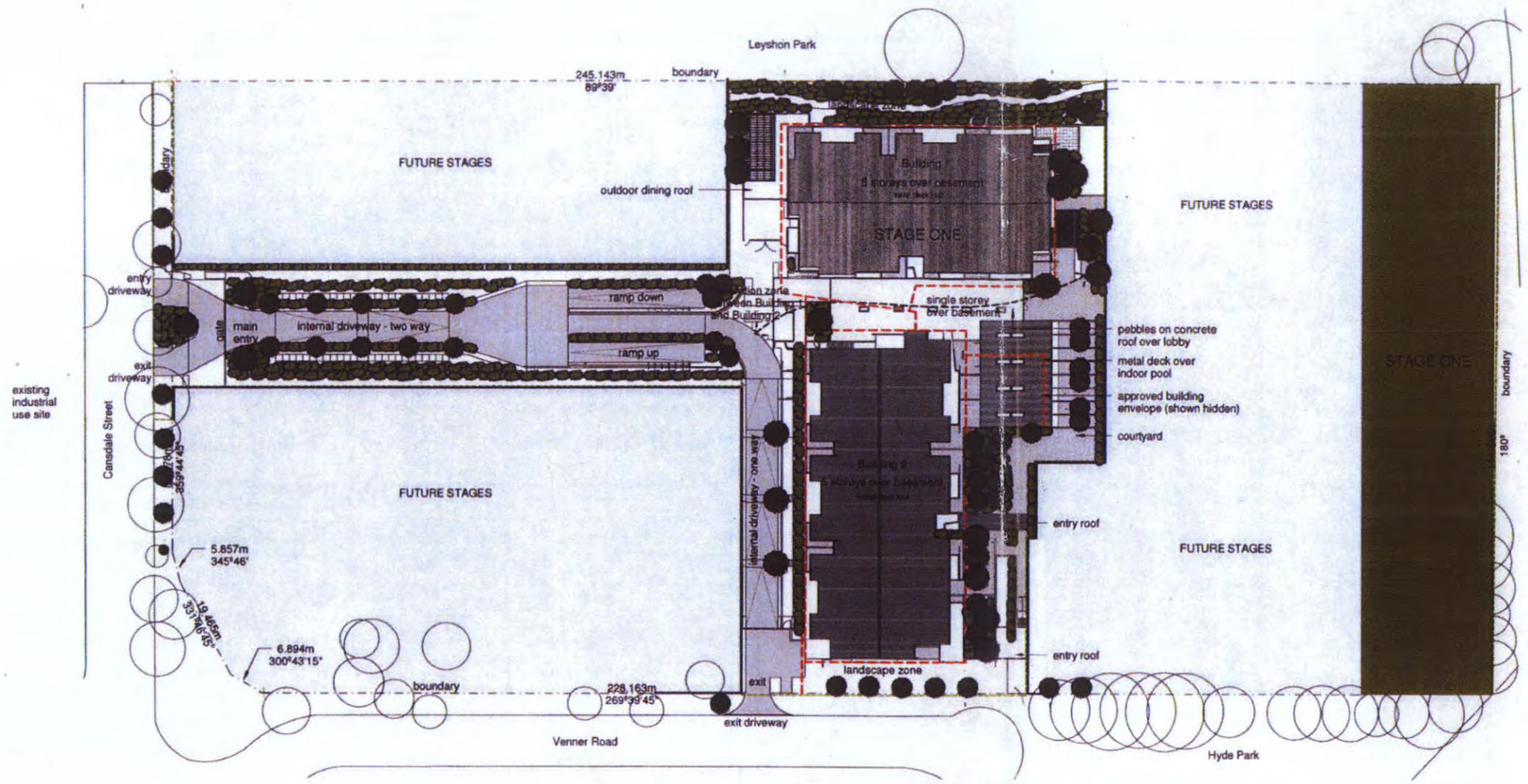
DA SUBMISSION



GFA SCHEDULE
rev b 21.02.07

Basement	
TOTAL BCC GFA	**77 m2**
Building 1 resident's car bays	**38**
Building 2 resident's car bays	**53**
Visitors car bays including 5 PWD	**31**
Non allocated bays	**4**
Level 1 - Ground Floor	
Building 1 BCC GFA (residential)	**246 m2**
Building 2 BCC GFA (residential)	**965 m2**
Common Area BCC GFA	**990 m2**
Full floor GFA	**2,201 m2**
On grade visitor car bays	**12**
Level 2	
Building 1 BCC GFA	**1,019 m2**
Building 2 BCC GFA	**1,218 m2**
Full floor BCC GFA	**2,237 m2**
Level 3	
Building 1 BCC GFA	**1,019 m2**
Building 2 BCC GFA	**1,218 m2**
Full floor BCC GFA	**2,237 m2**
Level 4	
Building 1 BCC GFA	**1,019 m2**
Building 2 BCC GFA	**1,218 m2**
Full floor BCC GFA	**2,237 m2**
Level 5	
Building 1 BCC GFA	**1,019 m2**
Building 2 BCC GFA	**1,218 m2**
Full floor BCC GFA	**2,237 m2**
Development Summary	
BCC GFA	**11,172 m2**
Total units B1	**38**
Total units B2	**53**
Total Units	**91**
Total residents cars	**91**
Total visitors cars	**43**

PLANS AND DOCUMENTS
referred to in the
APPROVAL dated 29 JUN 2007

NOTE:
REFERENCE TO SSL ON ALL PLANS REFERS TO AHD STRUCTURAL FLOOR LEVEL

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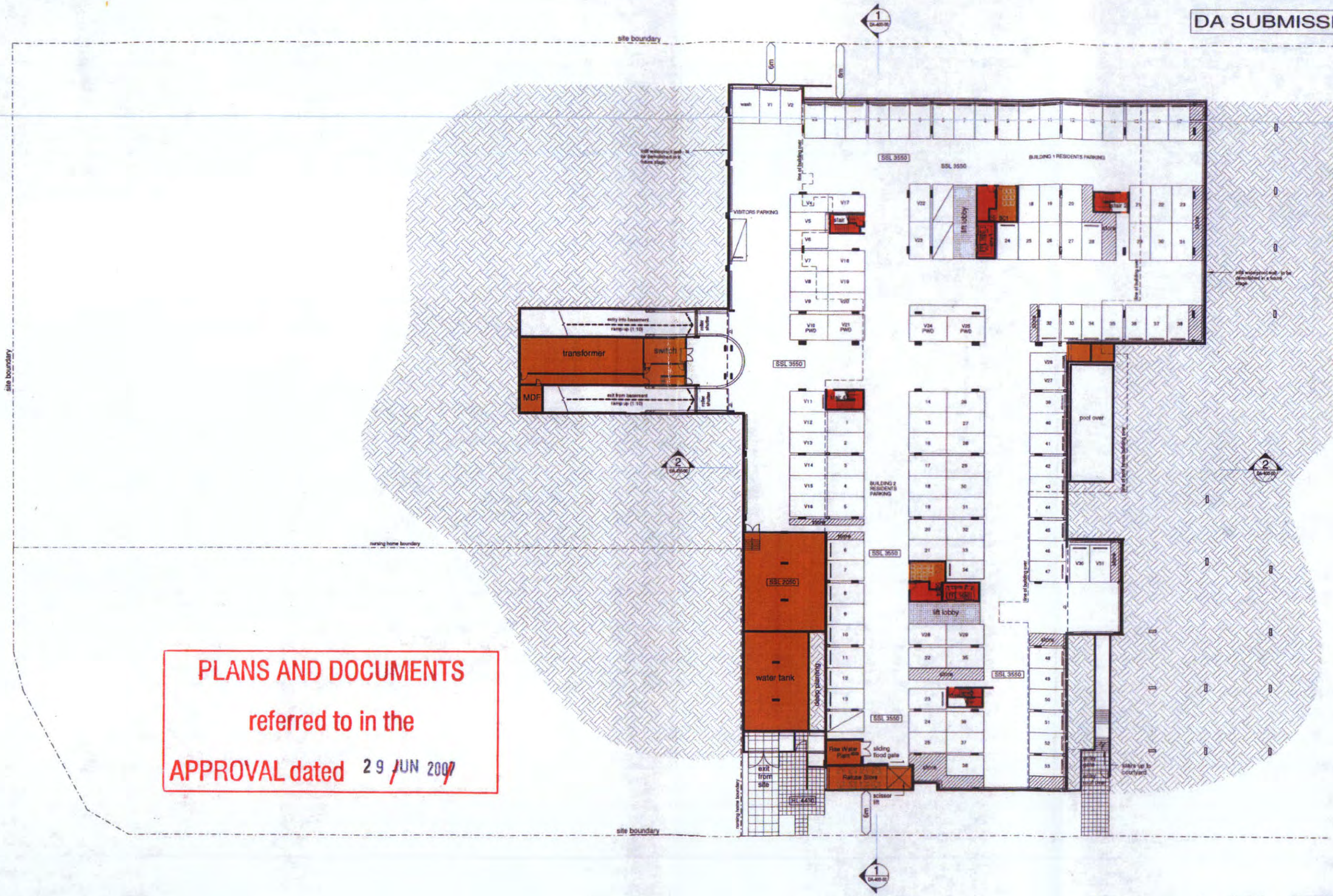
APP.BY/DES	REV	DATE	ISSUE	DRAWN	CHECK
REVIEWED	L	20.11.06	DA ISSUE	KP	SC
	M	24.11.06	DA ISSUE AMEND	KP	SC
DRAWN	N	21.02.07	DA ISSUE AMEND	KP	SC
KP	O	24.04.07	RESPONSE TO INFO REQUEST 3	DA	SC

AF PROJECT No : 2660
PROJECT: Yeronga Village - Stage 1
CLIENT: HARDEV PROPERTY DEVELOPMENT
DRAWING NAME: Site Plan
1:500 @ A1
ARKHEFIELD
A1
SCOPE: A | DISC: SD | PHASE | DWG No.: DA-100-00 | REV.: O

BCC.059.2933

DA SUBMISSION



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	N	21.02.07	DA ISSUE AMEND	KP	SC
DRAWN KP	O	24.04.07	RESPONSE TO INFO REQUEST 3	DA	SC
	P	27.04.07	DEEP PLANTING INDICATED	DA	SC

AP PROJECT No : 2660

PROJECT: Yeronga Village - Stage 1

CLIENT: HARDEV PROPERTY DEVELOPMENT

DRAWING NAME: Basement Level

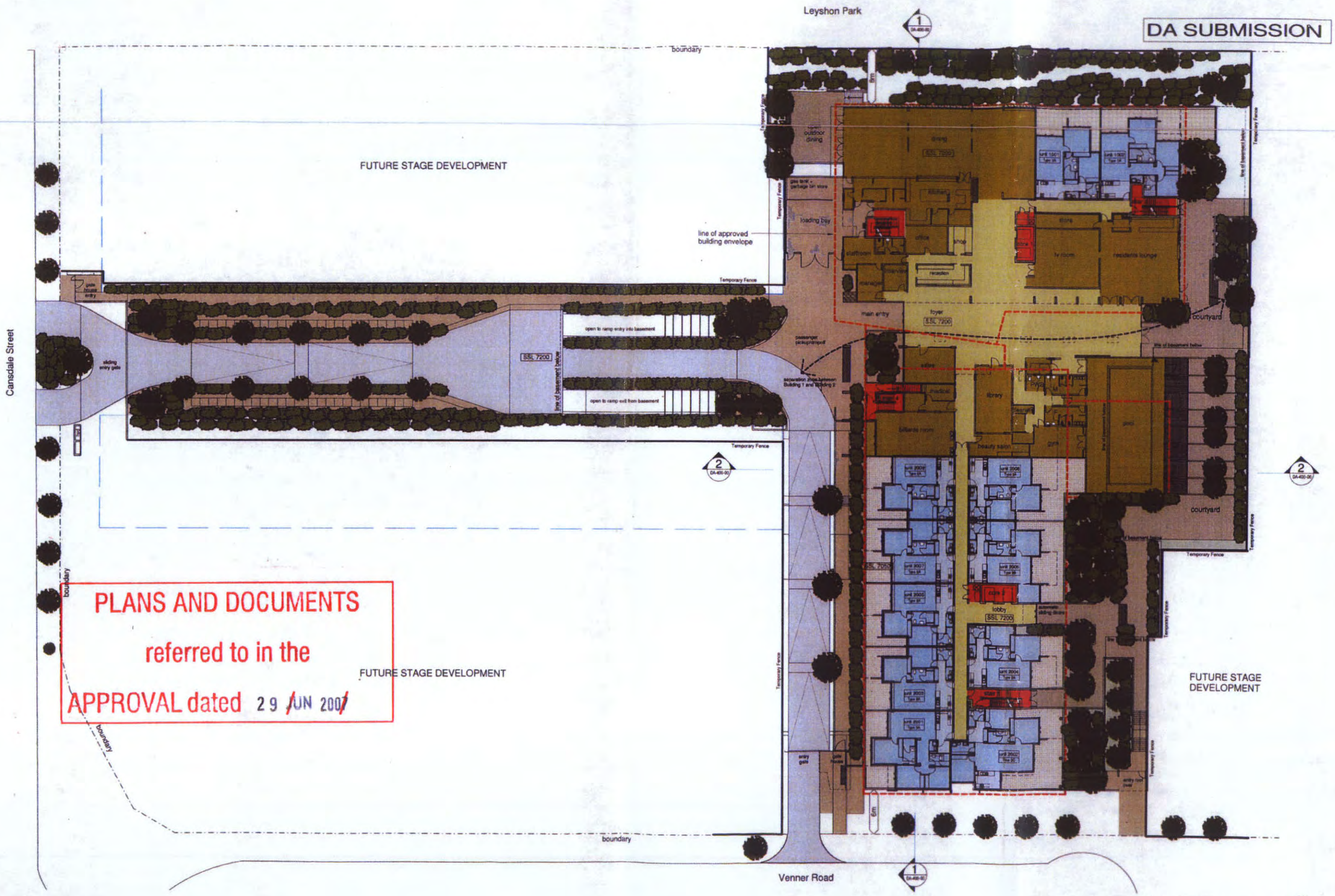
scale : 1 : 250

ARCHEFIELD

SCOPE	DISC	PHASE	DWG No.	REV.
	A	SD	DA-200-01	P

A1

BCC.059.2934



PLANS AND DOCUMENTS
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DRAWN	N	21.02.07	DA ISSUE AMEND	KP	SC
KP	O	24.04.07	RESPONSE TO INFO REQUEST 3	DA	SC

AF PROJECT No : 2660

PROJECT: Yeronga Village - Stage 1

CLIENT: HARDEV PROPERTY DEVELOPMENT

DRAWING NAME: Level 1 (Ground)

ARKHEFIELD

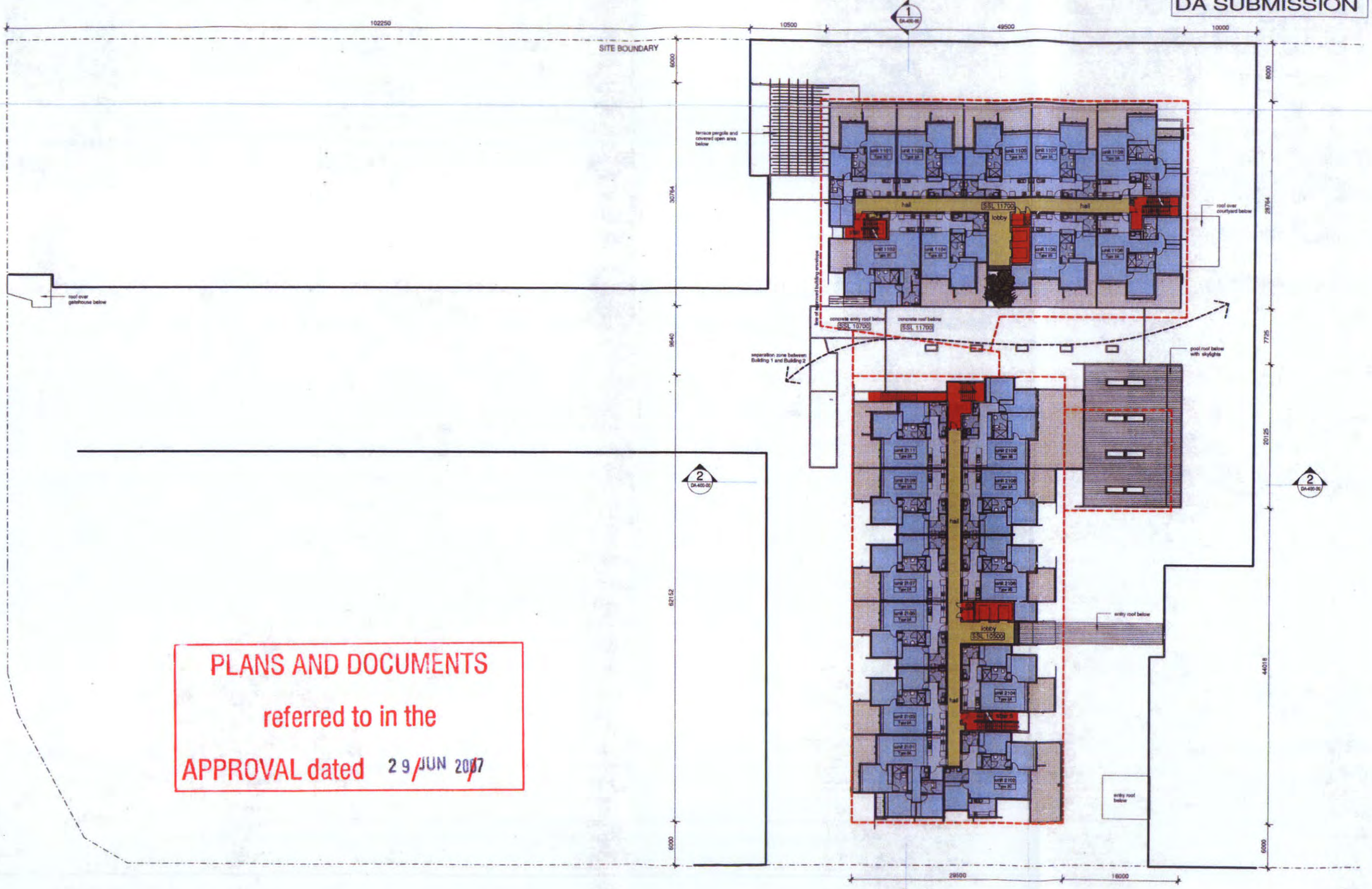
100mm LINE @ A1 10mm scale : 1 : 250

A1

SCOPE	DISC	PHASE	DWG No.	REV.
	A	SD	DA-200-02	O

BCC.059.2936

DA SUBMISSION



PLANS AND DOCUMENTS
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	M	24.11.06	DA ISSUE AMEND	KP	SC
DRAWN	N	21.02.07	DA ISSUE AMEND	KP	SC
KP	O	24.04.07	RESPONSE TO INFO REQUEST 3	DA	SC

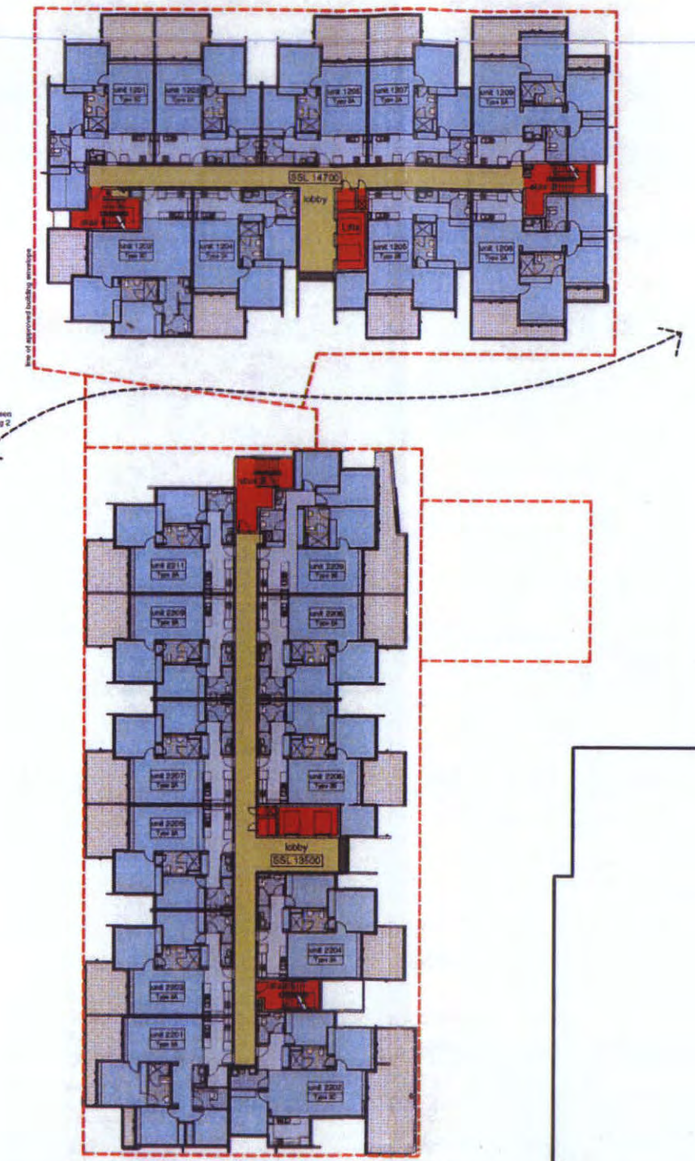
AF PROJECT No : 2660
PROJECT: Yeronga Village - Stage 1
CLIENT: HARDEV PROPERTY DEVELOPMENT
DRAWING NAME: Level 2
scale : 1 : 250
A1

ARCHEFIELD
410 Adelaide St Brisbane 4000
p (07) 3831 0100 f (07) 3831 0330
e mail@archefield.com.au

SCOPE	DISC	PHASE	DWG No.	REV.
	A	SD	DA-200-03	O

BCC.059.2935

DA SUBMISSION



PLANS AND DOCUMENTS
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	M	24.11.06	DA ISSUE AMEND	KP	SC
DRAWN	N	21.02.07	DA ISSUE AMEND	KP	SC
KP					

AF PROJECT No : 2660

PROJECT: Yeronga Village - Stage 1

CLIENT: HARDEV PROPERTY DEVELOPMENT

DRAWING NAME: Level 3, 4, 5 (Typical Floors)

100mm LINE @ A1 — 10mm — scale: 1 : 250

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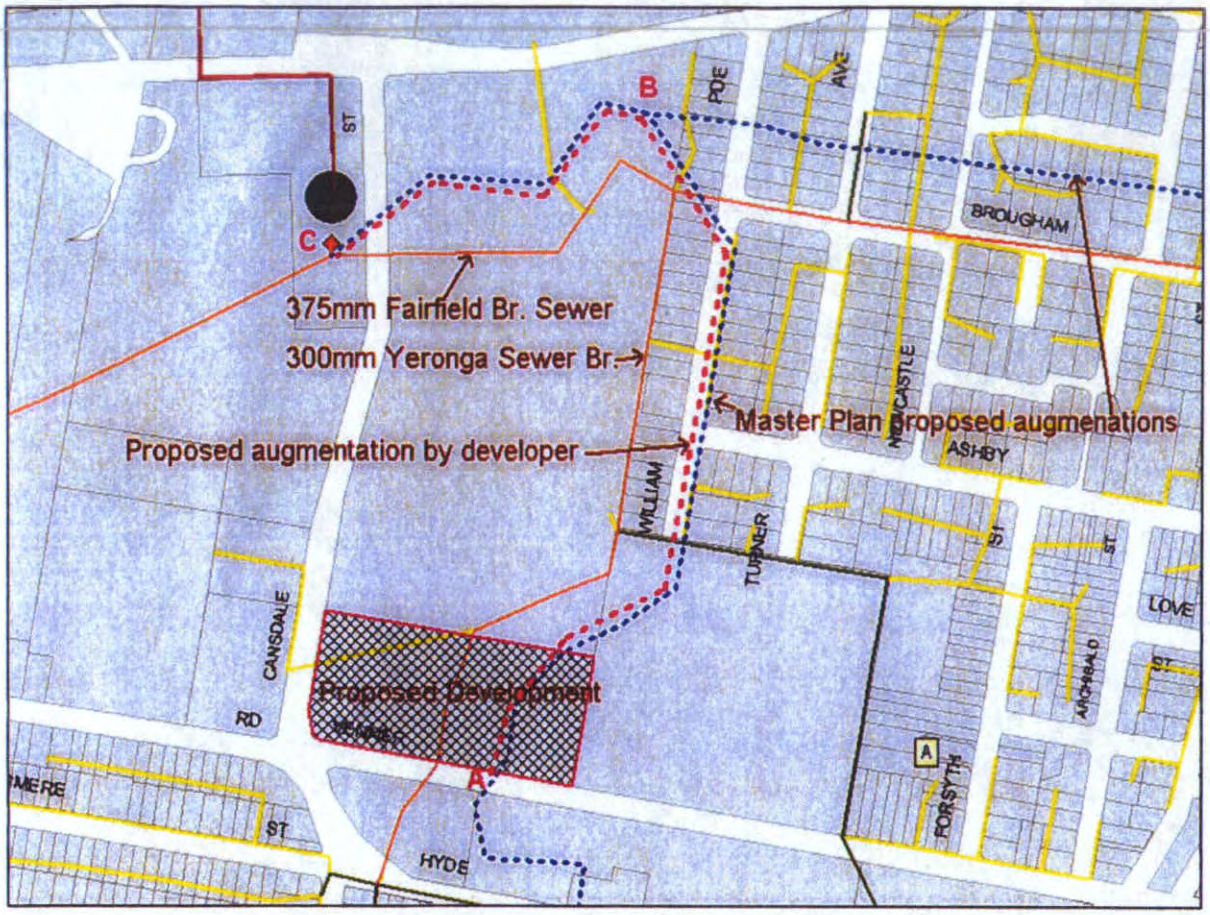
410 Adelaide St Brisbane 4000
p (07) 3831 9199 f (07) 3831 9288
e mail@arkhefield.com.au

SCOPE	DISC	PHASE	DWG No.	REV.
	A	SD	DA-200-04	N

A1

BCC:059:2937



5.1 Waste Water Disposal

External augmentation works are required in order to connect the development site to the existing gravity system. That is,

AB – 225mm pipe - 680 metres
BC – 300mm pipe - 328 metres

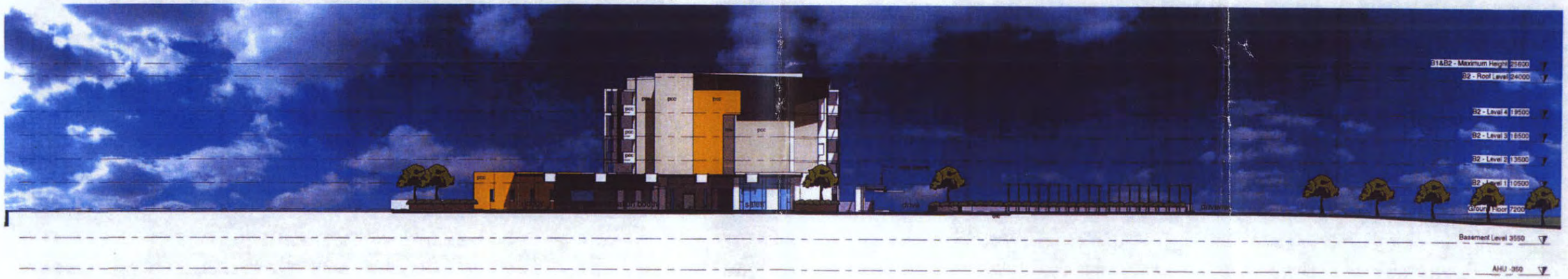
PLANS AND DOCUMENTS
referred to in the
APPROVAL dated 29 JUN 2007

SEWER WORKS
Plan No: S/917956
Dated: 5/05/07

DA SUBMISSION



1 **Colour - South Elevation Building 2**
1 : 250



2 **Colour - North Elevation Building 2**
1 : 250

PLANS AND DOCUMENTS
referred to in the
APPROVAL dated 29 JUN 2007

Legend

al	Aluminium
stn	Feature wall
glz	Glazing
pcc	Pre cast concrete
ofc	Off form concrete
sca	Sun control awning
mc	Metal cladding
ms	Metal screening
lvr	Fixed glass louvres
rbw	Rendered block work
ngl	Natural ground line
ss	Sliding sun screen

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	N	21.02.07	DA ISSUE AMEND	KP	SC
DRAWN KP	O	08.03.07	MATERIAL EXTENT	DA	SC
	P	24.04.07	RESPONSE TO INFO REQUEST 3	DA	SC

AF PROJECT No : 2660

PROJECT: Yeronga Village - Stage 1

CLIENT: HARDEV PROPERTY DEVELOPMENT

DRAWING TITLE: Elevations

ARKHEFIELD

SCOPE	DISC	PHASE	DWG No.	REV.
-	A	SD	DA-300-00	P

SCALE: 1 : 250 @ A1

BCC.059.2940

DA SUBMISSION



1 Colour - North Elevation Building 1
1 : 250



2 Colour - South Elevation Building 1
1 : 250

PLANS AND DOCUMENTS
referred to in the
APPROVAL dated 29 JUN 2007

Legend

al	Aluminium
stn	Feature wall
glz	Glazing
pcc	Pre cast concrete
ofc	Off form concrete
sca	Sun control awning
mc	Metal cladding
ms	Metal screening
lvr	Fixed glass louvres
rbw	Rendered block work
ngl	Natural ground line
ss	Sliding sun screen

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REVIEWED	M	24.11.06	DA ISSUE AMEND	KP	SC
	N	21.02.07	DA ISSUE AMEND	KP	SC
DRAWN	O	08.03.07	SUN SCREENS SHOWN	DA	SC
KP					

AF PROJECT No : 2660

PROJECT: Yeronga Village - Stage 1

CLIENT: HARDEV PROPERTY DEVELOPMENT

TITLE: Elevations

1 : 250 at A1

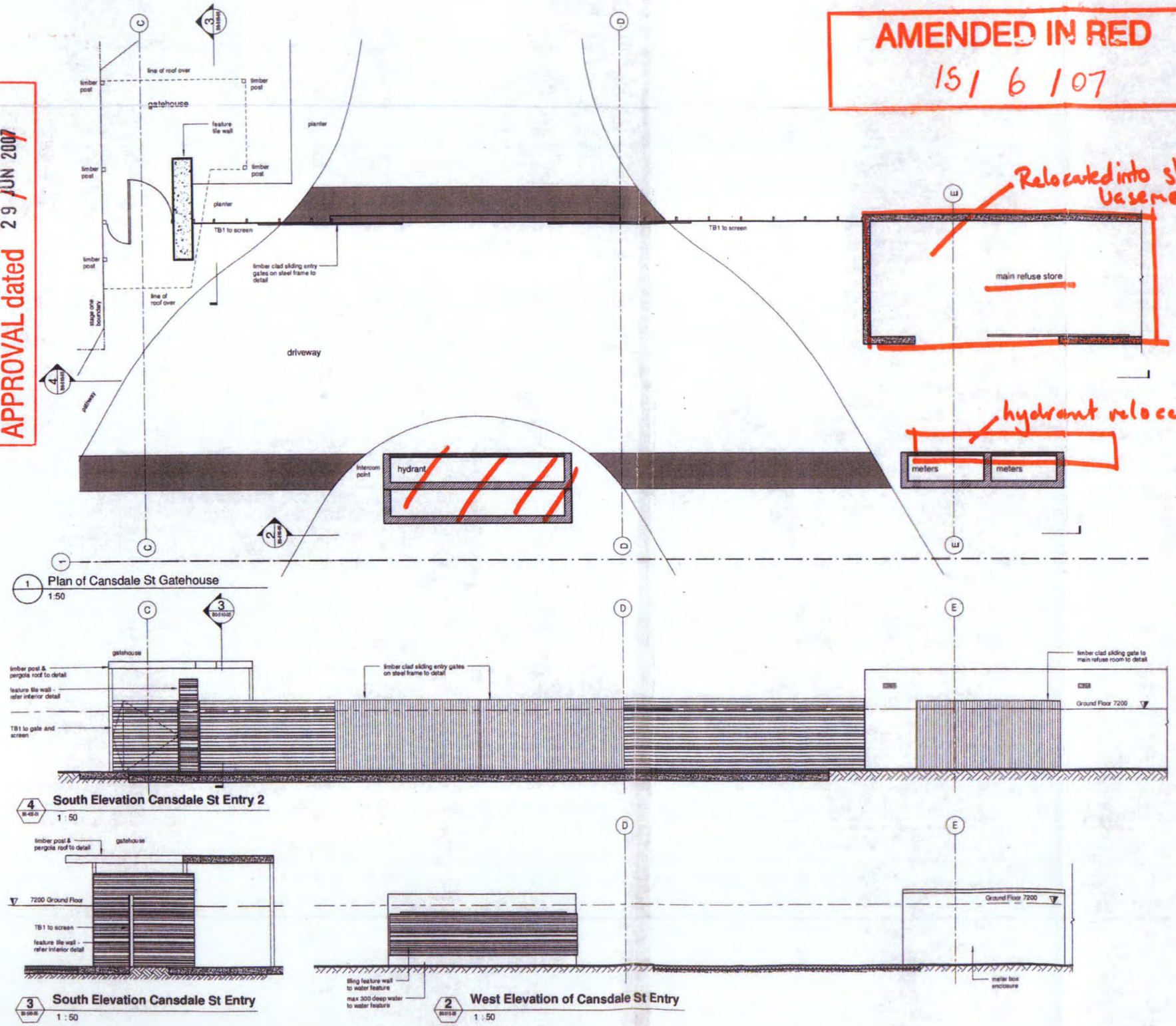
ARKHEFIELD

SCOPE	DISC	PHASE	DWG No.	REV.
-	A	SD	DA-300-01	O

BCC.059.2938

PLANS AND DOCUMENTS
referred to in the
APPROVAL dated 29 JUN 2007

AMENDED IN RED
15/ 6 /07



1 Plan of Cansdale St Gatehouse
1:50

4 South Elevation Cansdale St Entry 2
1 : 50

3 South Elevation Cansdale St Entry
1 : 50

2 West Elevation of Cansdale St Entry
1 : 50

DISCLAIMER
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REV	DATE	ISSUE	DRAWN	CHECKED
	05.01.07	INTERNAL OFFICE CHECK SET	KP	PF
	12.01.07	INTERNAL OFFICE CHECK SET	KP	PF
A	15.02.07	DD ISSUE	WJ	
B	07.03.07	DD ISSUE - REVISION 2	DA	

PROJECT
Yeronga Village - Stage 1

CLIENT
HARDEV PROPERTY DEVELOPMENT

DRAWING NAME
Gatehouse Details
Cansdale Street

SCALE 1 : 50
DATE 15.02.07

APPROVED PROJECT DIRECTOR	REVIEWED PROJECT MANAGER	DRAWN WJ
		DESIGN REVIEW

AF PROJECT No 2660
A1

ARKHEFIELD

DISCIPLINE	PHASE	SCOPE - DWG No. - LEVEL	REV.
A	DD	B0-510-05	B

BCC.059.2917

AMENDED IN RED
22 / 05 / 2007

EXISTING VEGETATION SCHEDULE

This Schedule shall be read in conjunction with the Vegetaion Management Plan (VMP)

ACTION

P - RETAIN AND PROTECT
P1 No other action required
P2 Remove dead and dangerous branches
P3 Remove side branches to allow access
P4 Prune lower branches
P5 Tree Surgery required
P6 Localised retaining as directed on site
P7 Included in future stage works

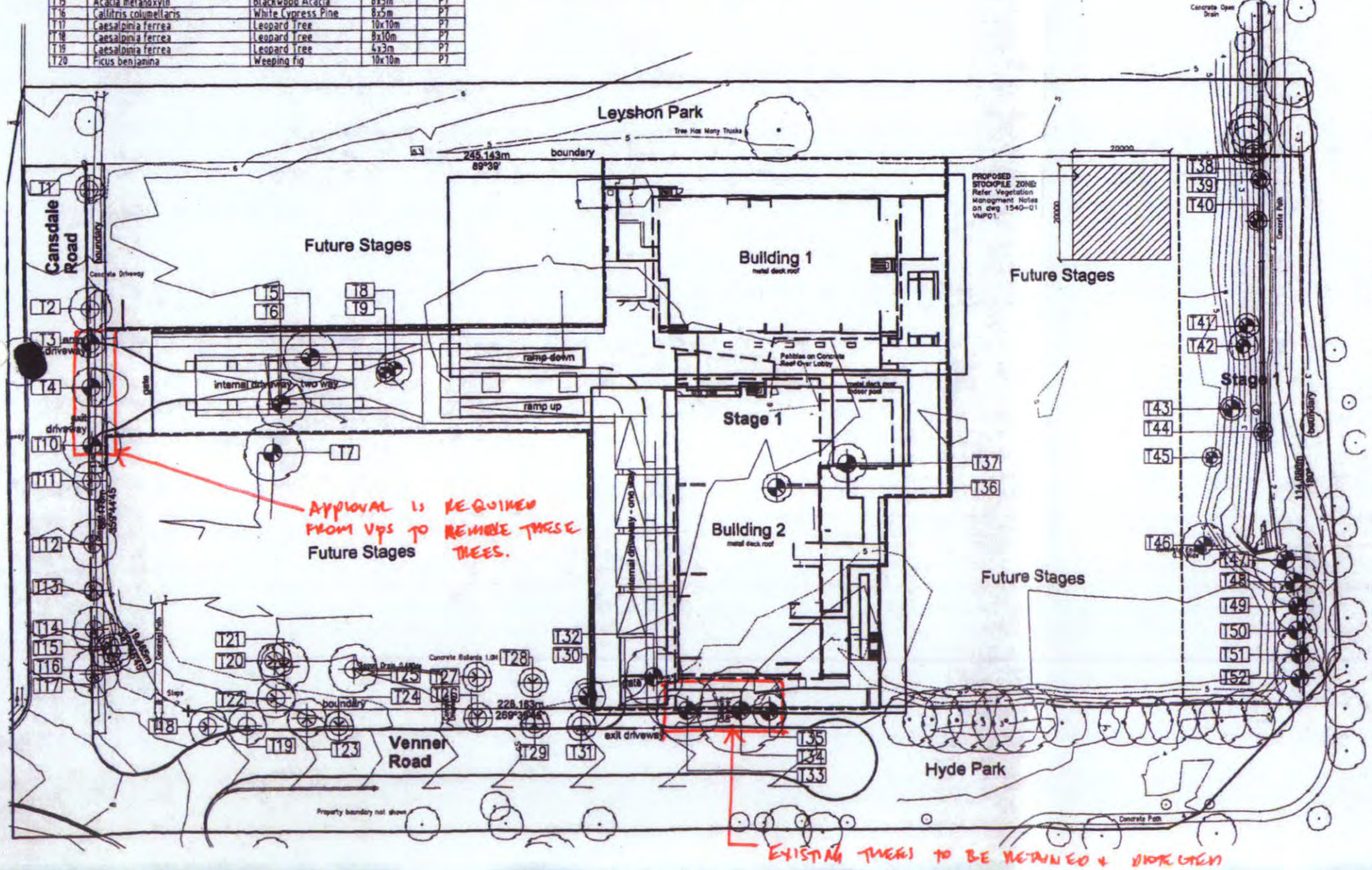
R - REMOVE
R1 Impact from building works will kill or severely damage tree
R2 Weed species
R3 Dead or dying or structurally unsound

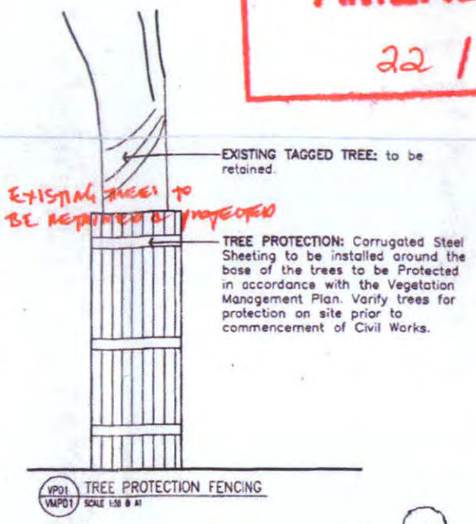
RL - RELOCATE
RL1 Relocate to positions indicated on plans.

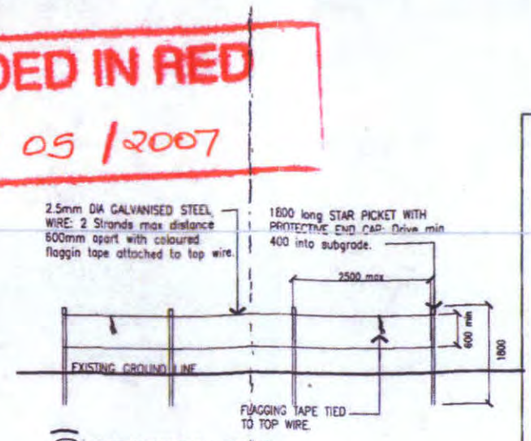
REF.	PLANT DESCRIPTION	COMMON NAME	HEIGHT & SPREAD	ACTION
T1	Caesalpinia ferrea	Leopard Tree	8x8m	P1
T2	Caesalpinia ferrea	Leopard Tree	8x5m	P1
T3	Caesalpinia ferrea	Leopard Tree	7x6m	R1
T4	Caesalpinia ferrea	Leopard Tree	10x8m	R1
T5	Ficus benjamina	Weeping Fig	10x8m	R1
T6	Ficus benjamina	Weeping Fig	9x8m	R1
T7	Delonix regia	Poinciana	8x6m	R1
T8	Archontophoenix alexandrae	Alexander Palm	8x4m	R1
T9	Archontophoenix alexandrae	Alexander Palm	6x3m	R1
T10	Caesalpinia ferrea	Leopard Tree	11x10m	R1
T11	Caesalpinia ferrea	Leopard Tree	8x8m	P7
T12	Caesalpinia ferrea	Leopard Tree	10x8m	P7
T13	Caesalpinia ferrea	Leopard Tree	5x3m	P7
T14	Caesalpinia ferrea	Leopard Tree	8x5m	P7
T15	Acacia melanoxylon	Blackwood Acacia	8x5m	P7
T16	Callitris columellaris	White Cypress Pine	8x5m	P7
T17	Caesalpinia ferrea	Leopard Tree	10x10m	P7
T18	Caesalpinia ferrea	Leopard Tree	8x10m	P7
T19	Caesalpinia ferrea	Leopard Tree	4x3m	P7
T20	Ficus benjamina	Weeping fig	10x10m	P7
T21	Macadamia integrifolia	Macadamia nut	5x4m	P7
T22	Caesalpinia ferrea	Leopard Tree	5x6m	P7
T23	Syagrus romanzoffiana	Cocos palm	9x3m	P7
T24	Caesalpinia ferrea	Leopard Tree	4x3m	P7
T25	Ficus benjamina	Weeping Fig	10x10m	P7
T26	Caesalpinia ferrea	Leopard Tree	4x3m	P7
T27	Schinus molle	Pepper Tree	8x12m	P7
T28	Ficus benjamina	Weeping Fig	10x10m	P7
T29	Caesalpinia ferrea	Leopard Tree	4x3m	P7
T30	Spathodea campanulata	African tulipTree	6x5m	R1
T31	Caesalpinia ferrea	Leopard Tree	4x3m	P7
T32	Delonix regia	Poinciana	6x5m	R1
T33	Eucalyptus tereticornis	Forest red gum	10x4m	R3
T34	Eucalyptus propinqua	Small fruited gray gum	25x16m	R2
T35	Eucalyptus tereticornis	Forest red gum	25x16m	R1
T36	Eucalyptus tereticornis	Forest red gum	15x6m	R1
T37	Eucalyptus tereticornis	Forest red gum	15x6m	R1
T38	Acacia melanoxylon	Blackwood	2x1.5m	P1
T39	Koelreuteria paniculata	Golden rain tree	2x1.5m	R1
T40	Koelreuteria paniculata	Golden rain tree	2x1.5m	R1
T41	Celtis chinensis	Chinese Hackberry	2x1.5m	R1
T42	Celtis chinensis	Chinese Hackberry	2x1.5m	R1
T43	Does not exist on site			
T44	Does not exist on site			
T45	Does not exist on site			
T46	Acacia melanoxylon	Blackwood	3x1.5m	R1
T47	Eucalyptus toreliana	Cadagi	15x10m	R2
T48	Eucalyptus toreliana	Cadagi	15x10m	R2
T49	Eucalyptus toreliana	Cadagi	15x10m	R2
T50	Eucalyptus toreliana	Cadagi	15x10m	R2
T51	Eucalyptus toreliana	Cadagi	15x10m	R2
T52	Eucalyptus toreliana	Cadagi	15x10m	R2

EXISTING TREES TO BE RETAINED & PROTECTED

APPROVAL REQUIRED FROM VPS TO REMOVE THESE TREES







VEGETATION MANAGEMENT SPECIFICATION NOTES:

1. VEGETATION PROTECTION:
Any vegetation listed to be retained and protected shall have dead or dangerous limbs removed. All tree surgery shall be undertaken by a qualified aborist and shall be undertaken in accordance with AS4373 - Pruning of Amenity Trees.

2. SITEWORKS/EARTHWORKS:
For location and extent of site works, proposed infrastructure, and earthworks refer to Civil Engineer's plans.

3. VEGETATION RETENTION/REMOVAL:
For all vegetation to be removed or retained and protected refer to vegetation management plans 1540-01 VMP01.

4. VEGETATION PROTECTION:
The following strategies shall be adopted to protect existing vegetation during construction:
i. All construction activity is to be restricted by temporally fencing undisturbed areas where existing trees are to be retained. Refer detail VD01 on drawing 1540-01 VMP01.
ii. Where possible tree roots should be tunneled under rather than severed. In the event of root damage, make a clean cut above the severed root and treat the root with a suitable fungicide. Do not excavate or fill within a 360 degree radius of a minimum of 10x trunk diameter at chest height.
iii. Access to the construction areas should be restricted to preexisting tracks or the path of existing disturbance.
iv. Do not store or otherwise place bulk materials and harmful materials under or within the dripline. Ensure decompation using hand methods.

5. WORKS WITHIN BUILDING FOOTPRINT AREAS:
All vegetation within the building footprint areas as indicated on plans is to be removed unless otherwise indicated and tub gound for use as mulch (except declared weed species). Weed species are to be disposed of off site at an authorised location. All areas disturbed by clearing works shall be grass seeded to prevent soil erosion or have appropriate sedimentation controls implemented in line with BCC best practice.

6. WORKS WITHIN EASTERN DRAINAGE CORRIDOR- WEED & RUBBISH REMOVAL:
Generally remove only the upper parts of woody weeds such as Ochna serrulata, and Landtana camara. Remove weeds by hand, remove from site and apply Glyphosate herbicide to cut stumps. Rubbish such as wire, plastic, concrete and other deleterious materials shall also be removed from site.

7. WORKS WITHIN REVEGETATION AREA 01 (RA01)
Remove weeds by hand, remove from site and apply glyphosate herbicide to cut stumps. The entire revegetation area 1 as indicated on plans is to be decompacted to 150mm min depth. Spread 100mm min imported topsoil prior to spreading 100mm imported composted forest litter. Plant revegetation species as scheduled and detailed. Areas disturbed by clearing works shall be mulched to prevent soil erosion or grass seeded for stabilisation.

8. MATERIALS STORAGE/STOCKPILE:
Topsoil, mulch and sub-soil should be stockpiled separately. All stockpiles should be located outside the dripline of existing trees for retention to avoid compaction of the root zones. Appropriate sediment controls should be placed around stockpiles. For the location and extent of storage, and stockpile areas for removed vegetation, including description of all methods to salvage and/or re-use cleared vegetation as mulch, refer to Civil Engineer's drawings.

9. SEDIMENT/EROSION CONTROL:
Sediment fences are to be installed immediately downslope of all disturbed areas. For the location, description and extent of all sediment traps and other erosion control devices refer Civil Engineer's drawings.

10. SEDIMENT/EROSION CONTROL PROGRAM:
For erosion and sediment control program, including control measures, monitoring programs, and maintenance procedures refer Civil Engineer's drawings.

11. AERIAL FAUNA:
All trees will be inspected prior to removal for evidence of aerial fauna or other fauna. The superintendent is to be notified immediately and the tree protected until further notice should fauna be present. Ensure a qualified fauna spotter is on site during pre-clearing inspection of and removal of trees indicated on drawing 1540-01 VMP01. This includes staging and sequencing of any clearing works operations, with relevant recovery proceedures in place during clearing works.

LEGEND

INDIVIDUAL EX. TREE - STAGE 1 TO BE REMOVED
Refer Existing Vegetation Schedule

INDIVIDUAL EX. TREE - RETAINED
Refer Existing Vegetation Schedule

PLANS AND DOCUMENTS APPROVAL
referred to in the
APPROVAL dated 29 JUN 2007
BCC- DA APPROVAL

Issue:	Description:	Date:	Signed:
A	BCC- DA APPROVAL	25.11.06	bm

DRAWING STATUS	SIGNATURE	DATE
Preliminary		
For Information Only		
For DA Approval		
For RA Approval		
For Tender		
For Construction		

PROJECT:
YERONGA RETIREMENT VILLAGE

CLIENT:
HARRISONS REAL ESTATE DEVELOPMENT

SITE:
15 CANSDALE STREET YERONGA

DRAWING:
VEGETATION MANAGEMENT PLAN STAGE 1

WORK TO FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO ORDERING MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS.

300MM ON ORIGINAL

drawn:	scale:	sht/ tot sht:	date:
bm	1:500@A1	2 of 8	25.11.06
phase no:	job no:	dwg no:	revision no:
DA	1540	VMP01	A

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A.I.L.A.

[w CONCEPTS
landscape architecture
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14 Mirbelia Street, Stafford Hts Q 4053
p : 07 3856 0233 f : 07 3856 0244
mob : 0417 140 773
email : [w@wconcepts.com.au
ABN: 57 167 437 924

DA SUBMISSION



1 **Colour - West Elevation**
1 : 250



2 **Colour - East Elevation**
1 : 250

PLANS AND DOCUMENTS
referred to in the
APPROVAL dated 29 JUN 2007

Legend

al	Aluminium
stn	Feature wall
glz	Glazing
pcc	Pre cast concrete
ofc	Off form concrete
sca	Sun control awning
mc	Metal cladding
ms	Metal screening
lvr	Fixed glass louvres
rbw	Rendered block work
ngl	Natural ground line
ss	Sliding sun screen

Do not scale from drawings. Dimensions are to be checked on site prior to commencement of work. Discrepancies to be brought to the attention of the author.
Electronic drawings are uncontrolled documents and are issued for information only. Any dimensions not nominated must be referred to the Architect for confirmation.
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APPROVED	REV	DATE	ISSUE	DRAWN	CHECK
REVISIONS	L	20.11.06	DA ISSUE	KP	SC
	M	24.11.06	DA ISSUE AMEND	KP	SC
	N	21.02.07	DA ISSUE AMEND	KP	SC
DRAWN KP	O	08.03.07	SUN SCREENS SHOWN	DA	SC

AF PROJECT No: 2660

PROJECT: Yeronga Village - Stage 1

CLIENT: HARDEV PROPERTY DEVELOPMENT

DRAWING NAME: Elevations

ARKHEFIELD

1 : 250

A1

SCOPE	DISC	PHASE	DWG No.	REV.
-	A	SD	DA-300-02	O

BCC.059.2939

TRAFFIC . PARKING . ACOUSTICS

16th February 2007
Our Ref: 22793res

Hardev Property Group
C/- PPM Group
PO Box 1559
Fortitude Valley Qld 4006

Attention: [redacted]

RE: Yeronga Village – Proposed Retirement Village - Traffic Engineering Report

Dear [redacted]

1. Introduction

This report forms TTM's response to the traffic engineering matters raised in the information request from Brisbane City Council dated 2 February 2007. The information request requests:

3) Provide a Traffic Report demonstrating that the traffic generated from this stage and subsequent stages (cumulative impact) does not require works in surrounding streets.

10) Submit a traffic report that considers the impacts of the full development, not just stage 1.

It is also understood that Council have raised several design issues at meetings subsequent to the issuing of the Information Request. These issues include:

- *Demonstrate MRV manoeuvres within the site,*
- *Demonstrate RCV manoeuvre at the Cansdale Street driveway arrangement and,*
- *Demonstrate that queuing at intercom at Cansdale Street entry is adequate for visitor access.*

2. Site Location

The approximate location of the site is shown in Figure 1.1. The site is currently occupied by an industrial warehouse which has access to both Cansdale Street and Venner Road.

PLANS AND DOCUMENTS
referred to in the
APPROVAL dated 29/JUN 2007

TTM Consulting (Qld) Pty Ltd
A Subsidiary of TTM Consulting Pty Ltd
ABN 65 010 868 621
Brisbane Gold Coast
Maroochydore Sydney Melbourne

P O Box 1120
579 Coronation Drive
TOOWONG BC 4066

t (07) 3327 9500
f (07) 3327 9501
[redacted]
www.ttmgroup.com.au

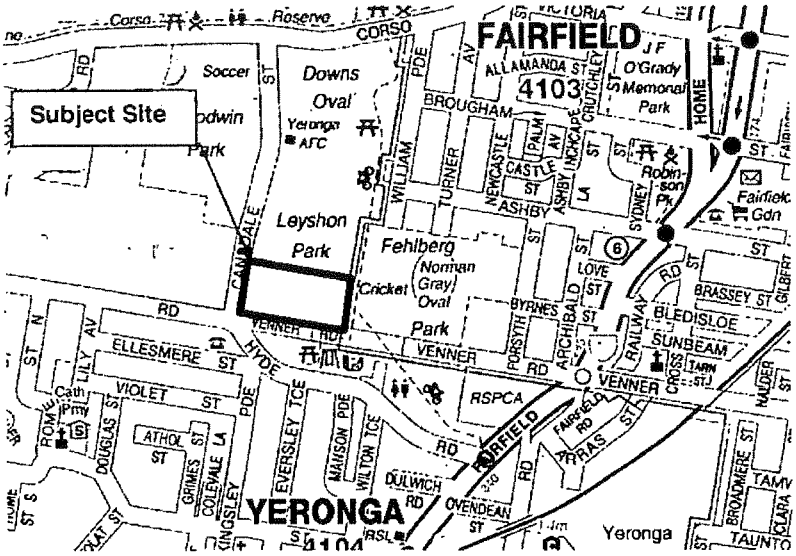

Figure 1.1 Locality Plan

3. Description of Development

The Yeronga Village development plan proposes 300 Independent Living Units for all stages of the development. The development plan also proposes 190 resident parking spaces and 62 visitor parking spaces. All parking is located in a basement accessed via Cansdale Street.

Access / egress to the car parking facility is proposed via a driveway located on Cansdale Street approximately 55.0m from Hyde Road. A driveway is also located on the Venner Road frontage, however this driveway will operate as an exit for service vehicles only.

4. Existing Peak Traffic Volumes

TTM conducted peak hour traffic surveys at the Fairfield Road / Hyde Road intersection and the Hyde Road / Cansdale Street / Venner Road, on Monday 5th February 2007. The results of the surveys are shown in Figures 4.1 and 4.2 respectively.

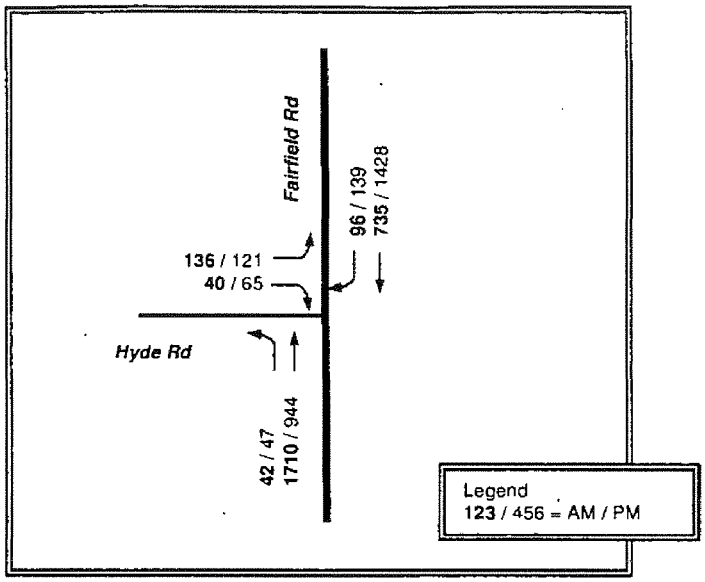

Figure 4.1 Fairfield Rd / Hyde Rd – Existing Peak Hour Volumes (vph)
(7.15am – 8.15am & 5.00pm – 6.00pm)

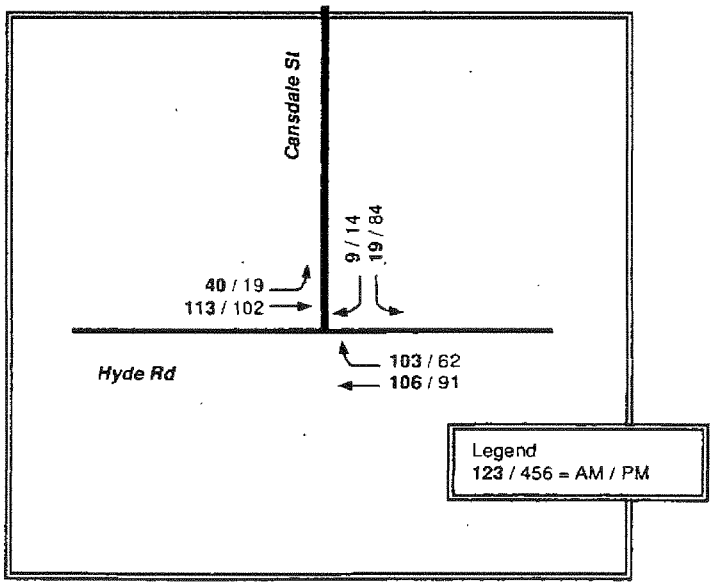

Figure 4.2 Hyde Rd / Cansdale St – Existing Peak Hour Volumes (vph)
(7.15am – 8.15am & 5.00pm – 6.00pm)

The surveys indicated that the traffic volumes generated on Venner Road are negligible. Three (3) vehicles entered and two (2) exited Venner Road in the morning peak and only one (1) exited Venner Road in the afternoon peak.

Based on the peak hour volumes, it is estimated that the daily traffic volumes on Hyde Road (east of Cansdale St) and Cansdale Street are approximately 3500vpd and 1700vpd.

The Hyde Road – Cansdale Street link is classified as a Suburban Route in accordance with the Council Road Hierarchy Map. The capacity threshold for this type of road, in accordance with Council's Road Hierarchy principles, is 15,000vpd (two lane).

5. Development Traffic Generation

The RTA Guide for Traffic Generating Development and the Department of Main Roads – Road Planning and Design Guidelines recommend traffic generation rates of 1 – 2vpd per dwelling and 0.1 – 0.2vph per dwelling in the peak traffic period.

Applying these rates to the proposed development relates to a traffic generation of between 300 – 600vpd and 30vph – 60vph during the peak traffic periods.

Given the level of car parking allocated throughout the village represents 0.63 spaces per unit, the lower level traffic generation is considered appropriate to assess the impact of the development traffic. The distribution of the development traffic to the external road network for the peak traffic periods is shown in Figure 5.1 and 5.2 respectively.

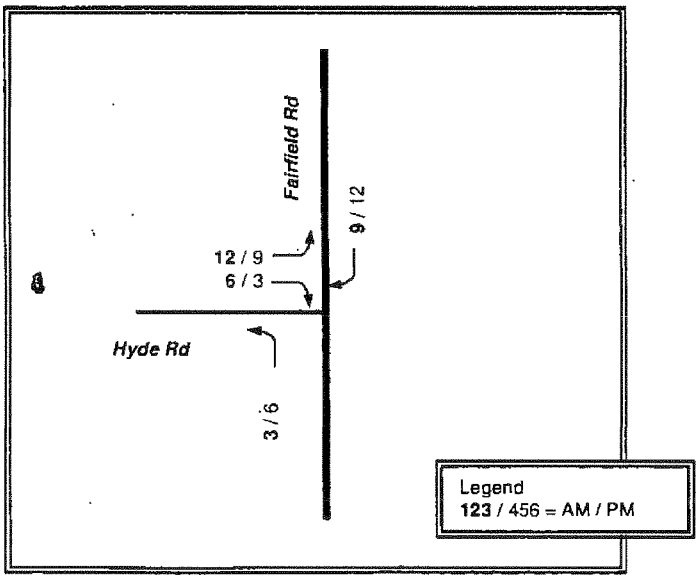

Figure 5.1 Fairfield Rd / Hyde Rd – Development Peak Hour Vol (vph)
(7.15am – 8.15am & 5.00pm – 6.00pm)

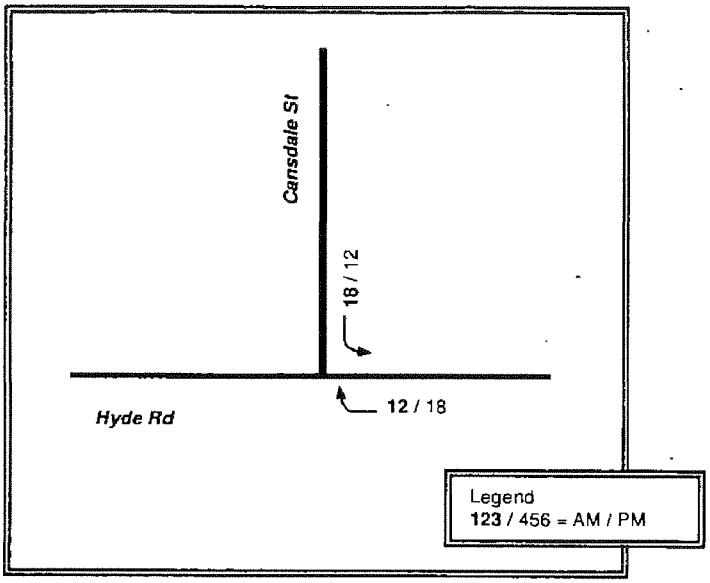

Figure 5.2 Hyde Rd / Cansdale St – Development Peak Hour Vol (vph) (7.15am – 8.15am & 5.00pm – 6.00pm)

6. Future Traffic Volumes

The combination of the future base traffic volumes and the development traffic volumes are shown in Figure 6.1 and 6.2 for the respective intersections. The future base traffic volumes have been based on a 1% pa growth rate on Fairfield Road and 3% on the local streets.

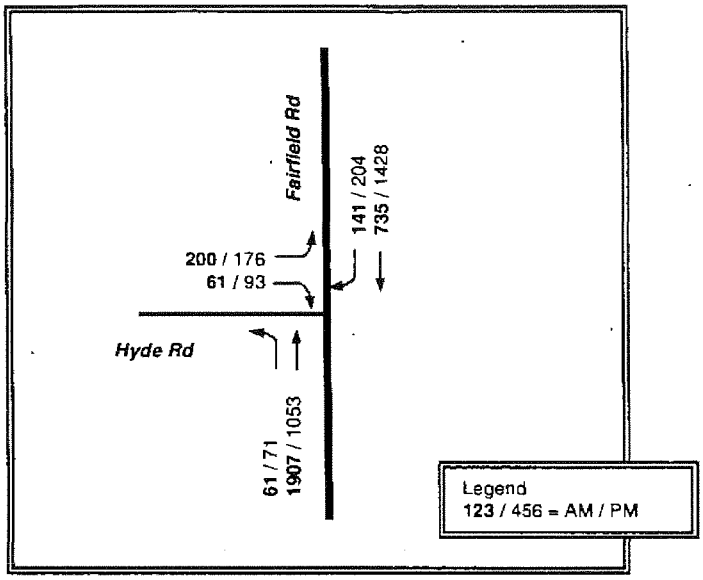

Figure 6.1 Fairfield Rd / Hyde Rd – Future Peak Hour Volumes (vph)
(7.15am – 8.15am & 5.00pm – 6.00pm

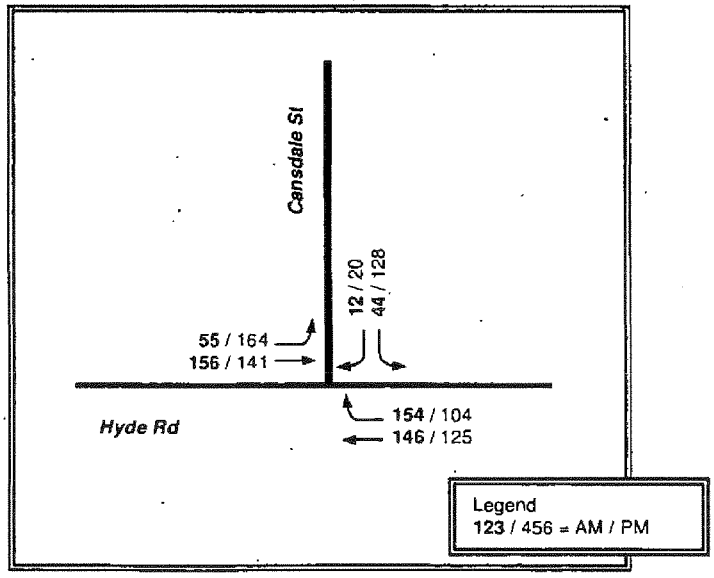

Figure 6.2 Hyde Rd / Cansdale St – Future Peak Hour Volumes (vph)
(7.15am – 8.15am & 5.00pm – 6.00pm)

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7. Impact on External Road Network

Fairfield Rd / Hyde Rd

The overall traffic generated by the proposed development is considered negligible in the context of the capacity of the surrounding road network. The Fairfield Road / Hyde Road intersection, which is controlled by traffic signals, is the primary access to the site from the surrounding catchment. An analysis of the future year peak hour traffic volumes indicates that this intersection will operate at an acceptable level of service for in excess of 10 years. The Sidra analysis indicates that the intersection will operate with a maximum degree of Saturation of approximately 74% in the PM peak traffic period, with an overall intersection level of service B in both the AM and PM peak traffic periods.

The results of the Sidra analysis are contained in the attachments.

Hyde Road / Cansdale Street

An analysis of the operation of the Hyde Road / Cansdale Street intersection also indicates that the intersection will operate at a high level of service. The critical movements at the intersection are the right turns into and out of Cansdale Street to / from Hyde Road. The intersection has been analysed by applying Austroads procedures. The results of the analysis are shown in Table 7.1a and 7.1b for the AM and PM peak periods respectively.

Table 7.1a Hyde Road / Cansdale Street – AM Peak

Hyde Rd / Cansdale St- Future AM with Development

Parameter	Right Turn into Cansdale St	Right Turn out Cansdale St
Type of Manouevre (Enter Number between 1 and 10)	9	10
Critical Acceptance Gap (secs.), ta	4	5
Follow-up Headway (secs.), tf	2	3
Minor Stream Flow Rate per Lane (veh/hour), Qm	154	12
Minor Stream Flow Rate per Lane (veh/sec), qm	0.0428	0.0033
Major (priority) Stream Flow Rate (veh/hour), Qp	210	357
Major (priority) Stream Flow Rate (veh/sec), qp	0.0583	0.0992
Absorption Capacity (veh/hour), C	1510	845
Right Turn Movement (Priority), Stream 3 Flow (vph), Q3	0	154
Practical Absorption Capacity (veh/hour), Cp	1208	522
Average Delay (seconds), Wm	0.67	1.51
Utilisation Ratio (Ratio of Arrival Rate to Service Rate)	0.1020	0.0142
Number of Storage Spaces Required, 95 percentile	1.00	1.00
Number of Storage Spaces Required, 98 percentile	1.00	1.00
Storage Length Required (metres), 95 percentile	8	8
Storage Length Required (metres), 98 percentile	8	8

Note: The above calculations were performed in accordance with AUSTROADS Part 5.

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Traffic Parking Acoustics

Table 7.1a Hyde Road / Cansdale Street – PM Peak

Hyde Rd / Cansdale St- Future PM with Development

Parameter	Right Turn into Cansdale St	Right Turn out Cansdale St
Type of Manouevre (Enter Number between 1 and 10)	9	10
Critical Acceptance Gap (secs.), ta	4	5
Follow-up Headway (secs.), tf	2	3
Minor Stream Flow Rate per Lane (veh/hour), Qm	104	20
Minor Stream Flow Rate per Lane (veh/sec), qm	0.0289	0.0056
Major (priority) Stream Flow Rate (veh/hour), Qp	305	430
Major (priority) Stream Flow Rate (veh/sec), qp	0.0847	0.1194
Absorption Capacity (veh/hour), C	1394	786
Right Turn Movement (Priority), Stream 3 Flow (vph), Q3	0	104
Practical Absorption Capacity (veh/hour), Cp	1115	525
Average Delay (seconds), Wm	0.90	1.93
Utilisation Ratio (Ratio of Arrival Rate to Service Rate)	0.0746	0.0255
Number of Storage Spaces Required, 95 percentile	1.00	1.00
Number of Storage Spaces Required, 98 percentile	1.00	1.00
Storage Length Required (metres), 95 percentile	8	8
Storage Length Required (metres), 98 percentile	8	8

Note: The above calculations were performed in accordance with AUSTROADS Part 5.

The analysis indicates that the right turn movements in either direction will operate at a high level of service, with minimal delays (less that 2 sec average delays for all movements) and queuing (minimum of one car required).

Whilst the analysis indicates that there is sufficient capacity at the Hyde Road / Cansdale Street intersection, it is recommended however, that the intersection configuration should be modified to ensure safe operation. A concept plan of the proposed modifications is attached. The plan basically provides a bypass lane for through traffic on Hyde Road when a vehicle is stopped to turn right into Cansdale Street.

Mid Block Capacity

In terms of the mid block capacity, both Hyde Road and Cansdale Street are designated as Suburban Routes in the Council Road Hierarchy. The capacity threshold for a two lane Suburban Route, as specified in the Council planning scheme, is 15,000vpd.

The existing daily traffic volumes are less than 4000vpd, and the proposed development will generate in the order of 300vpd, therefore it is concluded that the mid block capacities will not be exceeded with the proposed development.

8. Design Issues

8.1 Service Vehicle Access and Circulation

The design vehicle with respect to service vehicles accessing the site is an MRV. TTM have produced swept path diagrams for an MRV to access the loading facility within the site using Autotrack Version 7.6. The swept paths, which have been incorporated onto Arkhefield Architects development plans, demonstrate that the MRV can enter the site in a forward motion, manoeuvre into the loading area in a safe and efficient manner and exit the site in a forward motion.

8.2 Refuse Collection

The access arrangements proposed on Cansdale Street, which is designed as a "porte cochere" type arrangement, has been specifically designed to allow a RCV to stop and load adjacent to the refuse storage area. It is intended that the RCV will enter the driveway from the north, load without blocking vehicles entering the site (thus avoiding any potential for queuing onto Cansdale Street) and then exit in a forward motion onto Cansale Street without the need for any further manoeuvring within the driveway.

8.3 Visitor Access

Whilst a security gate is proposed at the Cansdale Street access, it is understood that this gate will only be closed at night after approximately 7.30pm. Subsequently there will basically be uninterrupted access for visitors up until 7.30pm.

When the security gate is closed, it is expected that visitors to the site will be minimal, however an intercom system is proposed at the Cansdale Street entry to ensure visitors can access the car park after the gate is closed. The access design allows visitors to contact the resident via the intercom when the security gate is closed. Whilst the potential for queuing behind visitors is considered negligible due to the hours that the gate is closed, the driveway design allows residents to bypass vehicles stopped at the intercom (it is intended that the visitor will have remote push button access controls for the security gate). The manoeuvring paths for these vehicles are presented on the development plans.

9. Conclusion

It is concluded from the analysis that the proposed development traffic will not have an adverse impact on the operation of the external road network.

It is recommended that the configuration of the Hyde Road / Cansdale Street intersection be modified from a safety perspective. A concept of the proposed modifications is included in the attachments.

The development plan also makes suitable provision for service vehicles (including delivery vehicles and refuse collection vehicles) to enter and exit the site in a forward motion.

It is also concluded that there is minimal potential for queuing to occur at the Cansdale Street access. The proposed security gates will only be closed after 7.30pm therefore residents and visitors will have uninterrupted access until this time. The location of the intercom system to be used by visitors after 7.30pm is such that other vehicles can bypass to avoid potential queuing.

If you have any queries with respect to the information provided, contact Brian Camilleri on 3327 9500.

Yours faithfully,



Director

ttm
Traffic Parking Acoustics

Attachments - Sidra Analysis

INTERSECTION

Movement Summary

Fairfield Rd / Hyde Rd

Future PM Peak

Signalised - Fixed time Cycle Time = 120 seconds

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
New S leg										
1	L	75	0.0	0.452	17.8	LOS B	115	0.50	0.79	40.3
2	T	1108	0.0	0.451	9.6	LOS A	119	0.50	0.46	47.5
Approach		1183	0.0	0.451	10.1	LOS B	119	0.50	0.48	46.9
New N leg										
8	T	1503	0.0	0.571	10.9	LOS B	162	0.57	0.52	46.2
9	R	215	0.0	0.559	15.9	LOS B	47	0.64	0.79	41.7
Approach		1718	0.0	0.571	11.5	LOS B	162	0.58	0.56	45.6
New W leg										
10	L	185	0.0	0.443	51.6	LOS D	77	0.71	0.81	24.8
12	R	98	0.0	0.576	67.2	LOS E	52	1.00	0.78	21.0
Approach		283	0.0	0.576	57.0	LOS E	77	0.94	0.80	23.3
All Vehicles		3184	0.0	0.576	15.0	LOS B	162	0.59	0.55	42.5

Pedestrian Movements

Mov ID	Dem Flow (ped/h)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate
P1	12	48.4	LOS D	0	0.80	0.80
P2	12	53.2	LOS E	0	0.94	0.94
P7	192	8.4	LOS A	0	0.19	0.19
All Peds	216	12.6	LOS B	0	0.43	0.43

INTERSECTION

Movement Summary

Fairfield Rd / Hyde Rd

Future AM Peak

Signalised - Fixed time Cycle Time = 120 seconds

Vehicle Movements

Mov ID	Turn	Dem Flow (veh/h)	%HV	Deg of Satn (v/c)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate	Aver Speed (km/h)
New S leg										
1	L	64	0.0	0.736	18.4	LOS B	241	0.64	0.84	39.8
2	T	2007	0.0	0.734	10.2	LOS B	242	0.64	0.60	46.8
Approach		**2071**	**0.0**	**0.734**	**10.5**	**LOS B**	**242**	**0.64**	**0.61**	**46.6**
New N leg										
8	T	774	0.0	0.274	5.9	LOS A	65	0.37	0.33	51.6
9	R	148	0.0	0.564	28.0	LOS C	60	0.94	0.86	33.9
Approach		**922**	**0.0**	**0.563**	**9.5**	**LOS A**	**65**	**0.46**	**0.41**	**47.6**
New W leg										
10	L	211	0.0	0.649	58.8	LOS E	93	0.99	0.83	22.9
12	R	64	0.0	0.689	74.5	LOS E	38	1.00	0.81	19.6
Approach		**275**	**0.0**	**0.689**	**62.5**	**LOS E**	**93**	**0.99**	**0.82**	**22.0**
All Vehicles		**3268**	**0.0**	**0.736**	**14.6**	**LOS B**	**242**	**0.62**	**0.57**	**42.8**

Pedestrian Movements

Mov ID	Dem Flow (ped/h)	Aver Delay (sec)	Level of Service	95% Back of Queue (m)	Prop. Queued	Eff. Stop Rate
P1	12	43.4	LOS E	0	0.85	0.85
P2	12	64.2	LOS E	0	0.95	0.95
P7	13	6.3	LOS A	0	0.32	0.32
All Peds	**37**	**33.8**	**LOS D**	**0**	**0.70**	**0.70**

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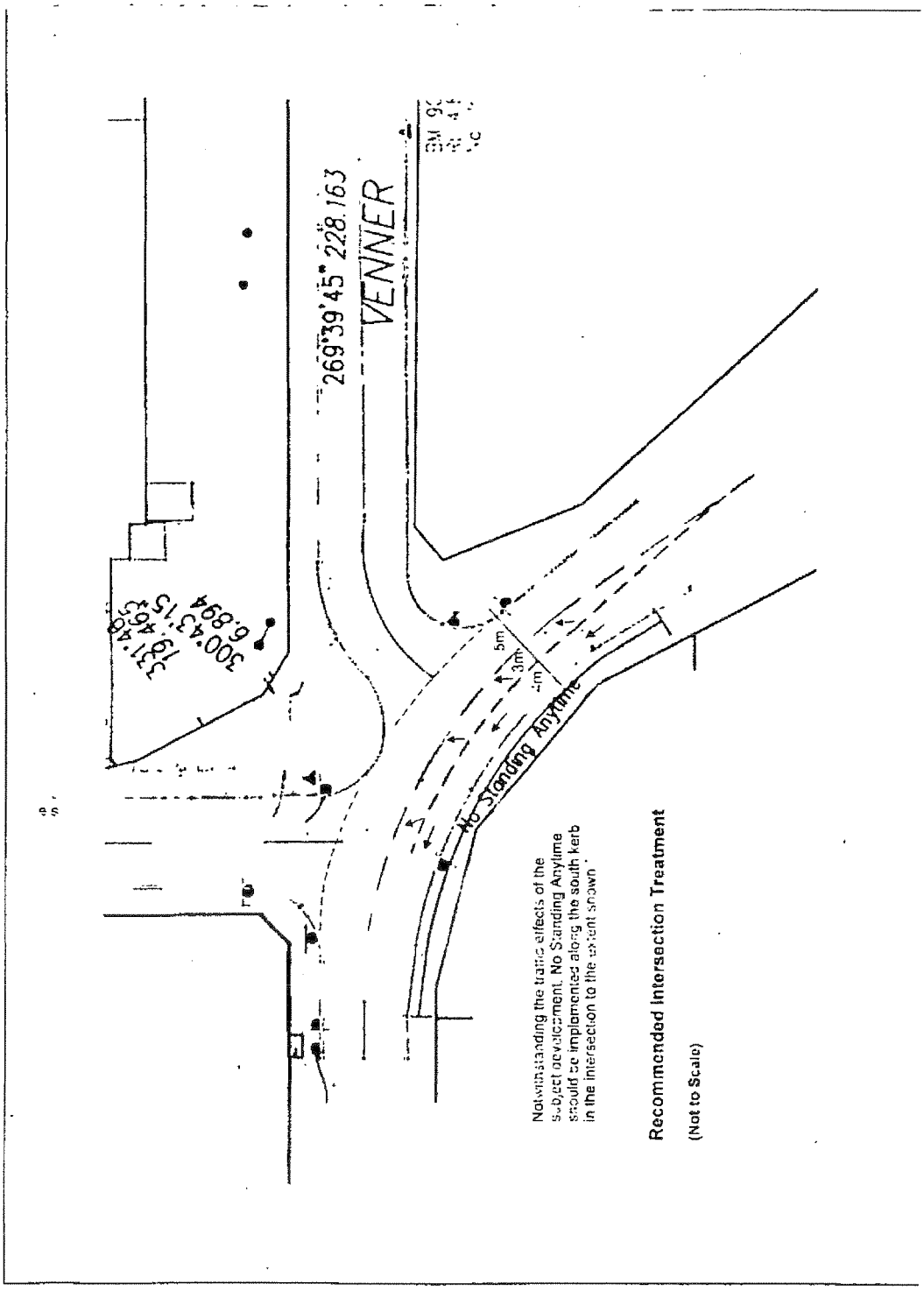
Traffic Parking Acoustics

Intersection Modification – Hyde Rd / Cansdale Street


269°39'45" 228.163
VENNER
331.40
300.43
19.465
6.894
5m
3m
4m
No Standing Anytime
Notwithstanding the traffic effects of the subject development, No Standing Anytime should be implemented along the south kerb in the intersection to the extent shown.
Recommended Intersection Treatment
(Not to Scale)

Dedicated to a better Brisbane

COUNCIL DELEGATE DECISION MADE ON
23 JUN 2007

15 June 2007

[redacted]
PO BOX 1559
FORTITUDE VALLEY BC QLD 4006

Permit Type: DA - Reconfigure a Lot
Description of Proposal: Reconfiguration/Subdivision of Land. (1 into 2 lot subdivision for Aged Care development).
Address of Site: 15 Cansdale St Yeronga Qld 4104
Real Property Description: Lot(s) 1 on Registered Plan 150512
Application Reference: A001637428 (previously 965135:DA)

Dear Sir/Madam

RE: Decision Notice under Section 3.5.15 of the "Integrated Planning Act 1997": Development Application

I am pleased to inform you that your application has been approved in accordance with the approved drawings in the approval package and subject to the attached conditions.

This notice includes extracts from the Act with respect to making representations about conditions, negotiated decisions, suspension of the appeal period and lodging an appeal.

This approval is for:

- Reconfigure a Lot - Development Permit - Subdivision of Land

Please phone me on the telephone number below during normal business hours if you have any queries regarding this matter.

Yours sincerely,

[redacted]
Senior Urban Planner, Development Assessment
Development Assessment South BSQ
(07) 3403 6117
Development Assessment Branch

Decision Notice Details

(Section 3.5.15 of the "Integrated Planning Act 1997")

INTRODUCTION:

The decision to approve the application was made by the Lead Principal Urban Planner as the delegate appointed by the Council to determine the application.

APPLICANT DETAILS:

Simon Forsyth/ Melissa Collie
PO BOX 1559
FORTITUDE VALLEY BC QLD 4006

SITE:

Address of Site:

15 Cansdale St Yeronga Qld 4104

Real Property Description:

Lot(s) 1 on Registered Plan 150512

City Plan Area Classification:

CP-LI

Name of Owner:

YV Unit Trust

Name of Ward:

Dutton Park

APPLICATION:

Aspects of development and development approvals sought:

- Reconfigure a Lot - Development Permit - Subdivision of Land

Description of Proposal:

Reconfiguration/Subdivision of Land. (1 into 2 lot subdivision for Aged Care development).

Council file reference:

A001637428 (previously 965135:DA)

Lodgement date:

02 February 2007

TYPE OF APPROVAL:

- Reconfigure a Lot - Development Permit - Subdivision of Land

FURTHER DEVELOPMENT PERMITS:

- Carrying Out Operational Work
- Carrying Out Building Work

REFERRAL AGENCIES:

There were no Advice Agencies for this application.

There were no Concurrence Agencies for this application.

There were no State Agencies for this application.

The Council did not refer this application to any other entity for its comment.

CONDITIONS:

This approval is subject to conditions, which are included in the attached approval package.

SUBMISSIONS:

Submissions may have been received for this application. For Code Assessable applications, submitters are not entitled to appeal this decision.

BRISBANE CITY COUNCIL'S APPROVAL PACKAGE

APPLICATION DETAILS

This package relates to the application detailed below

Address of Site:	15 CANSDALE ST YERONGA QLD 4104
Real Property Description of Site:	L1 RP.150512
Aspects of development and type of approval:	DA - Reconfigure a Lot Development Permit - Subdivision of Land
Council File Reference:	A001637428 Permit Reference Number/s: DARL167604707.
Package Status:	APPROVED - Version 1 (28th of June, 2007 12:00:00 AM)
Package Generated:	28/06/2007

PROJECT TEAM

The assessment of this application has been undertaken by:

[redacted] Senior Urban Planner, Development essment Development Assessment South BSQ [redacted] (07) 340[redacted]	Rory KELLY Lead Principal Urban Planner, Development Assessment Development Assessment South BSQ [redacted] (07) 340[redacted]	Paul HILLS Senior Engineering Officer, Development Assessment Development Assessment South BSQ [redacted] (07) 34[redacted]
[redacted] Ecologist, Development Assessment Development Assessment South BSQ [redacted] (07) 340[redacted]	[redacted] Landscape Architect, Development Assessment Development Assessment South BSQ [redacted] (07) 340[redacted]	

DRAWINGS AND DOCUMENTS

The term 'drawings and documents' or similar expressions mean:

Drawing or Document	Number	Plan Date
Vegetation Management Plan Stage 1	VMPO1 A (Amended In Red 22-MAY-2007)	25-NOV-2006
Proposed Lots 1,2 & 101 Park	7203-08B	12-FEB-2007
Hydraulic Analysis by Cardno Part 1	3500/34	23-MAY-2006
Hydraulic Analysis by Cardno Part 2	3500/34	23-MAY-2006
Sewer Works	s 917956	05-MAY-2007

Advice

Please see the attached document(s) for any advices.

APPROVAL CONDITIONS

Permit to Which These Conditions Relate:	DA - Reconfigure a Lot
Activity(ies):	Subdivision of Land
Stage:	Reconfiguration (1 into 2 lots) and park dedication

General/Planning Requirements

	Timing
1 Approved Drawings & Documents A legible copy of the approved drawings and documents bearing "Council Approval" and the Development Approval Conditions package is to be available on site at all times during construction and earthworks.	As indicated
GUIDELINE *This condition is imposed to ensure compliance with the development conditions of approval. The copy of the conditions and plans should be located in any site management office or with the site foreman. Any copies of conditions or plans that are illegible shall be deemed to be non compliance with this condition of approval.*	
2 Copy of Approval to Consultants Provide a copy of the Brisbane City Council approval package including the development approval conditions, approved plans & documents and the Decision Notice to the following and as indicated (where applicable): (a) All consultants preparing or lodging applications for "Operational Works"; (b) All consultants preparing or lodging applications to satisfy conditions requiring compliance assessment under Schedule 12 of the Integrated Planning Regulation 1998; (c) Prior to lodging a development permit for building works, all consultants preparing or lodging applications for "Carrying Out Building Works"; and (d) Prior to site works commencing, all contractors carrying out site works or building works associated with or resulting from this Development Permit.	As indicated
PROOF OF FULFILMENT *Copy of the wording of the sign is provided to the Lead Principal Planner, Development Assessment Team South*	
GUIDELINE *This condition is imposed to ensure that all consultants, contractors and Building Certifiers involved with completing the development are aware of the particular requirements of this site.*	
3 Carry Out The Approved Development - ROL Carry out the approved development generally in accordance with the approved drawing(s) and/or document(s) **as amended in Red on 22/06/2007 to show:** 1. Trees to be retained; and 2. Trees which require approval to remove.	While development is occurring on the site
GUIDELINE *This condition refers to the approved plans, drawings and documents to which the approval relates and is the primary means of defining the extent of the approval. Approved plans, drawings and documents are stamped PLANS and DOCUMENTS referred to in the APPROVAL and are dated to reflect the date of approval of the application by Council's Delegate. This condition should be read in conjunction with the following conditions which may require operational work or building work to be completed before the Council will endorse any survey plan. The extent to which plans, drawing(s) and/or documents can be modified is constrained by sections 3.5.24 and 3.5.33 of the "Integrated Planning Act 1997".*	
4 Complete All Operational Work Complete all operational work associated with this development approval, including work required by any of the following	Prior to survey plan endorsement

conditions. Such operational work is to be carried out generally in accordance with the approved plans, drawing(s), and/or documents or, if requiring a further approval from the Council, in accordance with the relevant approval(s).	

GUIDELINE
This condition is imposedin accordance with the Preliminary Approval to ensure works are completed prior to the Reconfiguration or Material Change of Use. Sealing of the survey plan for this application would proceed any Material Change of Use for the purpose set out in the Preliminary Approval. This condition also ensures that all "Operational Works" associated with the use are completed before the use commences unless bonding of works is sought. The bonding of any uncompleted works is undertaken depending on the circumstances where the work will be completed and accepted on maintenance within three months of the plan being sealed. It is not appropriate that the site be used without such work being completed in accordance with any detailed design approvals. Please note that the work referred to in this condition involves operational work and may therefore constitute 'assessable development'. Therefor this condition does not authorise assessable development to occur and a development permit may therefore be necessary. Information sheets can be downloaded for free from the City Plan section of Brisbane City Council's website: www.brisbane.qld.gov.au

5 Demolish Buildings Prior to building work for the proposed building commencing on the site undertake the following works: (a) Remove the existing buildings on the site; and (b) Cap all services to the building and stabilise the exposed ground surface with grass seeding. (c) Where buildings are demolished and, for whatever reason, redevelopment is delayed for more than 3 months, the following works are carried out: i. site is cleared of all rubble, debris and demolition materials; ii. site is levelled and turfed so it can be mowed; iii. site is landscaped with perimeter planting consisting of advanced specimens of fast growing species in accordance with the Planting Species Planning Scheme Policy; iv. drainage is provided to prevent ponding; v. site is maintained so there is no sediment run off onto adjacent premises, roads or footpaths; and vi. site is maintained to ensure no nuisance to adjacent premises, roads or footpaths.	As indicated

GUIDELINE
This condition is imposed as there are several exisitng buildings on the site where the proposed boundary will intersect. These buildings need to be removed or demolished prior to the endorsement of the survey plan to comply with the requirements of tion 5.2.2 Performance Critieria P3 of the Subdivision Code. It should also be noted that the removal of structures includes the removal of all existing concrete slabs and foundations and footings of any removed structures.

6 Relevant Period for Approval All aspects of the development as outlined within this section, to which the conditions relate in the "Development Approval Package" are to be completed before midnight 15 July 2011.	As indicated

GUIDELINE
This condition is imposed pursuant to 3.5.21A(2)(a) of the Integrated Planning Act 1997. The intent of this condition is to specify the particular time assessable development or an aspect of assessable development is to be completed before the development lapses. Any extension of the period sated in the condition is required to be made in accordance with Sections 3.5.22 and 3.5.33 of the Integrated Planning Act.

Monetary Contributions and Securities

	Timing
7 Pay Outstanding Charges Or Expenses Pay to Council any outstanding charges or expenses levied by the Council over the subject land.	Prior to survey plan endorsement

GUIDELINE
This condition is imposed to ensure that there are no outstanding charges existing over the subject site, including outstanding rates. If there are any outstanding monies over the subject property, they must be paid in full prior to endorsement of the survey plan.

8 Sewerage: Per ET (Equivalent Tenement) Pay to Council a monetary contribution towards the cost of sewerage headworks, as outlined below, **at the rate prevailing when the contribution is paid**. The contribution is calculated on 32.51 ETs (Equivalent Tenement) at the current rate of $5,730 per ET, for Sewerage Scheme Charge Area - S2, FFLD06 The amount payable is currently assessed at $186,282.00 and comprises of the following: • Treatment Headworks component: $49,220.00 • System Headworks component: $137,062.00 • Total contribution: $186,282.00 This headwork charge is the current rate for the 2006/2007 financial year	Prior to survey plan endorsement

GUIDELINE
This condition is imposed to require the payment of a proportional contribution towards a satisfactory sewerage treatment system within the locality of the site. If sewerage headworks have been paid under Application No A001637427 (Material Change of Use for Stage 1 of the Retirement Village) then 32.51 ET's may be credited against these charges. For any enquiries about this condition, please contact the Engineering Delegate, Development Assessment.

Water Supply: Per ET (Equivalent Tenement) Pay to Council a monetary contribution towards the cost of water supply headworks, as outlined below, **at the rate prevailing when the contribution is paid**. The contribution is calculated on 32.51 ETs (Equivalent Tenement) at the current rate of $4,729 per ET, for Water System Infrastructure Charges Plan Area - Mt Crosby South, W9. The amount payable is currently assessed at $153,740.00 and comprises of the following: • Treatment Headworks component: $30,560.00 • Distribution Headworks component: $123,180.00 • Total contribution: $153,740.00 This headwork charge is the current rate for the 2006/2007 financial year.	Prior to survey plan endorsement

GUIDELINE
This condition is imposed to require the payment of a proportional contribution towards a satisfactory water supply treatment system to the site.If water supply headworks have been paid under Application A001637427 Material Change of Use for the Retirement Village Stage 1) than 32.51ET's may be credited against these charges. For any enquiries about this condition please contact the Engineering Delegate, Development Assessment.

Ecology

	Timing
10 Arboricultural Requirements The following arboricultural requirements are to be performed to ensure the long-term health and safety of trees to be retained:	As indicated
10(a) Civil Works In consultation with the Ecologist, Development Assessment, the Arborist is to direct the civil works contractor in relation to any service installation activities utilising alternative technologies such as directional-boring or under-boring using vacuum excavation or air-spade. The Arborist must be a suitably qualified arboricultural consultant (minimum AQF Level 5 Diploma in Arboriculture).	While site works are occurring

10(b) Pruning Works Any necessary pruning, tree surgery and other maintenance works to maintain health and stability of any trees to be retained, and to reduce potential hazards for future residents, is to be carried out in consultation with the Ecologist, Development Assessment. All works must be performed by a suitably qualified arboricultural consultant (minimum AQF Level 5 Diploma in Arboriculture) in accordance with the *Australian Standard for Pruning of Amentiy Trees* AS 4373/96.	Prior to survey plan endorsement
10(c) Certification A suitably qualified arboricultural consultant (minimum AQF Level 5 Diploma in Arboriculture) is to submit documentation to the Ecologist, Development Assessment, to certify that all necessary arboricultural works have been carried out in accordance with the requirements of all parts of this condition.	Prior to survey plan endorsement
11 Submit Rehabilitation Plan Submit a Rehabilitation Plan and obtain approval from the Delegate, Development Assessment. The Rehabilitation Plan is to be generally in accordance with drawing number RP01 'Rehabilitation Plan Eastern Drainage Line' dated 25 November 2006 and is to be in the form of scaled plans and supporting documentation that includes at least the following information for the area contained within the Waterway Corridor. a. Description of proposed rehabilitation, including earthworks, methods, objectives; b. Details of the proposed rehabilitation schedule, including staging, plant species names, stock size, quantities, locations; c. A maintenance program for all rehabilitation works; d. Stabilisation methods for all areas of exposed soil surface; e. Details of special habitat features to be provided for the enhancement/restoration of habitat values; f. Specification notes on weed management, planting methods, mulching and soil preparation; and. g. An amended channel design in accordance with Council's Natural Channel Design Guidelines 2000, providing for a Manning's roughness of 0.15.	To be lodged prior to or concurrently with any other operational works application
PROOF OF FULFILMENT *A permit for Operational Works is obtained.*	
GUIDELINE *This condition is imposed when the proposed development includes areas to be rehabilitated that were identified in the Preliminary Approval of 9/10/2006 (ref: A001637426). It is expected that rehabilitation works will be carried out to a high standard and maintained accordingly. The requirements of this condition may be included as part of a Vegetation Management Plan (VMP). For enquiries about this condition, please contact the Ecologist, Development Assessment.*	
11(a) Implement Approved Plan Carry out rehabilitation works in accordance with the approved Rehabilitation Plan.	Prior to survey plan endorsement
PROOF OF FULFILMENT *Certification that rehabilitation works have been completed in accordance with approved plan is received by the Ecologist, Development Assessment.*	
GUIDELINE *Certification that the approved works have been implemented is to be submitted to the Ecologist, Development Assessment.*	
12 Implement Approved Vegetation Management Plan Implement the Vegetation Management Plan shown on the plan numbered VMP01 dated 25 November 2006 (as amended in red), approved as part of this application in accordance with any conditions or amendments.	Prior to commencement of use

Prior to the commencement of any site works, and when all tree protection measures are in place, arrange a pre-start meeting with the Ecologist Development Assessment.	

GUIDELINE
This condition refers to the approved plans, drawings and documents to which the approval relates and is the primary means of defining the extent of the approval.

13 Stormwater Quality - Submit Management Plan Submit and receive approval from the Delegate, Development Assessment for a Site Based Stormwater Quality Management Plan. The plan must be prepared by a suitably qualified and experienced professional and be in accordance with Council's *Subdivision and Development Guidelines* (2000 or later version).	To be lodged prior to or concurrently with any other operational works application

PROOF OF FULFILMENT
A Permit for Operational Works is obtained.

GUIDELINE
This condition is imposed to ensure that adequate measures are adopted to prevent stormwater quality being affected as a result of the operational stage of the development. It is applied where compliance with Council's Water Quality Objectives must be demonstrated as part of an Operational Works application. Site Based Stormwater Management Plans address short and long term stormwater management from a quality perspective, and provide details of the measures to be adopted to prevent or minimise the contamination of stormwater and the release of contaminated stormwater from the site. For any enquiries about this condition, please contact the Ecologist, Development Assessment.

13(a) Update Approved Plan Update the Site Based Stormwater Quality Management Plan as required to reflect current standards, best practices, plant modifications.	As indicated
13(b) Implement Approved Plan Implement and maintain the approved operational phase Site Based Stormwater Quality Management Plan to prevent the contamination of stormwater and the release of contaminated stormwater.	Prior to survey plan endorsement

PROOF OF FULFILMENT
Certification of the As Constructed measures is received by the Ecologist, Development Assessment.

GUIDELINE
Certification is to be submitted to the Ecologist, Development Assessmtn by a suitably qualified and experienced professional stating that works have been implemented in accordance with the approved plan and Council's Subdivision and Development Guidelines (2000 or later version). Certification must include details (ie. site plans and documentation) of the measures implemented on site.

lscape Architecture and Open Space Planning

	Timing
14 Parkland dedication (a) Transfer and surrender to the Brisbane City Council, in fee simple on trust for Public Purposes (parkland and drainage purposes) as indicated on the proposal plan 7203-08B having a minimum area of not less than 330 square metres. (b) Submit to the Delegate Plan Sealing, Licensing Sealing and Certificates Unit, a Survey Plan showing in detail the land to be dedicated.	Prior to survey plan endorsement

GUIDELINE
This condition is imposed in accordance with the Preliminary Approval identifying works within the waterway corridor that form part of the adjoining parkland.

15 Retain Existing Street Tree(s) Identify, retain and protect the existing street trees unless otherwise determined in writing by Council's Arborist, Vegetation and Pest Services.	While development is occurring on the site and then to be maintained

Existing street trees identified as T33-Eucalyptus tereticornis, T34-Eucalyptus propinqua and T35- Eucalyptus tereticornis on the Vegetation Management Plan numbered VMP01 dated 25 Novemember 2006 (as amended in red) are to be retained and protected.	
PROOF OF FULFILMENT *Written approval to remove or prune trees is obtained from the Arborist, Vegetation and Pest Services.*	
GUIDELINE *Street trees are protected under the Natural Assets Local Law, 2003.*	
15(a) Implement Protection Measures Install protection measures in accordance with Best Trade Practice, including the erection of a temporary fence around the entire tree at a distance of 1m from the drip line of the tree. There is to be no excavation, filling, or storage of materials or plant within the area described by this fence.	While development is occurring on the site
16 New Street Trees - General Plant trees on the footpath by:	Prior to survey plan endorsement
16(a) Monetary Contribution Making a monetary contribution currently calculated at $86.00 ... additional allotment (with street frontage) for Council to p... chase, plant and maintain the trees on footway. The required contribution currently totals $172.00 based on two additional lots;	Prior to survey plan endorsement
GUIDELINE *If this option is selected, Council will provide one tree of 250mm pot size for each additional allotment with road frontage. Species will be determined by Council.*	
17 Implement the Approved Detailed Plan Carry out the landscape works in accordance with the approved drawings, relevant City Plan Codes, Australian Standards and Best Trade Practice.	Prior to the commencement of the use and then to be maintained
PROOF OF FULFILMENT *The Compliance Certificate - Landscape Works is submitted to Council together with As Constructed plans.*	
17(a) Certify Works On completion provide written certification from: • A licensed and experienced Landscape Architect or Landscape Contractor that the completed landscaping complies with the detailed landscape plan, Council Standards and Best Trade Practice (Part B of the *Compliance Certificate - Landscape Works*).	Prior to commencement of use
PROOF OF FULFILMENT *The Compliance Certificate - Landscape Works is submitted to Council together with As Constructed plans (if applicable).*	
GUIDELINE *Submit the completed Compliance Certificate - Landscape Works, to the Landscape Architect, Development Assessment. If changes to the approved plan have been implemented, a copy of the as-constructed detailed Landscape Plan is required to be submitted with the Compliance Certificate - Landscape Works.*	

Engineering

	Timing
18 Granting Easements Grant the following easement(s): i. Easements for underground drainage, overland flow, open cut, and access purposes as may be required, in favour of Brisbane City Council.	Prior to survey plan endorsement
PROOF OF FULFILMENT *Registration of the easement on the plan of survey and on the property title with the Department of Natural Resources.*	

GUIDELINE
his condition is imposed to provide access, maintenance of services or to protect drainage paths. Easements in favour of the Brisbane City Council are required to have the necessary easement documentation prepared (free of costs and compensation to Council) by the Brisbane City council. Easements not in favour of the Brisbane City Council are required to have the necessary documentation prepared by the applicant's private solicitors. Easements are to be shown on a Survey Plan and lodged with the Delegate Plan Sealing, Licensing Sealing and Certificates Unit. Enquiries regarding any legal documentation can be directed to Licensing, Sealing and Certificates Unit, Development Assessment (ph: 3403 8888). For any other enquiries about this condition, please contact the Engineering Delegate, Development Assessment.

19 On Site Erosion- Minor Work Prepare an Erosion and Sediment Control (ESC) Management Plan and implement and maintain ESC measures for the site in accordance with Council's "Erosion and Sediment Control Standard"(Version 9 or later).	While site works (eg. operational works, building works) are occurring and until exposed soil areas are permanently stabilised (eg. turfed, concreted)

GUIDELINE
This condition is utilised where the potential for soil erosion, sediment loss from the site, and environmental impact on waterways is considered to be medium to low. Whilst not requiring submission of detailed information as defined in Council's "Erosion and Sediment Control Standard (Version 8 or later)", the ESC Management Plan must still satisfy the general requirements of this Standard (ie. minimise soil erosion and sediment loss from the site at all times during the works). No formal ESC Program is to be submitted for Council assessment. However, the ESC Management Plan should be prepared prior to site works commencing and a copy of the kept on-site. Non-compliance may result in prosecution under Environmental Legislation. For any enquiries regarding this condition please contact the Stormwater Management Officer - Erosion & Sediment Control, Development Assessment on 3403 7283.

0 STORMWATER - HYDRAULIC REPORT In accordance with the approved hydraulics report prepared by Cardno dated 23rd May 2006, undertake the approved external stormwater works and in accordance with the approved rehabilitation plan generally in accordance with drawing number RP01 "Rehabilitation Plan Eastern Drainage Line' dated 25 November 2006 (required a condition in this approval package and as shown on Figure 7 including: a. All fences proposed to be constructed across or over the overland flowpath are to allow the free passage of the overland flows; b. Easements for overland flow and access purposes are to be granted free of cost and compensation to Council over those areas identified in the report; and c. Provide certification to the Engineering Delegate, Development and Regulatory Services that the development has been constructed in accordance with the approved hydraulic report.	Prior to survey plan endorsement

GUIDELINE
s condition is required to ensure that the development provides the outcomes as determined in the previously approved ydraulic report conditioned in the Preliminary Approval of 9/10/2006 (ref: A001637426). For enquiries about this condition, please contact the Engineering Delegate, Development and Regulatory Services.

21 Repair Damage To Kerb, Footpath Or Road Repair any damage to existing kerb and channel, footpath or roadway (including removal of concrete slurry from footways, roads, kerb and channel and stormwater gullies and drainlines) that may occur during any works carried out in association with the approved development.	Prior to survey plan endorsement

PROOF OF FULFILMENT
Acceptance of the completed works by the Engineering Delegate, Development assessment.

GUIDELINE
This condition is imposed for the repair of damage to the existing road infrastrucure during works associated with the development.

22 Permission To Enter For Sewer Works Provide a written copy of permission to enter from owners of properties affected by sewer construction to the Engineering Delegate, Development Assessment.	Prior to plan endorsement for sewer construction

GUIDELINE
For any enquiries about this condition, please contact the Engineering Delegate, Development Assessment.

23 Provide/Extend Sewer Property Connection	

Provide or extend a sewerage property connection to each allotment in accordance with an approved detail design and "BCC Sewerage Standards - 2005".	Prior to undertaking the works
GUIDELINE *Provide adequate sewerage facilities and infrastructure for each allotment individually and collectively. The "BCC Sewerage Standards - 2005" are available on BCC's internet site (www.brisbane.qld.gov.au) and can be downloaded free of charge. For any enquiries about this condition, please contact the Engineering Delegate, Development Assessment.*	
23(a) Submit Plans Submit engineering plans showing the design of the works are in accordance the "BCC Sewerage Standards - 2005" and have been checked and certified by a Registered Professional Engineer of Queensland (RPEQ). Obtain endorsement from the Delegate, Development Assessment.	Prior to undertaking the works
PROOF OF FULFILMENT *Checked and certified by a Registered Professional Engineer of Queensland (RPEQ) and endorsed by the Delegate, Development Assessment.*	
GUIDELINE *This condition is imposed to ensure that the required works are designed in accordance with this development permit and relevant standards.*	
23(b) Submit As Constructed Drawings Submit "As Constructed" plans and an assests register in accordance with the approved design and "BCC Sewerage Standards - 2005".	Prior to the commencement of the On Maintenance period
PROOF OF FULFILMENT *Checked and certified by a Registered Professional Engineer of Queensland (RPEQ) and accepted by the Delegate, Development Assessment.*	
GUIDELINE *A copy of the notification is to be sent to Council to be kept as a record.*	
23(c) Implement Endorsed Plans Construct the works in accordance with the endorsed engineering plans and the "BCC Sewerage Standards - 2005".	Prior to survey plan endorsement
PROOF OF FULFILMENT *Accepted "on-maintenance" and "off-maintenance" as a Council asset by the Engineering Delegate, Development Assessment*	
GUIDELINE *This condition is imposed to ensure that the required works are carried out in accordance with this development permit, relevant standards and endorsed plans.*	
24 Construct External Sewer Headworks Construct the following external sewerage headworks in accordance with the "BCC Sewerage Standards - 2005": 1. A sewer from Point A to Point B as noted on Plan No. S917956; and 2. A sewer from Point B to Point C as noted on Plan No. S917956 Some or all of the system component of the sewerage headworks contribution payable for this site, may be off set against the actual cost of construction of the required works comprising headworks.	Prior to survey plan endorsement
PROOF OF FULFILMENT *Compliance with this condition is required by either: Receipt of payment if Council is to construct; or Certificate of Completion from Sewerage Operations Branch if constructed by a private contractor.*	
GUIDELINE *This condition is imposed to satisfy the conditions of the Preliminary Approval of 9/10/2006 (ref: A001637426). The "BCC Sewerage Standards - 2005" are available on BCC's internet site (www.brisbane.qld.gov.au) and can be downloaded free of charge. For any enquiries about this condition please contact the Engineering Delegate, Development Assessment.*	
24(a) Submit Plans Submit engineering plans showing the design of the works are	

in accordance the "BCC Sewerage Standards - 2005" and have been checked and certified by a Registered Professional Engineer of Queensland (RPEQ). Obtain endorsement from the Delegate, Development Assessment.	Prior to undertaking the works
PROOF OF FULFILMENT *Checked and certified by a Registered Professional Engineer of Queensland (RPEQ) and endorsed by the Delegate, Development Assessment.*	
GUIDELINE *This condition is imposed to ensure that the required works are designed in accordance with this development permit and relevant standards.*	
24(b) Submit As Constructed Drawings Submit "As Constructed" plans certified by a Registered Professional Engineer Queensland-Civil (RPEQ-Civil), that the plans are a true record of the works "as constructed" and are in accordance with the endorsed plans, approved modifications and in accordance with Council's Sewerage Standards.	Prior to the commencement of the On Maintenance period
PROOF OF FULFILMENT *Checked and certified by a Registered Professional Engineer of Queensland (RPEQ) and accepted by the Delegate, Development Assessment.*	
GUIDELINE *A copy of the notification is to be sent to Council to be kept as a record.*	
4(c) Implement Endorsed Plans Construct the works in accordance with the endorsed engineering plans and the "BCC Sewerage Standards - 2005".	Prior to survey plan endorsement
PROOF OF FULFILMENT *Accepted "on-maintenance" and "off-maintenance" as a Council asset by the Engineering Delegate, Development Assessment*	
GUIDELINE *This condition is imposed to ensure that the required works are carried out in accordance with this development permit, relevant standards and endorsed plans.*	
25 Ponding Of Stormwater Adjoining properties and roads are to be protected from ponding or nuisance from stormwater as a result of the works.	While development is occurring on site and during the on-maintenance period
GUIDELINE *This condition is imposed to ensure that the developer is aware that they are responsible for all remedial works required as a result of any site works and, that they must protect neighbouring properties and roads from ponding and nuisance water from the proposed development. Where this rectification work involved drainage, plans are to be lodged showing the manner in which it is intended to rectify the site drainage. These plans must be endorsed by the Engineering Delegate. For any enquiries about this condition, please contact the Engineering Delegate, Development Assessment.*	
Roofwater Reticulation Construct external stormwater works as shown on Fig. 7 of the hydraulics report prepared by Cardno, dated 23 May 2006, generally in accordance with Council's "Subdivision and Development Guidelines".	Prior to survey plan endorsement
GUIDELINE *This condition is imposed to ensure that the external stormwater is dealt with in a satisfactory manner. Copies of the "Subdivision and Development Guidelines", "Standard Drawings" and "Water Sensitive Urban Design Guidelines" can be downloaded from Brisbane City Council's website at www.brisbane.qld.gov.au. For any enquiries about this condition please contact the Engineering Delegate, Development Assessment.*	
26(a) Submit Plans Submit engineering plans and calculations in accordance with Council's "Subdivision and Development Guidelines" showing the design of the stormwater. Obtain endorsement from the Engineering Delegate, Development Assessment.	Prior to undertaking the works
PROOF OF FULFILMENT *Endorsed by the Engineering Delegate, Development Assessment.*	
GUIDELINE *All constructed stormwater outlets that are proposed to discharge directly to a waterway, shall ensure an appropriate waterway setback, reduction in flow outlet velocity and concentration and, include any supplementary planting works that may be required.*	
26(b) Submit As Constructed Plans	

Submit "As Constructed" plans including an asset register, checked by a Registered Professional Engineer Queensland (RPEQ), certifying that the works have been completed in accordance with Council's "Subdivision and Development Guidelines".	Prior to the commencement of the On Maintenance period
PROOF OF FULFILMENT *Acceptance of "Certificate of Completion", "As Constructed" plans and associated documentation by Engineering Delegate, Development Assessment.*	
GUIDELINE *This condition is imposed to ensure the Council has a record of the actual details of the works constructed for future reference.*	
26(c) Implement endorsed Plans Complete and maintain the works in accordance with the endorsed engineering plans and the "Subdivision and Development Guidelines".	Prior to survey plan endorsement
PROOF OF FULFILMENT *Acceptance of the works "on maintanance" and "off maintenance" as a Council asset by the Engineering Delegate, Development Assessment.*	
GUIDELINE *The maintenance period (defects liability) is generally twelve months (or otherwise as specified in Council's "Subdivisional Guidelines" from the date the works are accepted "on-maintenance" by the Engineering Delegate, Development Assessment. The maintenance period ends when the works are accepted "off-maintenance" by the Engineering Delegate, Development Assessment.*	
Telecommunications Enter into an agreement with a telecommunication carrier to provide underground telecommunication services within and adjacent to the proposed development in accordance with the "Subdivision and Development Guidelines".	Prior to undertaking the works
PROOF OF FULFILMENT *A copy of the agreement is forwarded together with the request for survey plan endorsement to the Plan Sealing Officer, Development Assessment.*	
GUIDELINE *This condition is imposed to ensure the provision of essential telecommunication services to all allotments. For any enquiries about this condition, please contact a relevant service provider regarding telecommunication services.*	
28 Electricity (Underground Supply Area) Provide underground electricity services in accordance with an approved electricity reticulation plan and the "Subdivision and Development Guidelines".	Prior to commencement of site works
GUIDELINE *This condition is imposed when a proposed subdivision requires the provision of electricity services in accordance with Council's Guidelines for the Provision of Underground Electricity". Even though the development may be in an area serviced by overhead electricity, UNDERGROUND supply to the development is required - no additional poles or overhead mains are to be erected.*	
28(a) Lodge Plans Lodge electricity reticulation plans showing the proposed electricity services and receive the verification of the City Lighting Unit, Local Asset Services.	Prior to survey plan endorsement
GUIDELINE *For any enquiries about this condition, please contact the City Lighting Unit (ph. 3403 8888) regarding electricity reticulation plans, or a service provider for electricity supply.*	
28(b) Agreement with Supplier Enter into an agreement with an electricity supplier to provide underground electricity services in accordance with the above approved electricity reticulation plans.	Prior to survey plan endorsement
PROOF OF FULFILMENT *A copy of the agreement with the electricity supplier is provided to the Plan Sealing Officer, Development Assessment.*	
GUIDELINE *Forward a copy of the agreement together with the request for survey plan endorsement, to the Plan Sealing Officer, Development Assessment.*	
29 Service Conduits & Mains Supply and install all service conduits and meet the cost of any	

alterations to public utility mains, existing mains, services or installations required in connection with the approved development in accordance with the "Subdivision and Development Guidelines".	Prior to survey plan endorsement

GUIDELINE
This condition is imposed when additions, alterations or extensions to service conduits, mains and other services are required as a result of the approved development. This includes the provision of all services and/or conduits along the full length of any rear allotment access or access easement. This includes the relocation of any fire hydrant and/or valves from within the limits of the development's vehicular footway crossings if applicable. Applicants should liaise with the appropriate service authorities. Typical underground service conduiting to be constructed includes, power, phone, telecommunications, sewer, stormwater and gas if applicable. For any enquiries about this condition, please contact the Engineering Delegate, Development Assessment (regarding advise on traffic signal conduits, stormwater, water supply and sewerage mains) or the relevant public utility authorities (for advice on other services).

29(a) Submit As Constructed Plans Submit "As Constructed" plans including an asset register, approved by a registered Professional Engineer Queensland (RPEQ) that are in accordance with Council's "Subdivision and Development Guidelines" and "BCC Water Supply Standard 2005" and "BCC Sewerage Standards 2005" showing the works required by this condition.	Prior to survey plan endorsement

GUIDELINE
This condition is imposed to ensure the Council has a record of the actual details of the works constructed for future reference.

Standard Advice

	Timing
30 NALL Prior to the removal of any vegetation from the site, lodge and receive approval for an Application to Carry Out Works on Protected Vegetation from the Ecologist, Development Assessment.	As indicated

GUIDELINE
This condition is imposed when the proposed development involves site works and the site is protected by the Natural Assets Local Law 2003. Application forms can be obtained from any Council Customer Service Centre. For any enquiries about this condition please contact the Ecologist, Development Assessment.

31 Noise And Dust Emissions-Advice Only All development involving the emission of noise and dust from building/construction activities requires that the emission be in accordance with the requirements of the Environmental Protection Regulation 1998 Part 2A - Environmental Nuisance. Pursuant to the Environmental Protection Regulation 1998 Part 2A - Environmental Nuisance- 6W. A builder or building contractor must not carry out building work on a building site in a way that makes or causes audible noise to be made from the building work- (a) on a Sunday or public holiday, at any time; or (b) on a Saturday or business day, before 6.30 a.m. or after 6.30 p.m. Please note: The above information has been provided to the applicant as an advice only, and does not form part of the development approval conditions. This advice has been provided to the applicant to inform them of other obligations they may have to comply with (under state legislation or local laws) prior to their activity commencing.	As indicated

GUIDELINE
All development involving the emission of noise and dust from building/construction activities requires that the emission be in accordance with the requirements of the Environmental Protection Regulation 1998 Part 2A - Environmental Nuisance.

32 Treatment Of Asbestos Disposal, handling, removal and restoration of any building materials containing asbestos shall be in accordance with the *Workplace Health and Safety Regulations 1989*.	As indicated

33 IF ENCOUNTERED - ACID SULFATES Any Acid Sulfate Soils encountered during site works must be stored and handled in accordance with *State Planning Policy 2/02 – Planning and Managing Development Involving Acid Sulfate Soils* and associated guidelines and technical documents.	While site works (eg. operational works, building works) are occurring and until exposed soil areas are permanently stabilised (eg. turfed, concreted)

GUIDELINE
The above information has been provided to ensure that during construction works (excavation) if any PAAS or ASS is encountered then appropriate meausures and referral to the State Planning Policy is conducted. PASS and ASS can have significant impacts on infrastructure footing and water qaulity in receiving environments which is why appropriate measures are to be implement on-site. For further information refer to the State Planning Policy 2/02 or alternatively contact the Pollution Officer Development Assessment South.

**** End of Package ****

AMENDED IN RED
22 / 05 / 2007

EXISTING VEGETATION SCHEDULE

This Schedule shall be read in conjunction with the Vegetaion Management Plan (VMP)

ACTION

P - RETAIN AND PROTECT
P1 No other action required
P2 Remove dead and dangerous branches
P3 Remove side branches to allow access
P4 Prune lower branches
P5 Tree Surgery required
P6 Localised retaining as directed on site
P7 Included in future stage works

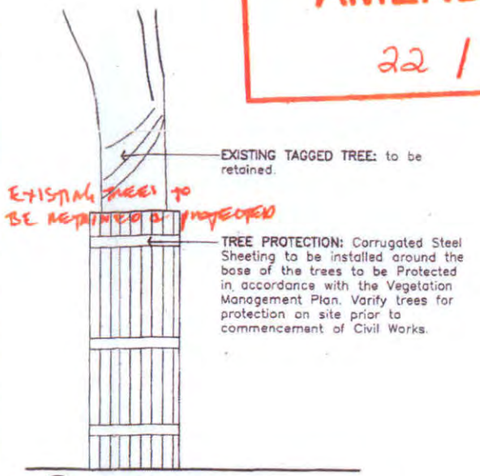
R - REMOVE
R1 Impact from building works will kill or severely damage tree
R2 Weed species
R3 Dead or dying or structurally unsound

RL - RELOCATE
RL1 Relocate to positions indicated on plans

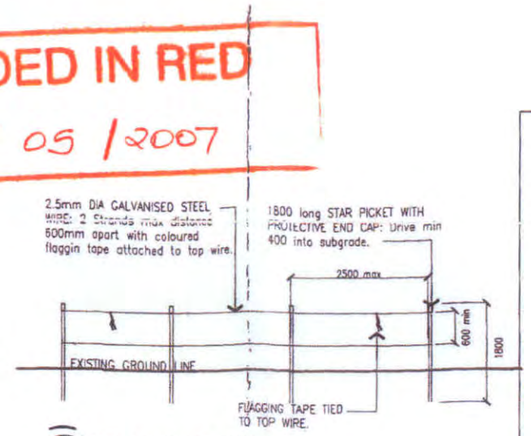
REF.	PLANT DESCRIPTION	COMMON NAME	HEIGHT & SPREAD	ACTION
T1	Caesalpinia ferrea	Leopard Tree	8x8m	P1
T2	Caesalpinia ferrea	Leopard Tree	8x6m	P1
T3	Caesalpinia ferrea	Leopard Tree	7x6m	R1
T4	Caesalpinia ferrea	Leopard Tree	10x8m	R1
T5	Ficus benjamina	Weeping Fig	10x8m	R1
T6	Ficus benjamina	Weeping Fig	9x8m	R1
T7	Delonix regia	Poinciana	8x6m	R1
T8	Archontophoenix alexandrae	Alexander Palm	8x4m	R1
T9	Archontophoenix alexandrae	Alexander Palm	6x3m	R1
T10	Caesalpinia ferrea	Leopard Tree	11x10m	R1
T11	Caesalpinia ferrea	Leopard Tree	8x8m	P1
T12	Caesalpinia ferrea	Leopard Tree	10x8m	P1
T13	Caesalpinia ferrea	Leopard Tree	5x3m	P1
T14	Caesalpinia ferrea	Leopard Tree	8x5m	P1
T15	Acacia melanoxylin	Blackwood Acacia	8x5m	P1
T16	Callitris columellaris	White Cypress Pine	8x5m	P1
T17	Caesalpinia ferrea	Leopard Tree	10x10m	P1
T18	Caesalpinia ferrea	Leopard Tree	8x10m	P1
T19	Caesalpinia ferrea	Leopard Tree	4x3m	P1
T20	Ficus benjamina	Weeping fig	10x10m	P1
T21	Macadamia integrifolia	Macadamia nut	5x4m	P1
T22	Caesalpinia ferrea	Leopard Tree	5x6m	P1
T23	Syagrus romanzoffiana	Cocos palm	9x3m	P1
T24	Caesalpinia ferrea	Leopard Tree	4x3m	P1
T25	Ficus benjamina	Weeping Fig	10x10m	P1
T26	Caesalpinia ferrea	Leopard Tree	4x3m	P1
T27	Schinus molle	Pepper Tree	8x12m	P1
T28	Ficus benjamina	Weeping Fig	10x10m	P1
T29	Caesalpinia ferrea	Leopard Tree	4x3m	P1
T30	Spathodea campanulata	African tuliptree	6x5m	R1
T31	Caesalpinia ferrea	Leopard Tree	4x3m	P1
T32	Delonix regia	Poinciana	6x5m	R1
T33	Eucalyptus tereticornis	Forest red gum	10x4m	R3
T34	Eucalyptus propinqua	Small fruited gray gum	25x16m	R2
T35	Eucalyptus tereticornis	Forest red gum	25x16m	R1
T36	Eucalyptus tereticornis	Forest red gum	15x6m	R1
T37	Eucalyptus tereticornis	Forest red gum	15x6m	R1
T38	Acacia melanoxylon	Blackwood	2x15m	P1
T39	Koelreuteria paniculata	Golden rain tree	2x15m	R1
T40	Koelreuteria paniculata	Golden rain tree	2x15m	R1
T41	Celtis chinensis	Chinese Hackberry	2x15m	R1
T42	Celtis chinensis	Chinese Hackberry	2x15m	R1
T43	Does not exist on site			
T44	Does not exist on site			
T45	Does not exist on site			
T46	Acacia melanoxylon	Blackwood	3x1.5m	R1
T47	Eucalyptus torelliana	Cadagi	15x10m	R2
T48	Eucalyptus torelliana	Cadagi	15x10m	R2
T49	Eucalyptus torelliana	Cadagi	15x10m	R2
T50	Eucalyptus torelliana	Cadagi	15x10m	R2
T51	Eucalyptus torelliana	Cadagi	15x10m	R2
T52	Eucalyptus torelliana	Cadagi	15x10m	R2

EXISTING TREES TO BE RETAINED & PROTECTED

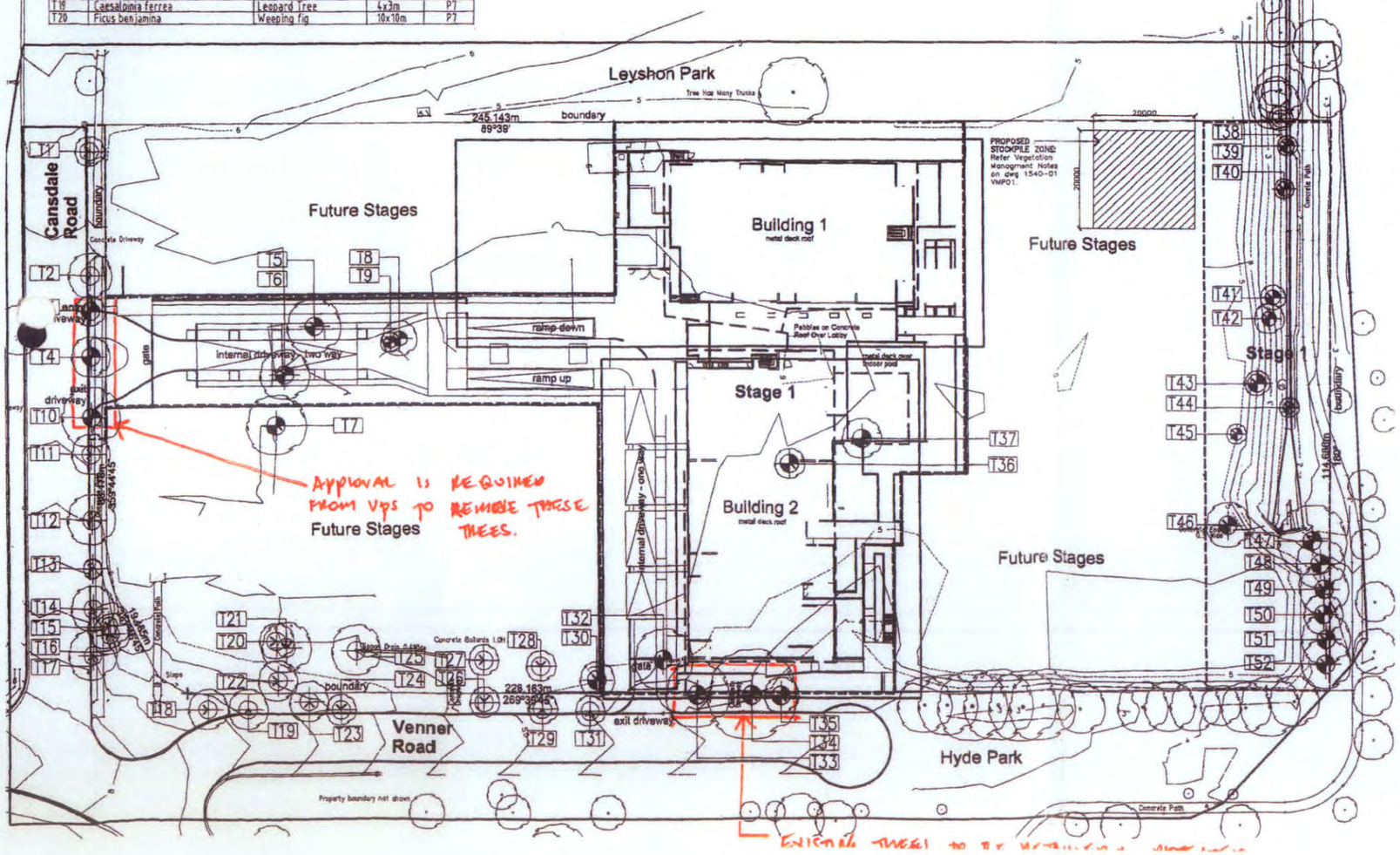
APPROVAL REQUIRED FROM VPS TO REMOVE THESE TREES



VP01 / VMP01 TREE PROTECTION FENCING SCALE 1:50 @ A1



VP02 / VMP01 TREE PROTECTION FENCING SCALE 1:50 @ A1



VEGETATION MANAGEMENT SPECIFICATION NOTES:

1. VEGETATION PROTECTION:
Any vegetation listed to be retained and protected shall have dead or dangerous limbs removed. All tree surgery shall be undertaken by a qualified aborist and shall be undertaken in accordance with AS4373 – Pruning of Amenity Trees.

2. SITEWORKS/EARTHWORKS:
For location and extent of site works, proposed infrastructure, and earthworks refer to Civil Engineer's plans.

3. VEGETATION RETENTION/REMOVAL:
For all vegetation to be removed or retained and protected refer to vegetation management plans 1540-01 VMP01.

4. VEGETATION PROTECTION:
The following strategies shall be adopted to protect existing vegetation during construction:
i. All construction activity is to be restricted by temporally fencing undisturbed areas where existing trees are to be retained. Refer detail VD01 on drawing 1540-01 VMP01
ii. Where possible tree roots should be tunneled under rather than severed. In the event of root damage, make a clean cut above the severed root and treat the root with a suitable fungicide. Do not excavate or fill within a 360 degree radius of a minimum of 10x trunk diameter at chest height.
iii. Access to the construction areas should be restricted to preexisting tracks or the path of existing disturbance.
iv. Do not store or otherwise place bulk materials and harmful materials under or within the dripline. Ensure decompation using hand methods.

5. WORKS WITHIN BUILDING FOOTPRINT AREAS:
All vegetation within the building footprint areas as indicated on plans is to be removed unless otherwise indicated and tub gound for use as mulch (except declared weed species). Weed species are to be disposed of off site at an authorised location. All areas disturbed by clearing works shall be grass seeded to prevent soil erosion or have appropriate sedimentation controls implemented in line with BCC best practice.

6. WORKS WITHIN EASTERN DRAINAGE CORRIDOR– WEED & RUBBISH REMOVAL:
Generally remove only the upper parts of woody weeds such as Ochna serrulata, and Landtana camara. Remove weeds by hand, remove from site and apply Glyphosate herbicide to cut stumps. Rubbish such as wire, plastic, concrete and other deleterious materials shall also be removed from site.

7. WORKS WITHIN REVEGETATION AREA 01 (RA01)
Remove weeds by hand, remove from site and apply glyphosate herbicide to cut stumps. The entire revegetation area 1 as indicated on plans is to be decompacted to 150mm min depth. Spread 100mm min imported topsoil prior to spreading 100mm imported composted forest litter. Plant revegetation species as scheduled and detailed. Areas disturbed by clearing works shall be mulched to prevent soil erosion or grass seeded for stabilisation.

8. MATERIALS STORAGE/STOCKPILE:
Topsoil, mulch and sub-soil should be stockpiled separately. All stockpiles should be located outside the dripline of existing trees for retention to avoid compaction of the root zones. Appropriate sediment controls should be placed around stockpiles. For the location and extent of storage, and stockpile areas for removed vegetation, including description of all methods to salvage and/or re-use cleared vegetation as mulch, refer to Civil Engineer's drawings.

9. SEDIMENT/EROSION CONTROL:
Sediment fences are to be installed immediately downslope of all disturbed areas. For the location, description and extent of all sediment traps and other erosion control devices refer Civil Engineer's drawings.

10. SEDIMENT/EROSION CONTROL PROGRAM:
For erosion and sediment control program, including contral measures, monitoring programs, and maintenance procedures refer Civil Engineer's drawings.

11. AERIAL FAUNA:
All trees will be inspected prior to removal for evidence of aerial fauna or other fauna. The superintendent is to be notified immediately and the tree protected until further notice should fauna be present. Ensure a qualified fauna spotter is on site during pre-clearing inspection of and removal of trees indicated on drawing 1540-01 VMP01. This includes staging and sequencing of any clearing works operations, with relevant recovery proceedures in place during clearing works.

LEGEND

INDIVIDUAL EX. TREE - STAGE 1 TO BE REMOVED
Refer Existing Vegetation Schedule

INDIVIDUAL EX. TREE - RETAINED
Refer Existing Vegetation Schedule

PLANS AND DOCUMENTS referred to in the APPROVAL dated 28 / JUN / 2007

BCC- DA APPROVAL

Issue:	Description:	Date:	Signed:
A	BCC- DA APPROVAL	25.11.06	bm

DRAWING STATUS:	SIGNATURE:	DATE:
Preliminary		
For Information Only		
For DA Approval		
For BA Approval		
For Tender		
For Construction		

PROJECT: YERONGA RETIREMENT VILLAGE

CLIENT: HARRISONS REAL ESTATE DEVELOPMENT

SITE: 15 CANSDALE STREET YERONGA

DRAWING: VEGETATION MANAGEMENT PLAN STAGE 1

WORK TO FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO ORDERING MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS.

300MM ON ORIGINAL 0 10 20 30 40 50

drawn:	scale:	on b size:	date:
bm	1:500@A1	2 of 8	25.11.06
sheet: DA	project no: 1540	DWG no: VMP01	revision no: A

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PRELIMINARY ONLY

PLANS AND DOCUMENTS
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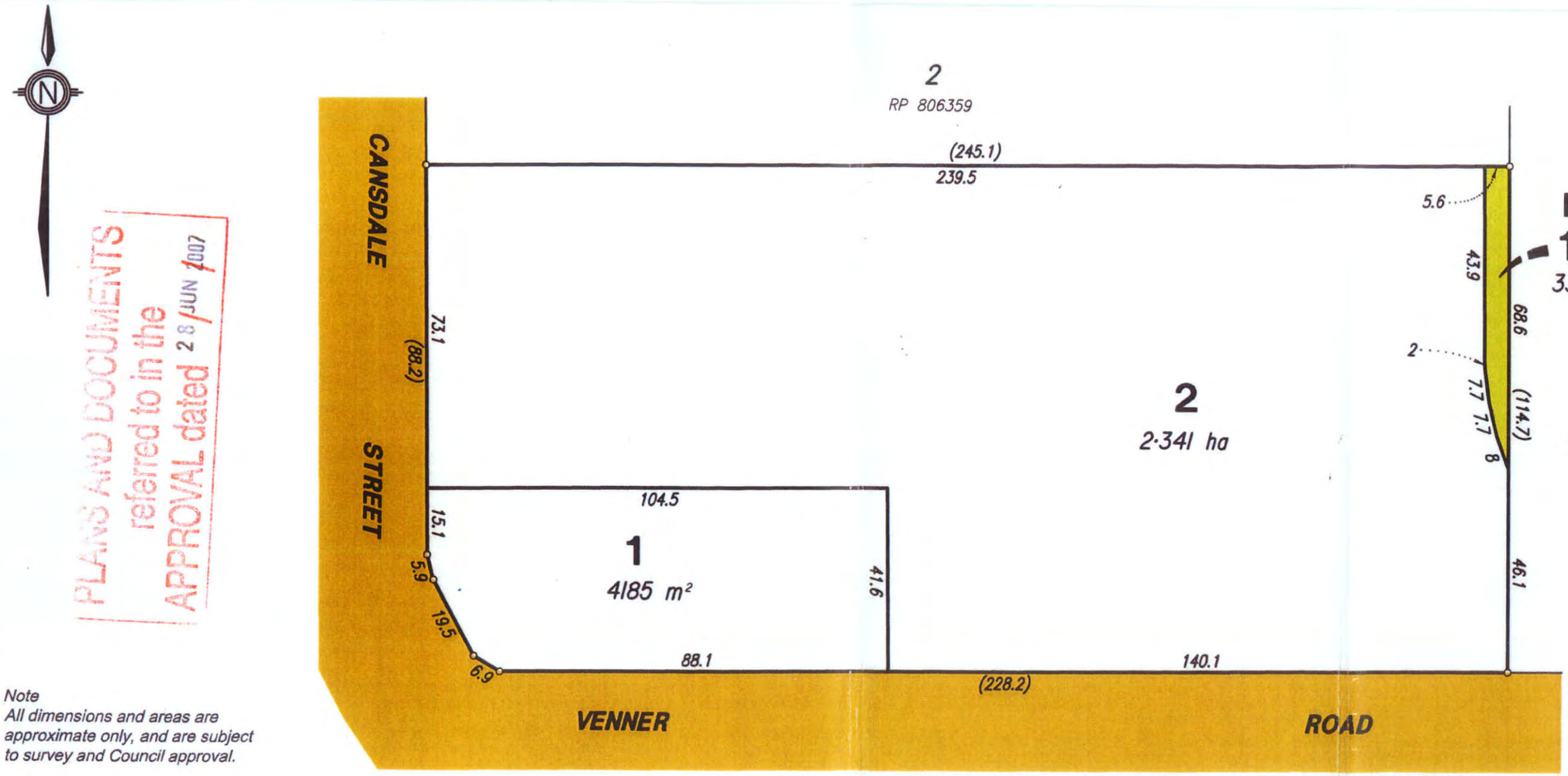

Note
All dimensions and areas are approximate only, and are subject to survey and Council approval.

Dimensions have been rounded to the nearest 0.1 metres.

The boundaries shown on this plan should not be used for final detailed engineers design.

Level Datum	Date 12 JAN 2007	
Origin	Surveyed	
	Comp By. WNW	
	DWG Name. 7203-PRO	
Scale 1 : 1000 @ A3	Local Authority BRISBANE CITY COUNCIL	
	Job Reference 7203	

CLIENT
Harrisons Real Estate Development

Proposed Lots 1, 2 & 101 (Park)
Cancelling Lot 1 on RP 150512

PROJECT
Harrisons - Yeronga Village

Plan Reference
7203-08B

pmm a conics company

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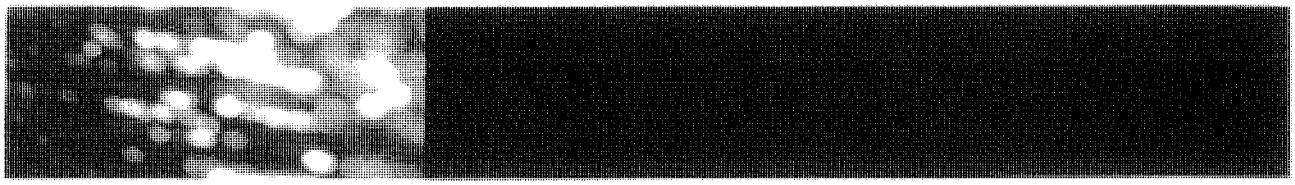
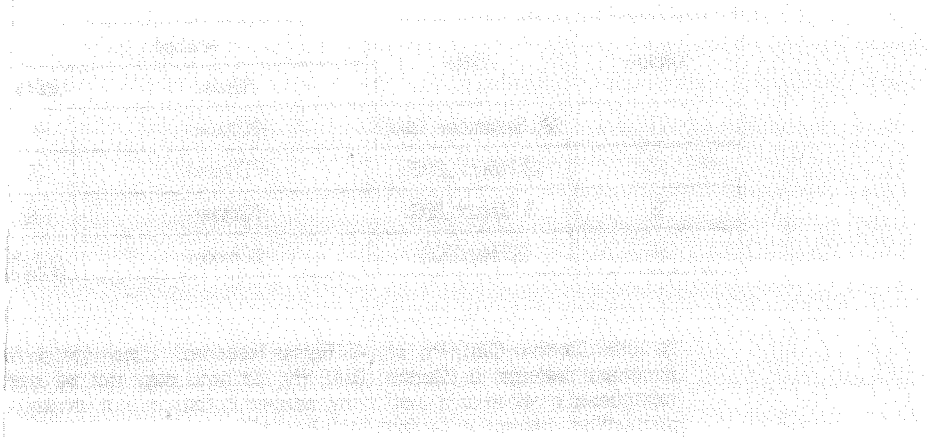


Yeronga Retirement Village

Hydraulic Analysis

PLANS AND DOCUMENTS
referred to in the
APPROVAL dated 28 JUN 2007



23 May 2006
Job No. 3500/34

Harrisons Real Estate Development

BCC.100.4898

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[redacted]
RPEQ 4744

Document Control

Version	Date	Author		Reviewer	
		Name	Initials	Name	Initials
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2	29 March 2006		KB		MG
3	31 March 2006		KB		MG
4	23 May 2006		[redacted]		[redacted]

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BCC.100.4899

YERONGA RETIREMENT VILLAGE
HYDRAULIC ANALYSIS

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BCC.100.4900

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1. INTRODUCTION

It is proposed to construct a retirement village on a site at the corner of Cansdale Road and Venner Road in Yeronga (the study site). Figure 1 shows the location of the site. The lot is described as Lot 1 on RP150512.

A preliminary investigation into the hydraulic issues associated with the development was carried out by Cardno in March 2005 as part of the initial submission to Council. The analysis identified the hydraulic constraints affecting the site and identified a potential design solution for drainage of the site. An information request was received from Council on the 21 June 2005 outlining a number of issues for which further information was required. A report was issued in September 2005 addressing these concerns. A second information request was issued by Council on the 2 February 2006 outlining some additional issues to be addressed. A meeting was held with Council to discuss these concerns and a resolution was meet on a number of the concerns raised. This report provides further information on the following concerns:

"The proposed entertainment area is to be set at RL 4.1 m AHD which does not meet the flood immunity standard of 100 year ARI Brisbane River Flood (RL 6.7 m AHD). Note 6 to Table B2.2.1 of the SDG requires a retirement village to comply with Table B2.2.2.

A creek or water requires Q100 analysis and the proposed application includes a Q50 analysis. This is in accordance with Table B2.2.1 of the Subdivision and Development Guidelines (SDG) however for development in the waterway the Q100 analysis is required.

The proposal has not addressed the trapped sag, west of the site in Cansdale Street. This area is currently drained by an overland flow path through the site. Filling the site without accounting for drainage from the west and north of the site may cause an adverse impact on adjacent properties and roads."

In response to the information request, detailed modelling of the works required to obtain a satisfactory hydraulic solution has been completed. The proposed works have been developed in consultation with ecologists and landscape architects to ensure that the outcome achieved maximises the environmental values of the waterway corridor. Modelling has considered both the need to cause no adverse impact and the desirability of including the design solution as part of an overall flood mitigation strategy for the catchment.

This report presents the results of the modelling investigations.

BCC.100.4902

2. SITE DESCRIPTION

The development site covers an area of approximately 2.79 ha. Ground levels throughout the site are generally between 5 m AHD and 6 m AHD. The site is currently used for industrial purposes. The western half of the site contains sheds and parking areas while the eastern half of the site is predominately grassed with some heavier vegetation such as trees and shrubs along the eastern boundary.

The extent of this flooding assessment is not limited to the development site as described above. Drainage paths considered in this assessment are presented in Figure 2. From this figure it can be seen that the main drainage path within the catchment is located on the eastern boundary of the site. The catchment drains in a northerly direction to the Brisbane River through Leyshon Park and Downs Oval and beneath the Brisbane Corso. The drain takes the form of an excavated channel with a concrete invert.

Smaller tributary flows enter the main channel approximately 80 metres upstream of the southern boundary of the development site. At this location stormwater drainage pipes from the west and the east meet and stormwater continues down the main open channel.

Despite the fact that the channel is not a natural waterway, a Waterway Corridor has been defined that affects the site (refer Figure 2). The corridor has been defined 30 metres either side of the low flow invert of the channel. As the centreline of the waterway is about eight metres inside the eastern boundary of the site, the corridor affects about a 38 metre width of the site.

3. PREVIOUS STUDIES

A flood study of the area was conducted by Brisbane City Council in June 2003 (*Yeronga Local Stormwater Management Plan (LSMP) June 2003*). This report has been referenced as part of the current assessment. In addition, Council made available the models developed for the LSMP for the current investigation. The models provided base information for use in the detailed modelling undertaken for this investigation.

The major storm event considered for the local stormwater management plan had a recurrence interval of 50 years. This is considered appropriate given that the drain can be classified as a designed open channel, for which the major storm event for the specification of fill and floor levels is the 50 year event according to Table B2.2.1 of the *Subdivision and Development Guidelines* (2000). Consequently, the 50 year event was considered for the analysis of local catchment flooding when investigating the drainage requirements for the proposed development.

As shown in Figure 6, the flood mitigation measures proposed in the *Yeronga Local Stormwater Management Plan* include retaining the existing concrete invert of the channel and increasing the width of the grassed base of the channel by 12 metres (p30 and Appendix L) along the eastern boundary of the site and downstream (north) of the site. A Mannings n value of 0.04, which corresponds to grass, was adopted for the channel to maximise its flow carrying capacity.

The works envisaged for the area also include the excavation of channels to convey the runoff from the eastern and western portions of the catchment to the main drain on the eastern boundary of the site. The proposed base width of the eastern and western channels is 10 metres and 8 to 12 metres respectively. As for the main channel, grass lined channels with a Mannings n value of 0.04 was envisaged. Bank slopes of 1 in 4 were adopted for the channel.

Based on the dimensions indicated in the LSMP and existing ground levels in the vicinity of the drain, the main drain following the completion of channel works would have a top width of about 39 metres. The western drain would have a top width of between 36 and 40 metres and the eastern drain a top width of about 30 metres.

The channel design presented in the LSMP is preliminary. It is likely that Council will give consideration to obtaining a design more conscious of environmental and safety issues if the flood mitigation works are implemented. However, such a design would necessitate the construction of a wider channel to provide for flatter bank slopes and the reduced flow capacity associated with a level of vegetation higher than grass. If the bank slopes were to be flattened to improve safety (as proposed for the development at the request of Council), the top width of the channels could need to increase by as much as 13 metres (a top width of 52 metres) as a worst case.

Further, it is also important to note that the proposed location of the main channel and western channel in the LSMP affect private property (i.e. the proposed site) and would require the resumption of a significant area in order to be constructed. The existing drain is not contained within an easement and therefore Council has no current right to modify the drain without the consent of the owner of the property.

BCC.100.4904

4. GOVERNING FLOOD LEVELS

Based on a flood report obtained from Council and the *Yeronga Local Stormwater Management Plan* (City Design June 2003), the applicable flood levels to the site are listed in Table 1. Table 1 also lists the peak flood levels calculated by the current study (refer Section 6).

Table 1 Defined Flood Levels

Event	Brisbane River Flooding (mAHD)	Local Flooding (mAHD)			
		Yeronga LSMP		Current Modelling	
		Existing	Post Mitigation	Existing	Post Mitigation
100 Year	6.7	-	-	-	-
50 Year	5.5	3.70 – 4.35	3.70 – 3.74	3.89 – 4.38	3.62 – 3.65
20 Year	3.7	-	-	-	-
10 Year	-	3.25 – 4.27	3.10 – 3.24	3.51 – 4.18	3.20 – 3.22
2 Year	-	3.00 – 4.23	2.80 – 2.97	3.03 – 3.69	2.72 – 2.74

The figures quoted in Table 1 for local flooding include the levels predicted for the site following the completion of proposed flood mitigation works. The proposed mitigation works that affect the site are shown in Figure 6 and described in Section 3.

Based on Table B2.2.1 of the *Subdivision and Development Guidelines* (2000), the design levels applicable to the development are listed in Table 2.

Table 2 Design Levels for Development

Case	Brisbane River		Local Flooding		Governing Level (mAHD)
	Design Level	Level (mAHD)	Design Level	Level (mAHD)	
Allotment fill	100y ARI + 0.3m	7.0	50y ARI + 0.3m	4.68	7.0
Habitable Floor	100y ARI + 0.5m	7.2	50y ARI + 0.5m	4.88	7.2
Non-Habitable Areas	100y ARI + 0.3m	7.0	50y ARI + 0.3m	4.68	7.0
Carparking*	20y ARI	3.7	50y ARI	4.38 existing 3.65 mitigated	**4.38 existing** **3.65 mitigated**

Note: Basement car parks can be set below the nominated level provided that suitably waterproofed perimeter walls, air vents, and entry/exit ramps at the car park entrance are above the 100 year ARI flood levels for all sources including the Brisbane River (i.e. 6.7 m AHD).

A basement car park (floor level 4.1 m AHD) is proposed for the development. As the entry/ exit to the basement car park will be from the podium level (7.0 m AHD minimum), the Council requirements with respect to basement car park immunity will be achieved.

5. FLOOD MODELLING

5.1 Overview

The existing stormwater drainage system in the area consists of a series of overland flow paths, stormwater pipes and open channels. Given this interaction between surface and underground drainage, XP-STORM was considered the most suitable package for modelling the investigation area. Version 8.5 of XP-STORM was used for the analysis.

XP-STORM is capable of modelling hydrology and hydraulics in a single model, and includes the algorithms used in RAFTS. It was therefore possible to import the Council RAFTS model of the catchment to the XP-STORM model to derive inflow hydrographs for the hydraulic layer of the XP-STORM model that were consistent with those obtained by Council.

The following sections of the report discuss the various components of the XP-STORM model and the modelling procedures adopted for this assessment. A schematic of the XP-STORM model developed for the site is provided in Figure 3.

5.2 XP Storm Hydrology

As part of the preparation of the *Yeronga Local Stormwater Management Plan* (2003) Brisbane City Council developed a RAFTS model to represent the hydrology of the East Yeronga catchment. The data from the RAFTS model was transferred to the hydrology layer of the XP-STORM model. Table 3 summarises the parameters adopted for each sub-catchment. Sub-catchment boundaries are shown on Figure 4.

Table 3 Sub-Catchment Details

Sub-Catchment	Area (ha)	Fraction Impervious (%)	Slope (m/m)	Manning's Roughness
AB	22.30	44	0.045	0.035
CDE	10.50	65	0.048	0.025
F	3.66	81	0.040	0.025
G	13.23	36	0.020	0.033
HM	42.57	50	0.016	0.025
N	2.95	90	0.045	0.025
O	3.40	29	0.016	0.033
P	3.95	3.4	0.070	0.025
Q	9.90	47	0.012	0.025
R	8.80	33	0.010	0.040
Main1	2.20	30	0.040	0.037
Main4	1.96	20	0.020	0.040
Main7 (D2)*	2.17	20	0.020	0.040
Main12	4.22	15	0.020	0.036
Main17	3.42	23	0.010	0.039
Main22	4.33	23	0.010	0.039
Main26	1.50	20	0.010	0.037

* Node Main7 is labelled D2 in the developed case model.

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XP-STORM allows the specification of configuration parameters which apply globally to the model. One of the configuration parameters that can be set is the value of the storage multiplier B_x, which is directly analogous to the B_x factor in RAFTS. In order to achieve calibration for the Yeronga LSMP, a B_x factor of 1.75 was adopted for the RAFTS model. This storage coefficient was applied as a configuration parameter (BX=1.75) to the XP-STORM model. A configuration parameter was also set to specify that runoff routing was to be completed in accordance with the algorithms used in RAFTS.

Three detention basins were included in the Council RAFTS model of the catchment and were thus duplicated in the XP-STORM model. The first basin is formed between the Gold Coast Railway line and the Yeronga TAFE (Node AB). The second basin, which is smaller than the first, is formed between Fairfield Road and the Gold Coast Railway Line (Node CDE). The third detention basin is located towards the downstream end of the main channel, and discharges just upstream of the Brisbane Corso (Node Q). This basin is formed in the residential streets to the east of the main channel. Table 4 reports the storage information, drawn from the Council model, used to model each of these detention zones. In this table the depth of storage reported is relative to the invert of the node to which the storage is assigned.

Table 4 Detention Basin Details

Basin 1 (Node AB)		**Basin 2 (Node CDE)**		**Basin 3 (Node Q)**	
Node Invert = 4.20 mAHD		Node Invert = 1.96 mAHD		Node Invert = 2.00 mAHD	
Depth* (m)	**Area (m²)**	**Depth* (m)**	**Area (m²)**	**Depth* (m)**	**Area (m²)**
0	0	0	0	0	0
1.1	5	0.5	2	1.2	61
1.8	16	1.0	2	1.3	1800
2	30	1.2	10	1.4	2010
2.2	55	1.4	20	1.5	3710
2.3	100	1.5	80	1.6	5620
2.4	170	1.6	320	1.7	8030
2.5	310	1.6	800	1.8	10200
2.6	480	1.7	1080	1.9	12400
2.7	620	1.8	1760	2	13930
2.8	770	1.9	2550	2.1	16820
3.1	1120	2.0	3250		
3.3	1440	2.2	2820		
3.5	1600	2.5	1667		
4.3	1904				
5.3	2477				
5.8	3190				
6.3	3966				

** Depth is relative to the invert of the node to which the storage is assigned.*

Rainfall losses were set to match those adopted by Council, namely 15 mm of initial loss followed by a continuing loss rate of 2.5 mm per hour.

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Rainfall intensities were taken from the Brisbane Intensity Frequency Duration curve provided in the BCC Supplement to QUDM (Appendix A to Section 6 of the Brisbane City Council *Subdivision and Development Guidelines* (2000)).

To be consistent with the Yeronga LSMP, events with recurrence intervals of 2, 10, and 50 years were modelled. Storm durations ranging from 30 minutes to 2 hours were considered for the analysis. A storm with a duration of 60 minutes was found to produce peak flow rates in the vicinity of the site.

The peak flows predicted by the hydrology layer of XP-STORM are presented in Table 5. The table also reports the corresponding (Council) RAFTS discharge. It can be seen from these results that the peak flows predicted by the XP-STORM model closely agree with the discharges determined for the Yeronga LSMP. Given this close agreement, it was considered that the hydrology component of the XP-STORM model was providing satisfactory results.

Table 5 XP-STORM Hydrology Results - 60 Minute Duration Storm

Sub-Catchment	2 year ARI Discharge (m^3/s)		10 year ARI Discharge (m^3/s)		50 year ARI Discharge (m^3/s)	
	STORM	RAFTS	STORM	RAFTS	STORM	RAFTS
AB	4.97	4.79	8.79	8.55	12.06	12.01
CDE	3.43	3.35	5.33	5.24	6.96	6.95
F	1.30	1.29	1.98	1.95	2.55	2.55
G	2.47	2.72	4.14	3.95	5.94	5.81
HM	7.63	7.37	13.47	13.00	19.29	19.08
N	1.07	1.06	1.61	1.59	2.07	2.06
O	0.64	0.61	1.12	1.09	1.61	1.58
P	1.16	1.14	1.83	1.79	2.40	2.39
Q	1.98	1.91	3.48	3.31	4.98	4.88
R	1.10	1.05	2.04	1.93	3.05	2.94

Note: STORM refers to results from XP-STORM, RAFTS to results from Council model

5.3 XP Storm Hydraulics

5.3.1 Overview of Hydraulic Model

Detailed survey was collected for the region downstream (north) of approximately Hyde Road to the Brisbane River. The survey, completed by PMM Group (Drawing 7203-2a) included spot levels and cross sections through the existing drain. This information was augmented by design data for pipes and culverts in the vicinity of the study area.

Based on discussions with Council [redacted] it is understood that the survey upon which the Council hydraulic model is based was taken from aerial (helicopter) survey and that the levels obtained from the aerial photogrammetry are quite variable in the channel.

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Therefore, in addition to potential variations associated with the different models used for the Yeronga LSMP (MIKE-11 and HEC-RAS) and the current investigation (XP-STORM), the fact that detailed survey was used for the current investigation will produce calculated flood levels which differ from those obtained by Council. As the model is based on detailed survey rather than aerial photogrammetry, it is considered that the results obtained from the new modelling will be more reliable than those presented in the Yeronga LSMP.

5.3.2 Cross Section Information

As noted in Section 5.3.1, cross sectional information was obtained from the detailed survey of the site. A total of 28 cross sections were used to define the water courses within the model area in the developed case (one additional cross section was included in the existing case model). The location of each of these cross sections is shown in Figure 5.

Manning's n roughness coefficients were applied to the centre, left and right banks of each cross section. The value of the Manning's coefficients adopted for the model varied from 0.03 to 0.08, similar to the values adopted for the Yeronga LSMP. Downstream of the development site the channel is well maintained with mowed grassed slopes and a concrete invert. Therefore the roughness along this section of the model was generally set at 0.03 for the entire width of the cross section.

Roughness values were increased within the western and eastern overland flow paths due to the presence of more significant vegetation along these watercourses. These roughness estimations were based on aerial photography and site inspection.

5.3.3 Structures

The detailed survey indicated stormwater pipes under the western and eastern overland flow paths. These pipes convey runoff from catchments upstream of the site and discharge it to the main channel approximately 40 metres north of Venner Road. The details of these pipes are presented in Table 6.

Table 6 Stormwater Pipe Dimensions (Existing)

Line	Dimensions	Number of pipes	Total Length (m)
Fairfield Rd to Main Drain	1200 dia RCPC	2	137
Fairfield Rd to Main Drain	1200H x 1800W Oval	2	277
Hyde Rd to Main Drain	1650 dia RCPC	1	170

Brisbane Corso crosses the main channel at the downstream end of the model, just upstream of the Brisbane River. A bank of culverts allows runoff to pass under the road. The details of these culverts are presented in Table 7. Invert levels at the inlet of the culvert indicate that there is a significant drop in bed level from the main channel to the culvert invert.

Table 7 Brisbane Corso Culvert Details

XP-STORM Link Location	Geometry	No. of culverts	Length (m)	Upstream Invert (mAHD)	Downstream Invert (mAHD)
Main23-24	1650& RCPC	4	27.3	-0.45	-0.80

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5.3.4 Boundary Conditions and Simulation Details

Previous modelling for the Yeronga LSMP (Brisbane City Council June 2003) was based upon a constant tailwater level of 1.2 m AHD in the Brisbane River, which is equivalent to the Mean High Water Springs tide level. The same boundary condition was adopted for the current modelling at the downstream end of the model (node Main26) with the model reverting to normal depth if required.

The XP-STORM model was run for a period of 24 hours at 5 second time steps.

5.4 Proposed Mitigation Option

5.4.1 Overview of Proposed Council Mitigation Scheme

As part of the Brisbane City Council Yeronga LSMP, mitigation options were investigated to relieve some of the flooding pressures already experienced by residents within the catchment. The final proposed relief configuration included the following components (from the *Yeronga Local Stormwater Management Plan* (June 2003)):

- Widening of the western overland flow path from Hyde Road, through Venner Road to the confluence with the main drain. In the existing case this flow path is poorly defined. Under the proposed relief conditions the base of this channel would be increased to between 8 metres and 12 metres.
- Widening of the eastern overland flow path from Fairfield Road, through Fehlberg Park to the confluence with the main drain. As with the western flow path, this channel is poorly defined under existing conditions. The proposed mitigation solution indicates a widening of the base of this channel to approximately 10 metres with 1v:4h batter slopes.
- Widening of the main channel downstream of the confluence with the eastern and western overland flow paths. The proposed mitigation option indicates that the concrete lined channel invert should be maintained with the channel widened by 12 metres. This widening may occur as 6 metres either side of the concrete invert or 12 metres to one side depending on the location of other elements within the floodplain such as houses. In the vicinity of the site, this would produce a channel with a top width of about 39 metres assuming 1 in 4 bank slopes.
- Diversion of part of the piped stormwater from sub-catchment G to the piped system of sub-catchment O. Under existing conditions, the pipe infrastructure at the outlet of sub-catchment G is not sufficient to convey the 2 year ARI discharge. Sub-catchment runoff in addition to the capacity of the pipe in the 2 year event will be diverted to sub-catchment O.

A number of other mitigation measures were recommended involving upgrading and replacing pipe drainage infrastructure throughout the catchment. The measures relevant to the currently proposed development only have been mentioned here. Figure 6 presents the proposed mitigation solution diagrammatically and is drawn from Appendix L of the LSMP.

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5.4.2 Proposed Mitigation Solution

The extent to which the site is flooded for the 50 year local flooding event (Figure 2) is limited to within about 15 to 20 metres of the boundary of the site. Based purely on hydraulic grounds, the development could proceed to the limit of inundation (i.e. to within 15 to 20 metres of the eastern boundary of the site) without impacting on existing flooding.

However, the situation is complicated by the following factors:

- **Waterway corridor**

  A waterway corridor has been defined based on a nominal 30 metre offset from the centre of the drain (refer Figure 2). A width of between 38 metres and 57 metres on the eastern boundary of the site is within the defined waterway corridor.

  Performance Criteria P3 of the Filling and Excavation Code of City Plan requires that filling or excavation must not cause any increase in flooding or drainage problems. Acceptable Solution 3.1 to the performance criteria is to ensure that no filling or excavation is located within a waterway corridor. Compliance to the acceptable solution would quarantine a significant area without providing any hydraulic benefit. As an alternate solution, as noted above the site could be filled to the existing flood line (i.e. 15 to 20 metres from the property boundary) without adversely impacting on flood levels.

  Council has agreed to development up to a 25 metre setback from the property boundary on the eastern side, within the waterway corridor.

- **Flood Mitigation Works**

  The Yeronga LSMP (refer Section 3 and Section 5.4.1) notes the need for flood mitigation works to occur to reduce the incidence of flooding in areas upstream of the site.

  With reference to Figure 6, the mitigation solution recommended in the Yeronga LSMP significantly encroaches on the proposed development site. As no easement exists on the site for drainage, Council would either need to obtain permission from the land owner for works to be completed on the land or purchase the land for drainage purposes.

  Further, the proposed works will affect land that is presently free from inundation rather than being sited within the parkland to the east that is subject to inundation.

  Given the above, the logical location for the mitigation works is within the Council controlled open area to the east of the site rather than within the site.

Based on discussions with Council mitigation works within the open channel along the eastern boundary of the site will be limited to those proposed by Council. Some beautification of the channel will be carried out through landscaping (refer to Appendix C for landscape concept plans) however the essential properties of the channel will be preserved. The landscaping concept is consistent with the hydraulic modelling assumptions.

It can be noted that the proposed diversion of flow from subcatchment G (refer Section 5.4.1) was not included in the modelled mitigation measures. This will conservatively increase the modelled flow in the eastern tributary of the drain.

6. MODELLING RESULTS

6.1 General

As mentioned in the previous section, Council has agreed to a 25 metre setback from the property boundary on the eastern side at the limit of development within the site. The open drain will be retained essentially in its existing conditions and beautification landscaping conducted as per the concept design presented in Appendix C. The proposed landscaping works are consistent with the hydraulic parameters (such as Manning's n roughness coefficients) adopted in the XP-STORM modelling. Considering these points, only the existing case was modelled for this study.

As noted in Section 5.3.1, the flood levels predicted by the XP-STORM modelling of the catchment differ from those calculated using MIKE-11 and HEC-RAS for the Yeronga LSMP. This can be attributed to the use of different hydraulic models for the two studies and, more significantly, the use of cross sections based on detailed survey for the current investigation.

When quantifying the performance of the proposed works, comparisons were made between the flood level estimates obtained from the current modelling and those presented in the Yeronga LSMP.

Peak flow rates and velocities calculated for the existing case scenario are provided in Appendix B.

6.2 Existing Situation

The peak flood levels calculated for the existing situation are presented in Table 8 also presents the peak flood levels reported in the Yeronga LSMP at cross sections in close proximity to nodes in the XP-STORM model.

In the western tributary upstream of the site, the flood level predicted by the XP-STORM model is less than that presented in the Yeronga LSMP by between 570 mm and 140 mm for the 2 and 50 year events respectively. In the eastern tributary upstream of the site, the flood levels predicted by the XP-STORM model are generally less than those presented in the Yeronga LSMP by up to 130 mm. The Council model predicts a level up to 100 mm lower than that obtained from the current model immediately upstream of the site.

Within the main channel in the vicinity of the site, the XP-STORM model predicted levels up to 200 mm higher than those presented in the Yeronga LSMP. In the vicinity of the Brisbane Corso the difference in flood level is greater, with the XP-STORM model predicting that the Corso will control levels upstream to a greater extent than calculated in the Yeronga LSMP modelling.

From the results presented above it was concluded that the current modelling provided a satisfactory prediction of flood levels within the catchment despite not exactly matching the results previously reported. However, this is to be expected given the differences in modelling and base data for the XP-STORM and Yeronga LSMP models (refer Section 6.1).

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Table 8 Existing Case Results

		2 year Event Peak Levels			10 year Event Peak Levels		
Council Cross Section	XP-Storm Node	LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
Western Tributary							
	HM	-	4.46	-	-	4.59	-
	Trib A	-	4.05	-	-	4.16	-
Y2020	Trib B	4.27	3.64	-0.63	4.39	4.16	-0.23
	Trib B.1	-	3.62	-	-	4.16	-
Y2010	TribC	4.23	3.62	-0.61	4.27	4.16	-0.11
Eastern Tributary							
	AB	-	4.67	-	-	4.90	-
	CDE	-	3.80	-	-	3.96	-
	FRd	-	3.80	-	-	3.96	-
	F	-	3.73	-	-	3.91	-
	G	-	3.61	-	-	3.79	-
Y140	Main1	3.85	3.73	-0.12	4.03	3.91	-0.12
Y130	Main2	3.78	3.69	-0.09	3.95	3.88	-0.07
Y120	Main3	3.71	3.64	-0.07	3.86	3.82	-0.04
Y110	Main4	3.68	3.61	-0.07	3.83	3.79	-0.04
Y100	Main5	3.65	3.57	-0.08	3.79	3.75	-0.04
Y79	Main6	3.39	3.51	0.12	3.61	3.70	0.09
Main Channel							
	Main 7	-	3.18	-	-	3.59	-
	Main 8	-	3.12	-	-	3.57	-
	Main 9	-	3.10	-	-	3.56	-
Y75	Main 10	2.98	3.06	0.08	3.24	3.54	0.30
	Main 11	-	3.04	-	-	3.53	-
Y70	Main 12	3.05	3.03	-0.02	3.34	3.52	0.18
	Main 13	-	3.02	-	-	3.52	-
	Main 14	-	3.00	-	-	3.52	-
Y60	Main 15	2.95	2.98	0.03	3.23	3.51	0.28
	Main 16	-	2.96	-	-	3.50	-
Y50	Main 17	2.87	2.93	0.06	3.12	3.48	0.36
	Main 18	-	2.92	-	-	3.48	-
Y40	Main 19	2.59	2.90	0.31	2.79	3.47	0.68
	Main 20	-	2.88	-	-	3.46	-
	Main 21	-	2.85	-	-	3.45	-
Y30	Main22	2.03	2.84	0.81	2.48	3.44	0.96
u/s Corso	Main23	1.75	2.82	1.07	2.5	3.44	0.94
d/s Corso	Main24	1.4	2.65	1.25	1.63	3.10	1.47

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		2 year Event Peak Levels			10 year Event Peak Levels		
Council Cross Section	XP-Storm Node	LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
	Main 25	-	2.64	-	-	3.09	-
	Main 26	-	2.48	-	-	2.93	-
Nodes off Main Channel							
	O	-	3.03	-	-	3.52	-
	P	-	2.93	-	-	3.48	-
	Q	-	2.84	-	-	3.44	-
	R	-	6.09	-	-	6.13	-
	N	-	3.03	-	-	3.52	-

		50 year Event Peak Levels			100 year Event Peak Levels		
Council Cross Section	XP-Storm Node	LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
Western Tributary							
	HM	-	4.67	-	-	4.72	-
	Trib A	-	4.36	-	-	4.45	-
Y2020	Trib B	4.52	4.36	-0.16	-	4.45	-
	Trib B.1	-	4.36	-	-	4.45	-
Y2010	TribC	4.35	4.36	0.01	-	4.45	-
Eastern Tributary							
	AB	-	5.16	-	-	5.40	-
	CDE	-	4.09	-	-	4.18	-
	FRd	-	4.09	-	-	4.18	-
	F	-	4.05	-	-	4.13	-
	G	-	3.94	-	-	4.09	-
Y140	Main1	4.17	4.05	-0.12	-	4.13	-
Y130	Main2	4.11	4.01	-0.09	-	4.10	-
Y120	Main3	4.07	3.96	-0.11	-	4.09	-
Y110	Main4	4.05	3.94	-0.11	-	4.09	-
Y100	Main5	4.02	3.94	-0.08	-	4.08	-
Y79	Main6	3.96	3.93	-0.03	-	4.08	-
Main Channel							
	Main 7	-	3.92	-	-	4.08	-
	Main 8	-	3.92	-	-	4.07	-
	Main 9	-	3.91	-	-	4.06	-
Y75	Main 10	3.69	3.90	0.21	-	4.05	-
	Main 11	-	3.89	-	-	4.04	-
Y70	Main 12	3.79	3.89	0.10	-	4.04	-
	Main 13	-	3.89	-	-	4.04	-

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Council Cross Section	XP-Storm Node	50 year Event Peak Levels			100 year Event Peak Levels		
		LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
	Main 14	-	3.89	-	-	4.04	-
Y60	Main 15	3.72	3.88	0.16	-	4.04	-
	Main 16	-	3.87	-	-	4.03	-
Y50	Main 17	3.67	3.86	0.19	-	4.02	-
	Main 18	-	3.86	-	-	4.02	-
Y40	Main 19	3.56	3.85	0.29	-	4.02	-
	Main 20	-	3.85	-	-	4.01	-
	Main 21	-	3.84	-	-	4.00	-
Y30	Main22	3.5	3.84	0.34	-	4.00	-
u/s Corso	Main23	3.52	3.83	0.31	-	4.00	-
d/s Corso	Main24	1.9	3.31	1.41	-	3.38	-
	Main 25	-	3.31	-	-	3.38	-
	Main 26	-	3.14	-	-	3.21	-
Nodes off Main Channel							
	O	-	3.89	-	-	4.04	-
	P	-	3.86	-	-	4.02	-
	Q	-	3.84	-	-	4.00	-
	R	-	6.16	-	-	6.18	-
	N	-	3.89	-	-	4.04	-

Note *Nodes on eastern boundary of site shaded*
Refer to Figure 3 and Figure 5 for node locations
Council cross sections column specifies section at or near XP-Storm node location

6.3 Stormwater Drainage Network Upgrades

Detailed survey of the site indicates two stormwater pipes that traverse the site as shown on Figure 7. The development proposed for the site makes it necessary to realign these pipes.

- ***Cansdale Street***

Existing stormwater infrastructure includes a sag on Cansdale Street approximately 77 metres north of the intersection of Venner Road and Cansdale Street. A total catchment of 3.6 ha drains to this point and is then conveyed to the open channel via a 900 mm diameter stormwater pipe. A field inlet is located approximately 89 metres north east of the sag.

The proposed development for the site includes the construction of a basement car park in the north western corner of the site making it is necessary to realign this pipe as shown in Figure 7. As part of the conditions required by Council, it was also necessary to upgrade this pipe to entirely convey the 100 year discharge.

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It was decided to alter the pipe alignment to pass around the basement car park and connect to the existing field inlet. In order to design the upgraded pipe line such that no adverse impacts were experienced at Cansdale Street a hydraulic grade line analysis was carried out. The full results of these calculations are reported in Appendix C. Key outcomes from this assessment are summarised in Table 9. The total length of pipe has increased from 263 metres to 280 metres. The results of this assessment will be finalised during detailed design.

Table 9 Cansdale Street Pipe Upgrade Results

Pipe Section	A	B	C
Contributing Catchment Area (ha)	3.15	0.47	0.98
Total Flow Q100 (m^3/s)	1.90	2.17	2.72
Pipe Section Length (m)	40.3	66.4	172.9
Pipe Diameter (mm)	900	1050	1200
Upstream Invert level (m AHD)	5.00	4.00	2.50
Downstream Invert Level (m AHD)	4.50	2.50	1.35
Upstream Head (m AHD)	4.31	3.41	2.19
Downstream Head (m AHD)	3.86	2.99	1.35

- ***South East Corner***

As shown on Figure 7, a single 1650 mm diameter stormwater pipe crosses the south eastern corner of the development site. This pipe conveys stormwater runoff from catchments upstream and discharges it into the upstream end of the open drain, at the point where piped runoff from the west also enters the drain. Again, due to the proposed development it was necessary to realign this pipe to pass around the boundary of the site rather than through it. The proposed pipe alignment is shown on Figure 7.

Analysis of the effect of this realignment was carried out using the XP-STORM model developed for the flood assessment. The addition of a man hole and extra pipe length to this section of the stormwater drainage system means that additional losses are incurred. In order to ensure no worsening of flood levels in the vicinity of the pipe, it was necessary to upgrade the pipe by adding a second 1650 diameter pipe. Current invert levels were maintained. Based on the alignment shown in Figure 7 it is clear that an extra section of pipe has been added. The total length of pipe has increased from 77 metres to 96 metres. The results of this analysis are summarised in Table 10. The results of this assessment will be finalised during detailed design.

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Table 10 South East Corner Pipe Upgrade Results

	100 year ARI			50 year ARI		
Node	Existing WSL (mAHD)	Developed WSL (mAHD)	Mitigated WSL (mAHD)	Existing WSL (mAHD)	Developed WSL (mAHD)	Mitigated WSL (mAHD)
Trib B	4.45	4.46	4.37	4.36	4.38	4.26
Trib B.1	4.45	4.46	4.37	4.36	4.38	4.26
Trib C	4.45	4.46	4.37	4.36	4.38	4.26
	10 year ARI			2 year ARI		
Node	Existing WSL (mAHD)	Developed WSL (mAHD)	Mitigated WSL (mAHD)	Existing WSL (mAHD)	Developed WSL (mAHD)	Mitigated WSL (mAHD)
Trib B	4.16	4.19	3.98	3.64	3.77	3.58
Trib B.1	4.16	4.19	3.98	3.62	3.76	3.49
Trib C	4.16	41.9	3.98	3.62	3.76	3.46

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7. CONCLUSION

It is proposed to construct a retirement village on a site at the corner of Cansdale Road and Venner Road in Yeronga (the study site). Figure 1 shows the location of the site.

Development of the site is constrained by the presence of a waterway corridor that affects the eastern part of the site (refer Figure 2) and flood mitigation measures proposed in the *Yeronga Local Stormwater Management Plan* (June 2003) (refer Figure 6). The waterway corridor boundary is approximately 38 metres from the eastern boundary of the site, thus limiting development within this area. However, Council has agreed to a 25 metre set back from the eastern boundary. The open drain will remain unchanged under developed conditions thus no impact on flood levels is expected.

Some stormwater drainage infrastructure has been upgraded to accommodate for the aspects of the proposed development such as basement car parks. The Cansdale Street sag has been redesigned and the pipe realigned to convey the 100 year ARI discharge to the open channel, around the edge of the development. Similarly, the pipes traversing the south eastern corner of the development have also been upgraded and realigned.

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FIGURES

Figure 1 Locality Plan

Figure 2 Drainage Paths

Figure 3 XP-STORM Model Layout

Figure 4 Catchment Boundaries

Figure 5 Cross Section Locations

Figure 6 Previous Proposed Mitigation Option

Figure 7 Stormwater Pipe Locations

Figure 8 Headwall Configuration

APPENDIX A

Peak Flows and Velocities

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	Existing Case Peak Velocities (m/s)		
Node	Q50	Q10	Q2
G-Main4	0.60	0.29	0.17
O-Main12	0.25	0.65	0.22
P-Main17	0.25	0.25	0.24
F-Main1	0.29	0.31	0.25
R-Main22	0.15	0.12	0.09
N-Main12	0.20	0.20	0.19
Main22-23	1.61	1.61	1.52
Main24-25	-0.38	-0.36	-0.29
Main25-26	0.74	0.74	0.73
Main17-18	0.99	1.00	1.01
Main18-19	0.87	0.86	0.81
Main19-20	-0.84	-0.85	-0.85
Main20-21	1.05	1.03	1.03
Main21-22	1.00	0.99	1.01
Main12-13	0.90	0.88	0.85
Main13-14	1.09	1.08	1.04
Main14-15	1.20	1.19	1.15
Main15-16	0.99	0.99	0.95
Main16-17	-0.91	-0.89	-0.88
Drain4	-	-	-
Main10-11	1.00	0.99	1.01
Main11-12	0.71	0.68	0.64
Drain3	-	-	-
Drain1	-	-	-
Drain2	-	-	-
AB-CDE	0.82	0.77	0.70
CDE-FRd	0.39	0.34	0.30
Q-Main22	0.65	0.56	0.40
244.1	1.00	0.83	0.66
PipesL21	1.14	1.15	1.20
CorsoPipes	2.33	1.86	1.33
PipesD5	-	-	-
OverlandC	0.34	0.29	0.23
PipesC	1.10	1.06	0.99
OverlandD	0.45	0.38	0.47
PipesD	0.93	0.89	0.87
OverlandE	-0.33	-0.27	-0.17
PipesE	0.97	0.99	0.91
OverlandA	0.39	0.34	0.23
PipesA	1.33	1.31	1.21

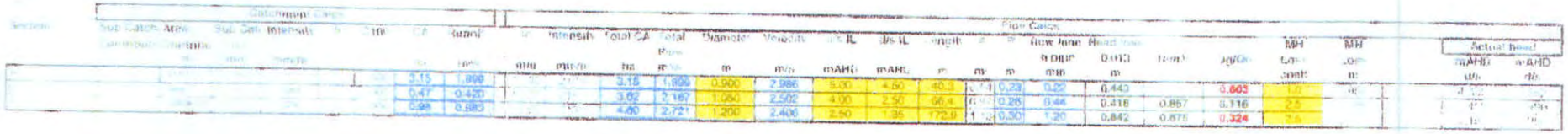
	Existing Case Peak Velocities (m/s)		
OverL47	0.64	0.54	0.41
PipesL47	2.09	2.07	2.08
OverL48	0.57	0.47	0.27
PipesL48	2.35	2.32	2.25
OverM5D2	-	-	-
PipesM5D2	-	-	-
Weir	0.00	0.00	0.00
FREE	1.00	1.00	1.00

	Existing Case Peak Discharges (m^3/s)		
Node	Q50	Q10	Q2
G-Main4	8.45	4.03	2.27
O-Main12	2.24	5.87	2.00
P-Main17	3.44	3.55	3.40
F-Main1	3.89	3.41	3.12
R-Main22	3.04	2.03	1.10
N-Main12	2.38	2.46	2.24
Main22-23	20.31	16.12	11.42
Main24-25	-17.07	-13.28	-8.79
Main25-26	20.13	15.99	11.39
Main17-18	20.03	15.25	10.28
Main18-19	19.11	14.99	10.18
Main19-20	-16.87	-12.09	-7.86
Main20-21	18.50	14.61	10.07
Main21-22	18.21	14.45	10.05
Main12-13	22.83	16.66	10.46
Main13-14	21.61	15.85	10.22
Main14-15	21.00	15.54	10.16
Main15-16	20.25	15.27	10.08
Main16-17	-17.61	-12.21	-7.82
Drain4	-	-	-
Main10-11	23.35	16.53	10.16
Main11-12	21.97	16.12	10.03
Drain3	-	-	-
Drain1	-	-	-
Drain2	-	-	-
AB-CDE	11.12	8.02	6.61
CDE-FRd	14.88	10.04	5.36
Q-Main22	4.88	3.48	1.98
244.1	14.61	9.23	4.36
PipesL21	1.08	1.09	1.14
CorsoPipes	5.04	4.00	2.85
PipesD5	-	-	-
OverlandC	10.51	6.67	3.15
PipesC	1.09	0.99	0.94
OverlandD	10.04	6.33	2.89
PipesD	0.84	0.84	0.82
OverlandE	-8.01	-4.50	-1.31
PipesE	0.92	0.93	0.86
OverlandA	11.39	7.47	3.00
PipesA	1.51	1.48	1.37

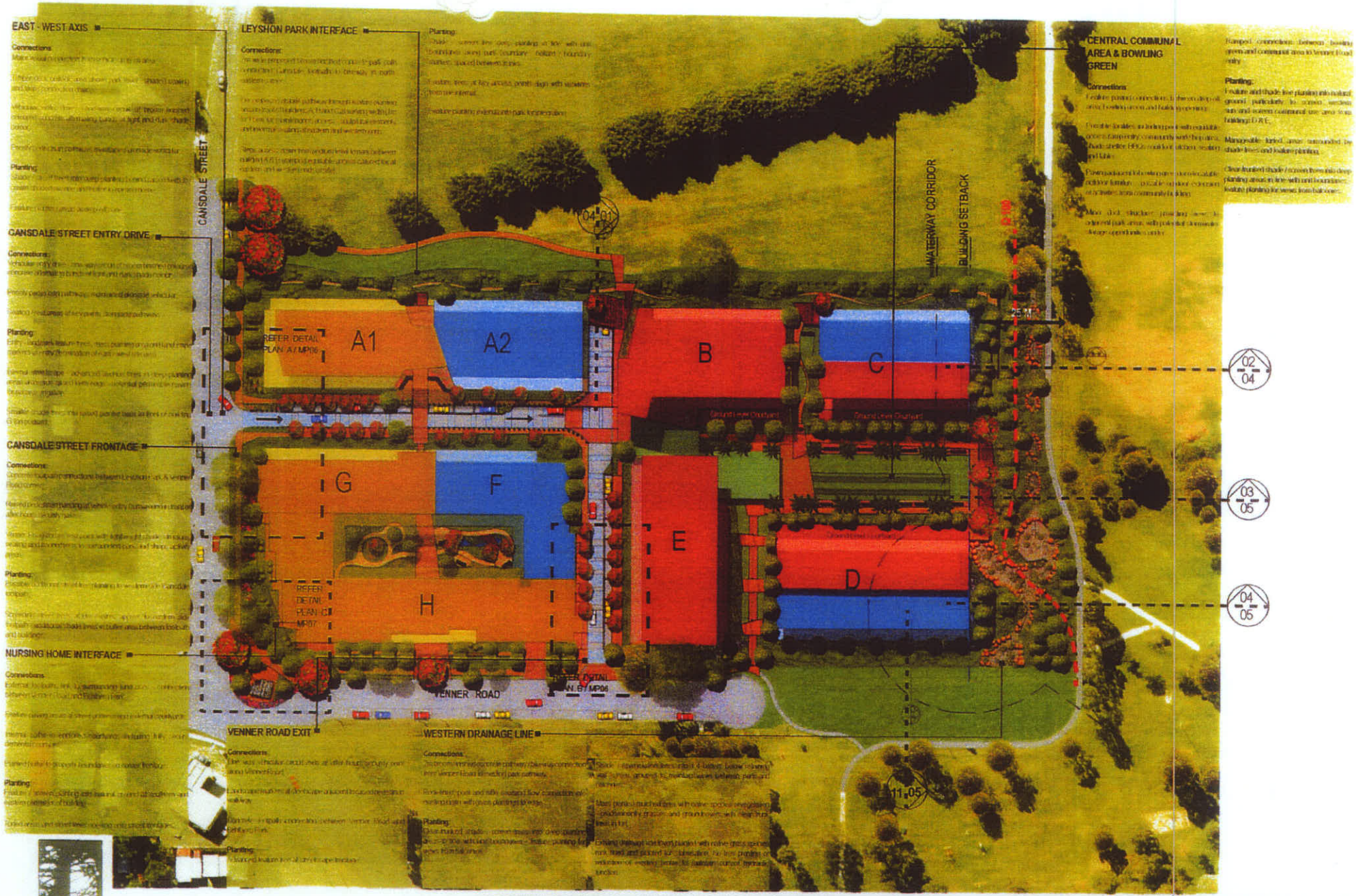
	Existing Case Peak Discharges (m^3/s)		
OverL47	14.95	9.23	3.53
PipesL47	4.56	4.52	4.48
OverL48	17.23	10.10	2.70
PipesL48	5.13	5.08	4.92
OverM5D2	-	-	-
PipesM5D2	-	-	-
Weir	0.00	0.00	0.00

APPENDIX B

Hydraulic Grade Line Calculations – Cansdale Street



BCC.100.4926

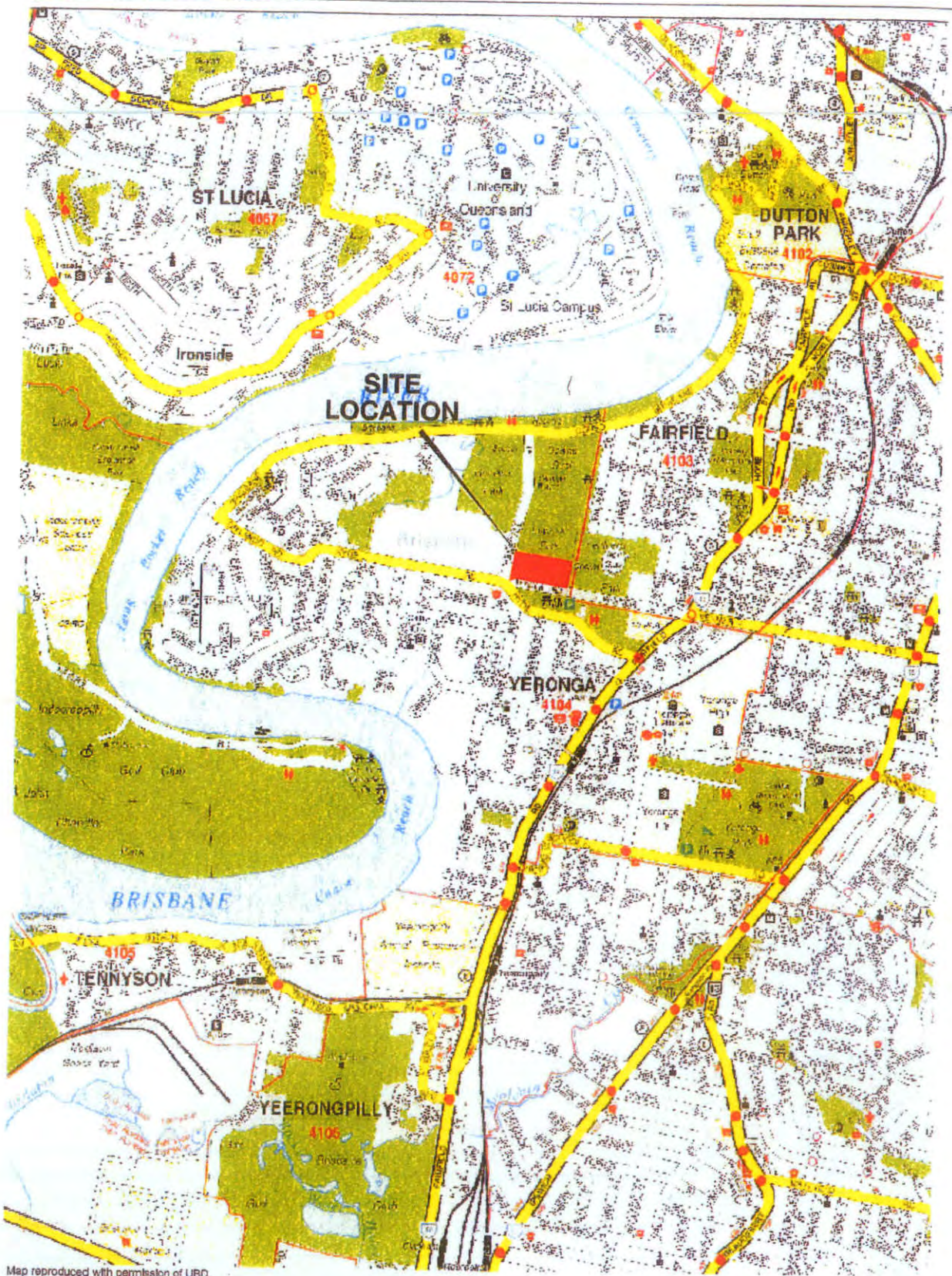


YERONGA VILLAGE
FOR Harrisons Real Estate Development
Venner Rd, Yeronga

MP03> LANDSCAPE MASTER PLAN

BCC.100.4927

Cardno



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N.T.S.

FIGURE 1
SITE LOCALITY PLAN

Rev: Orig. Date: 23 May 2006

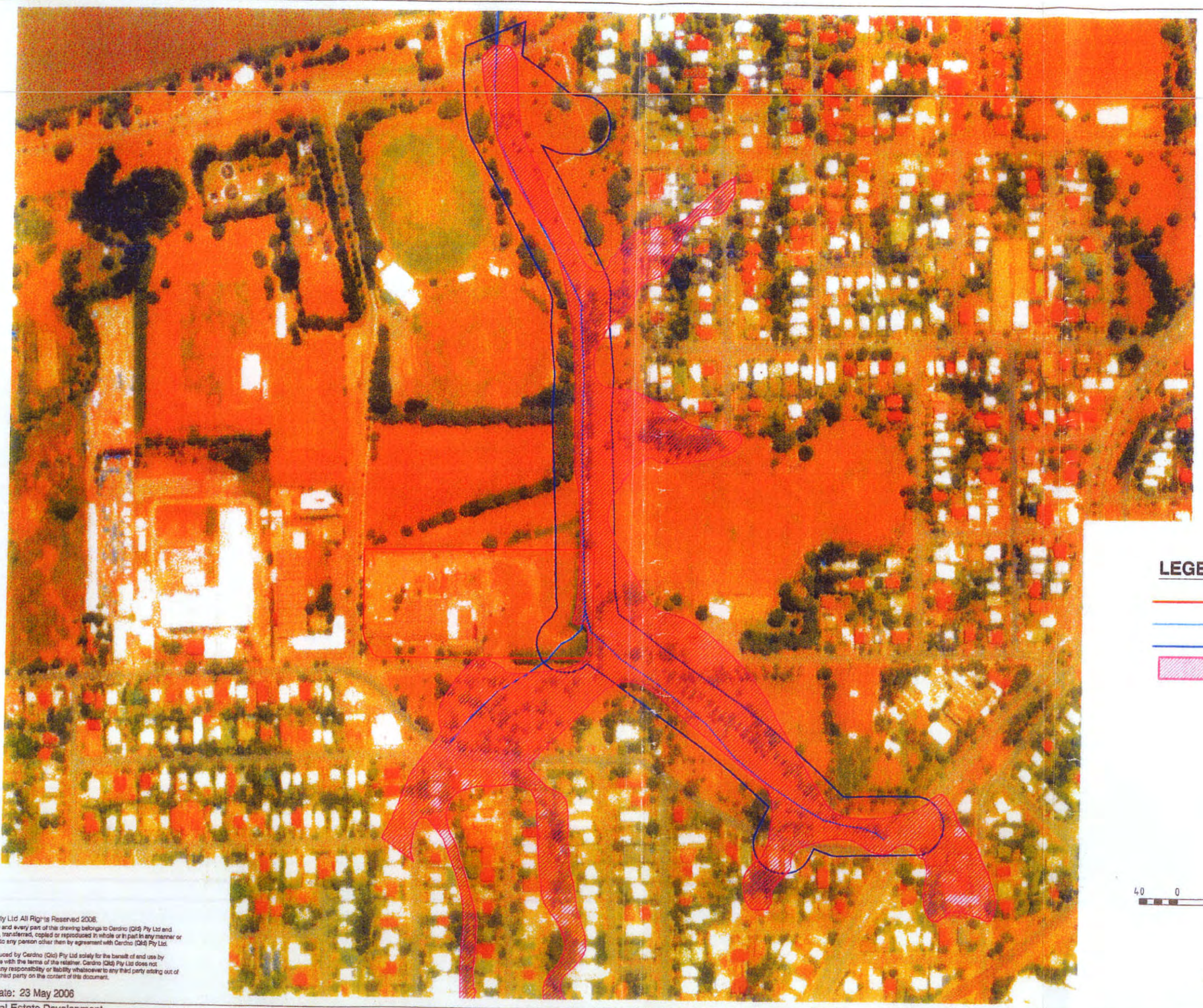
Project No.: 3500/34

Harrisons Real Estate Development

CAD FILE: J:\3500-34\Acad\Hydraulic Analysis\Figure 1 - Site Location Plan.dwg
XREFs:

PRINT DATE: 23 May, 2006 3:07pm

Cardno



N

LEGEND

- SITE BOUNDARY
- DRAINAGE PATH
- WATERWAY CORRIDORS
- Q50 Existing Inundation (Yeronga LSMP)

40 0 40 80 120 160 200m
1:4000

Scale 1:4000 (A3)

FIGURE 2
DRAINAGE PATHS

Project No.: 3500/34
PRINT DATE: 23 May, 2006 - 3:06pm

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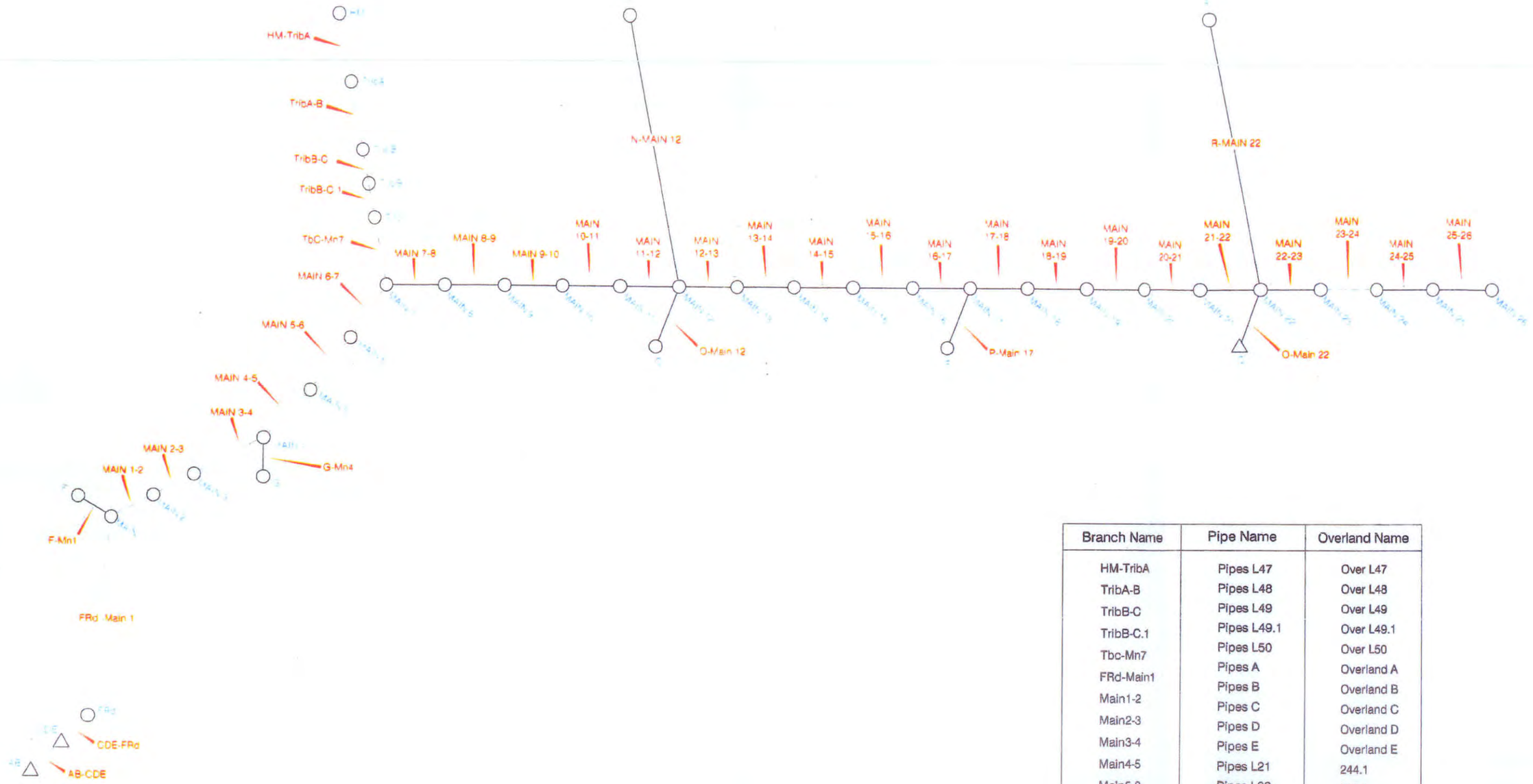
Harrisons Real Estate Development

CAD FILE J:\3500-34\Acad\Hydraulic Analysis\Figure 2 - Drainage Paths.dwg
XREF's



Branch Name	Pipe Name	Overland Name
HM-TribA	Pipes L47	Over L47
TribA-B	Pipes L48	Over L48
TribB-C	Pipes L49	Over L49
TribB-C.1	Pipes L49.1	Over L49.1
Tbc-Mn7	Pipes L50	Over L50
FRd-Main1	Pipes A	Overland A
Main1-2	Pipes B	Overland B
Main2-3	Pipes C	Overland C
Main3-4	Pipes D	Overland D
Main4-5	Pipes E	Overland E
Main5-6	Pipes L21	244.1
Main6-7	Pipes L22	245.1
Main23-24	Pipes L23	246.1
Drain 5	Corso Pipes	Weir
	Pipes D5	-

LEGEND

MULITI LINKS

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Rev: Orig Date: 23 May 2006

Harrisons Real Estate Development

CAD FILE: J:\3500-34\Acad\Hydraulic Analysis\Figure 3 - XP-STORM Model layout.dwg
XREFs:

N.T.S.

FIGURE 3
XP-STORM MODEL LAYOUT

Project No.: 3500/34

PRINT DATE: 23 May, 2006 - 3:11pm

BCC.100.4930

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N

75 0 75 150 225 300 375m
1:7500

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CAD FILE: J:\3500-34\Cad\ Hydraulic Analysis\Figure 4 - Catchment boundaries.dwg
XREFs:

Scale 1:7500 (A3)

FIGURE 4
CATCHMENT BOUNDARIES

Project No.: 3500/34

PRINT DATE: 23 May, 2006 - 3:09pm

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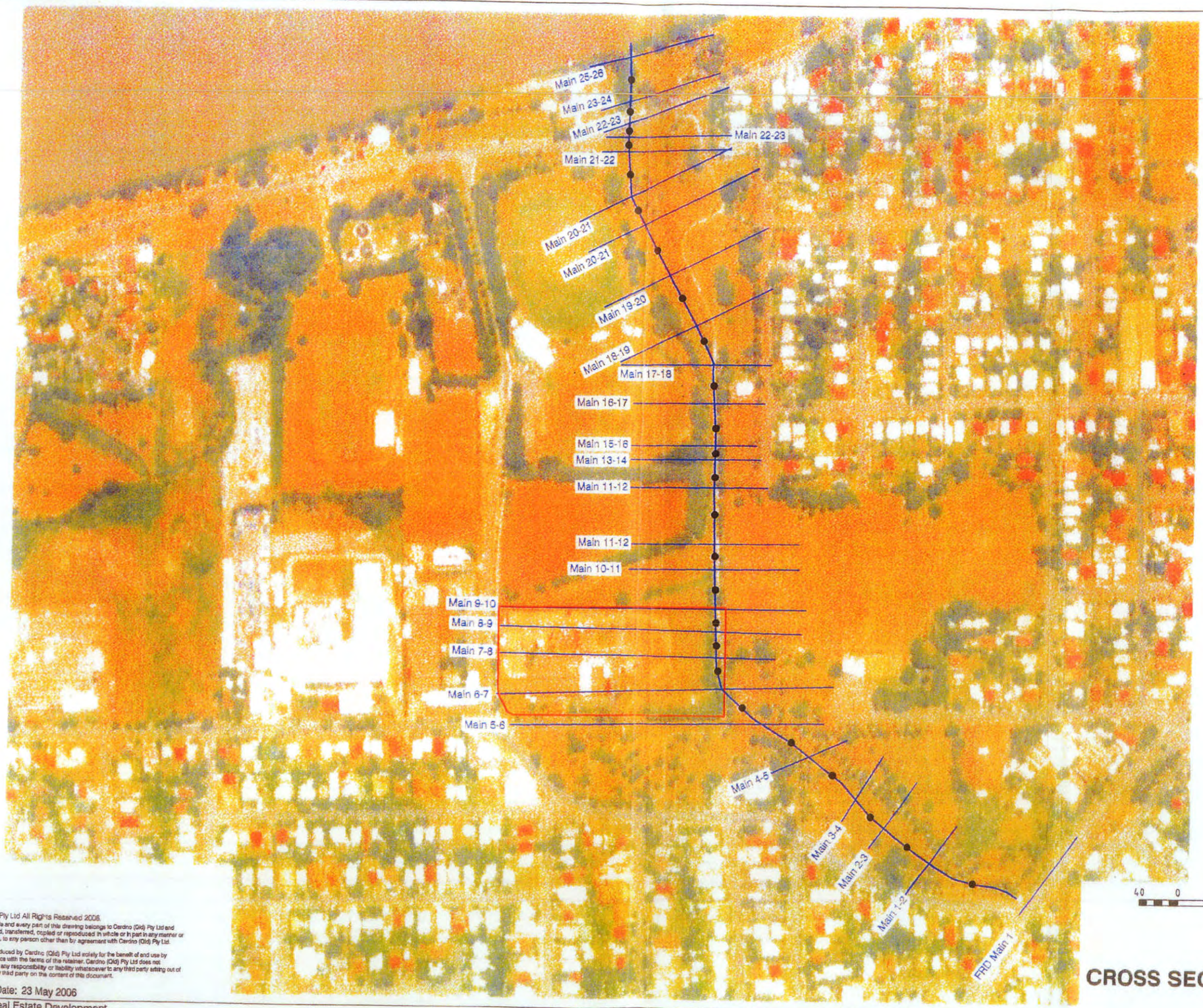

N

40 0 40 80 120 160 200m
1:4000

Scale 1:4000 (A3)

FIGURE 5
CROSS SECTION LOCATIONS

Project No.: 3500/34
PRINT DATE: 23 May, 2006 - 3:09pm

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Harrisons Real Estate Development

CAD FILE: A3500-34\Acad\Hydraulic Analysis\Figure 5 - Cross Section Locations.dwg
/REF's

Cardno



40 0 40 80 120 160 200m
1:4000

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Harrisons Real Estate Development

CAD FILE: I:\3500-34\Acad\Hydraulic Analysis\Figure 6 - Previous Proposed Mitigation Options.dwg
XREFs:

Scale 1:4000 (A3)

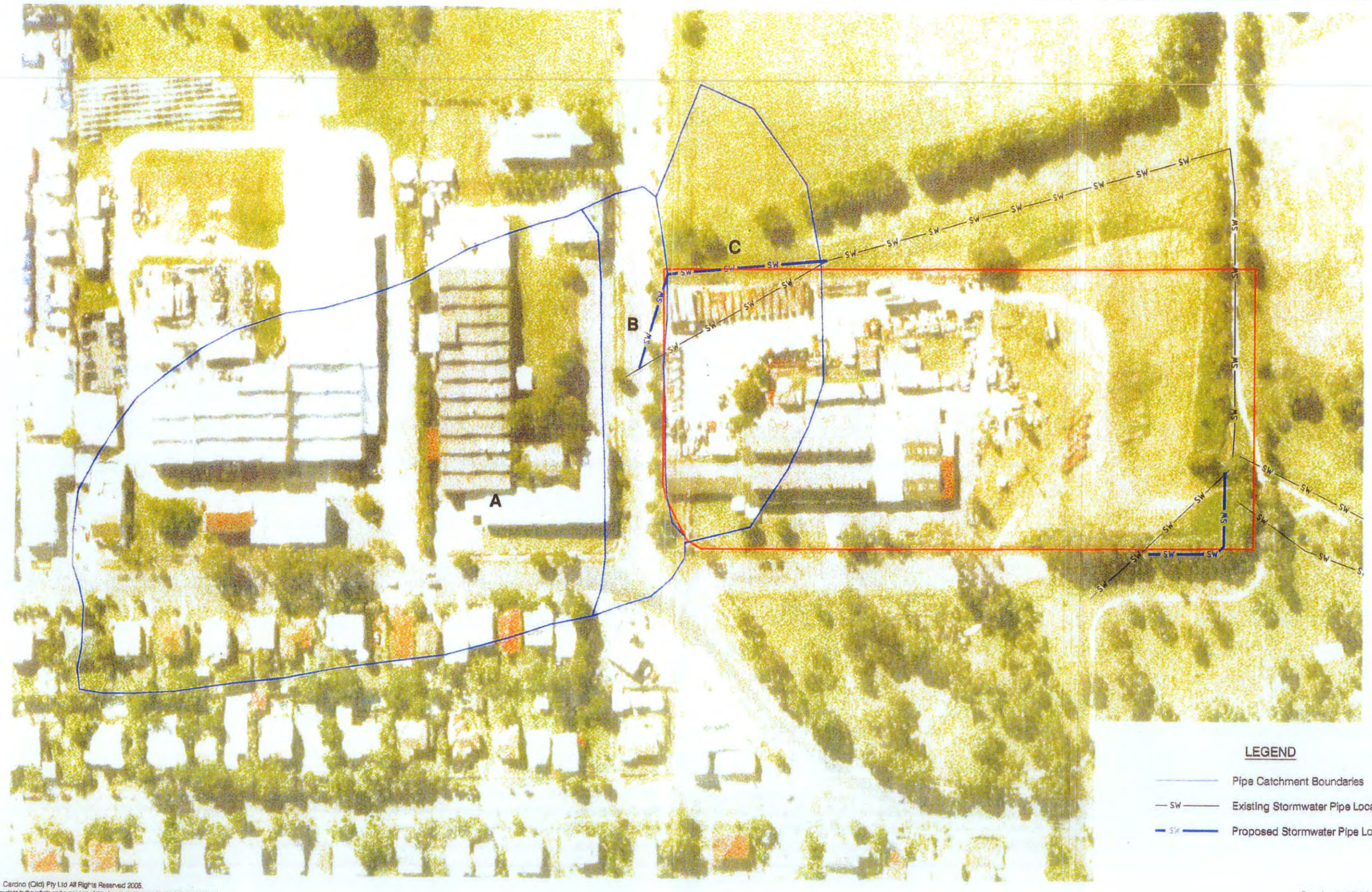
FIGURE 6

PREVIOUS PROPOSED MITIGATION OPTIONS

Project No.: 3500/34

PRINT DATE: 23 May, 2006 - 3:17pm

Cardno



LEGEND

- Pipe Catchment Boundaries
- SW — Existing Stormwater Pipe Locations
- SW — Proposed Stormwater Pipe Locations

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Harrisons Real Estate Development

CAD FILE J:\3500-34\Acad\Hydraulic Analysis\Figure 7 - Stormwater Pipe Locations.dwg
XREFs

Scale 1:1500 (A3)

FIGURE 7
STORMWATER PIPE LOCATIONS

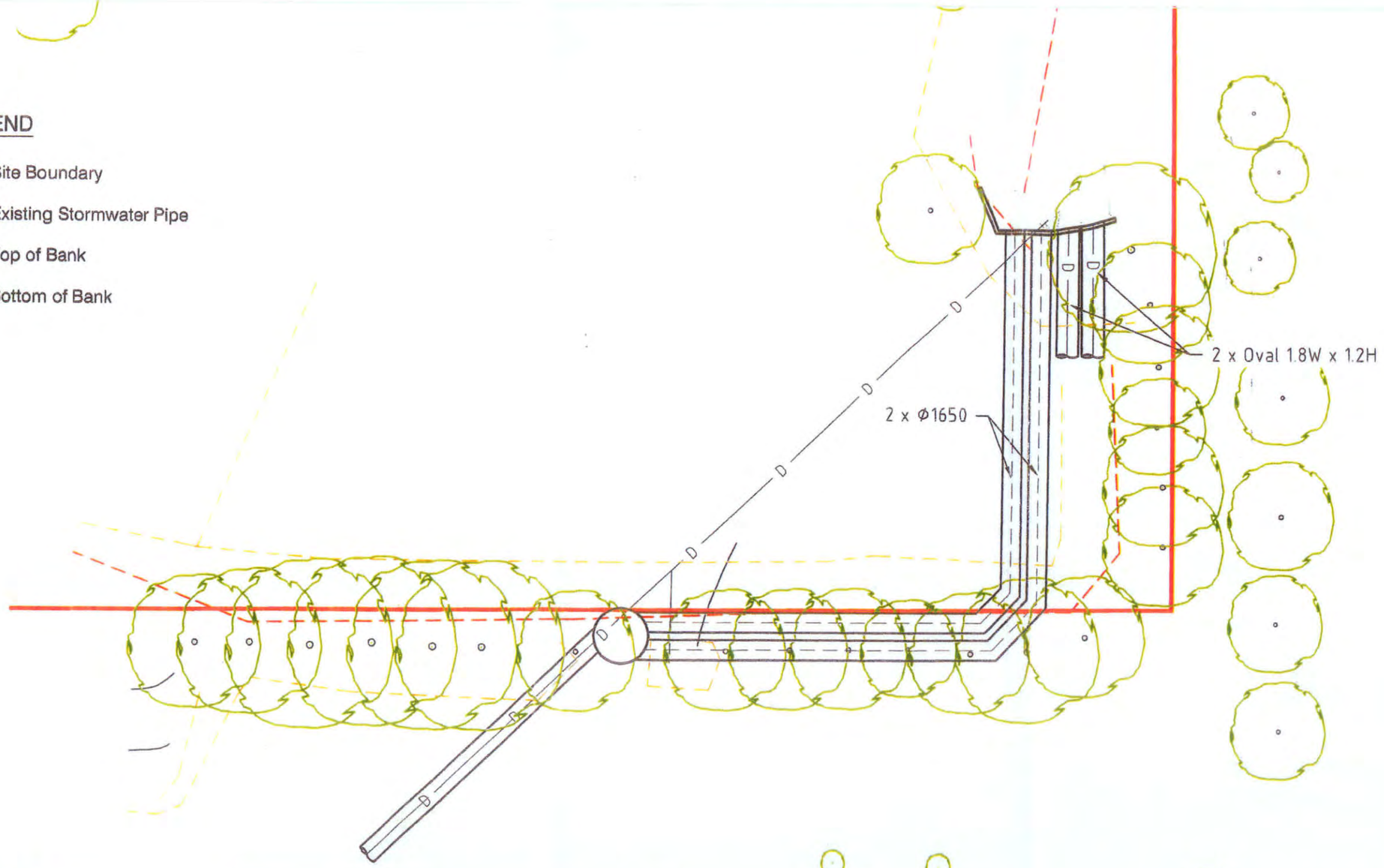
Project No.: 3500/34

PRINT DATE: 23 May, 2006 - 3:29pm

Cardno

LEGEND

- Site Boundary
- D — Existing Stormwater Pipe
- Top of Bank
- Bottom of Bank



5 0 5 10 15 20 25m
1:500

Scale 1:500 (A4)

FIGURE 8
HEADWALL CONFIGURATION

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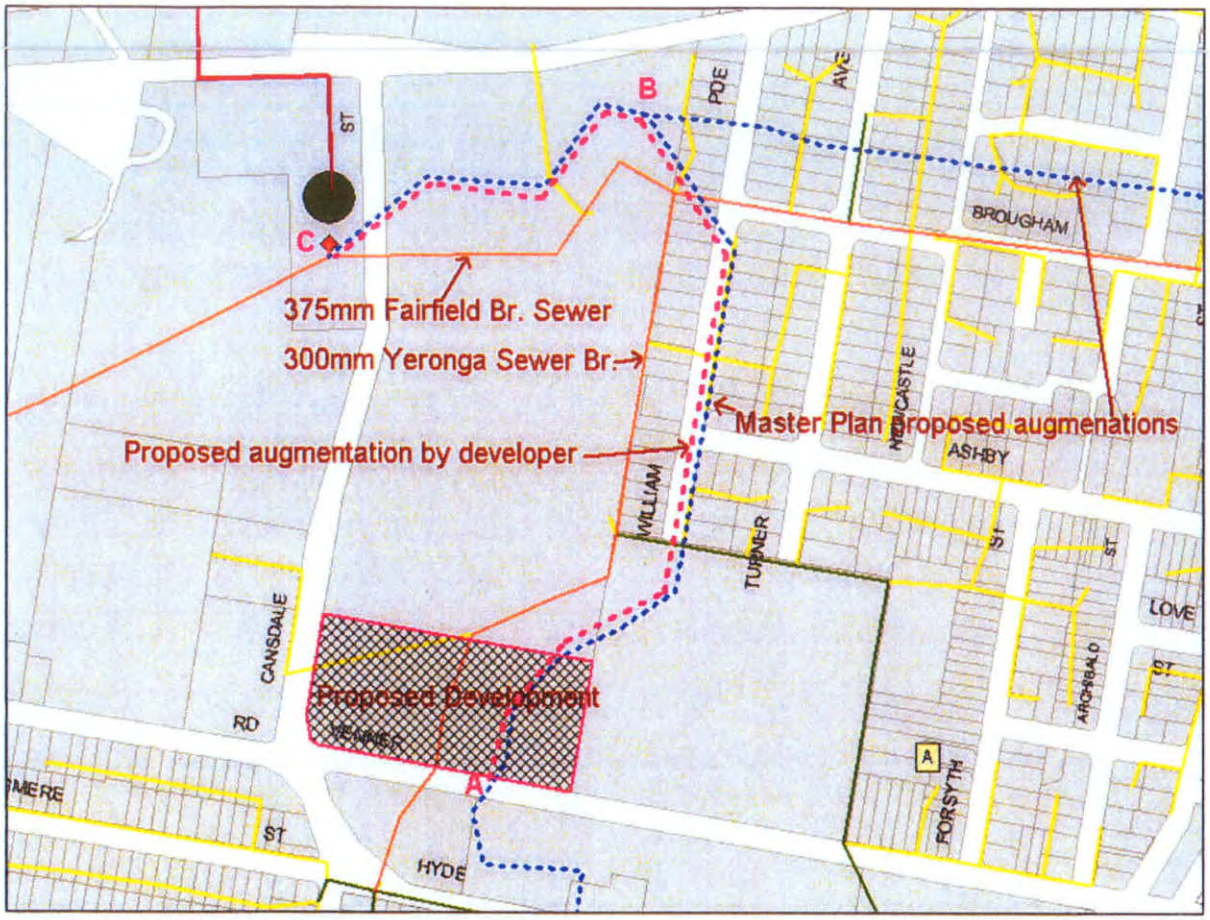
Harrisons Real Estate Development

CAD FILE: J:\3500-34\Acad\Hydraulic Analysis\Figure 8 - Headwall Configuration.dwg
XREF's

Project No.: 3500/34

PRINT DATE: 23 May, 2006 - 3:27pm



5.1 Waste Water Disposal

External augmentation works are required in order to connect the development site to the existing gravity system. That is,

AB – 225mm pipe - 680 metres
BC – 300mm pipe - 328 metres

PLANS AND DOCUMENTS
referred to in the
APPROVAL dated 28 JUN 2007

SEWER WORKS
Plan No: 5/917956
Dated: 5/05/07

SJF

12 OCT 2006

Brisbane City Council
ABN 72 002 765 795

Development Assessment Team South
Customer & Commmunity Services Division
Level 10, 69 Ann Street
Brisbane Qld 4000
GPO Box 1434
Brisbane Qld 4001

Facsimile 07 3403 5379

Application No: DRS/USE/H05-917956
Project No: DRS/PRO/P05-107231
Contact: Deborah Mangu
Telephone: (07) 340 36605

COUNCIL DELEGATE DECISION MADE ON
13 OCT 2006

10 OCT 2006

M E Harrison Investment Co Pty Ltd
C/- Pmm Group
Po Box 1559
FORTITUDE VALLEY QLD 4006

Attention [redacted]

Dear [redacted]

Decision Notice under section 3.5.15 of the *Integrated Planning Act 1997*: Preliminary Approval for a Material Change of Use overriding the planning scheme under section 3.1.6 of the IPA for Multi Unit Dwelling, Retirement Village, Aged Care Accommodation, Shop, Office And Restaurant on land at 15 Cansdale St, Yeronga Qld 4104 and described as Lot 1 on RP150512, Parish of Y'pilly.

I am pleased to inform you that your application has been *approved* in accordance with the drawings numbered and subject to the attached conditions.

Drawing or Document	Number	Plan Date
Precinct Plan	SD 02 REV E	18-MAY-2006 (Plan Date)
Building Envelope Plan	SD 03 REV H	22-AUG-2006 (Plan Date)
Circulation Plan	SD 04 REV E	18-MAY-2006 (Plan Date)
Conceptual Staging Plan	SD05 REV G	18-AUG-2006 (Plan Date)
Conceptual Basement Plan	SD 06 REV D	18-MAY-2006 (Plan Date)
Indicative Site Elevations	SD 07.1 REV D	04-MAY-2006 (Plan Date)
Indicative Site Elevations	SD 07.2 REV D	04-MAY-2006 (Plan Date)
Building 1 - Envelope Articulation	SD 07.3 REV A	23-AUG-2006 (Plan Date)
Indicative Site Elevations	SD 08 REV D	04-MAY-2006 (Plan Date)
Context Sections	SD 09 REV C	21-MAR-2006 (Plan Date)
Site Sections	SD 10 REV C	21-MAR-2006 (Plan Date)
Site Sections	SD 11 REV C	21-MAR-2006 (Plan Date)
Landscape Master Plan	MP03 ISSUE D	21-AUG-2006 (Plan Date)
Landscape Sections Sheet 1	MP04 ISSUE C	21-AUG-2006 (Plan Date)
Landscape Sections Sheet 2	MP05 ISSUE C	21-AUG-2006 (Plan Date)

Landscape Details Sheet 1	MP06 ISSUE C	21-AUG-2006 (Plan Date)
Landscape Details - Sheet 2	MP07 ISSUE C	21-AUG-2006 (Plan Date)
Ecological Sustainability Initiatives	MP08 ISSUE B	27-MAR-2006 (Plan Date)
Landscape Sections - Sheet 3	MP11 ISSUE B	27-MAR-2006 (Plan Date)
Hydraulic Analysis Report - Cardno	JOB NO 3500/34	23-MAY-2006 (Plan Date)
Sewer Augmentation	PLAN NO S917956	03-OCT-2006 (Plan Date)

This notice includes extracts from the Act with respect to making representations about conditions, negotiated decisions, suspension of the appeal period, and lodging an Appeal.

This approval is for:

Preliminary Approval for a Material Change of Use overriding the planning scheme under section 3.1.6 of the IPA for Multi-unit Dwelling, Retirement Village, Shop, Office and Restaurant

Should you want to discuss the approval, please do not hesitate to contact me on (07) 340 36605.

Yours faithfully

[redacted]

Customer and Community Services

BRISBANE CITY COUNCIL'S APPROVAL PACKAGE

APPLICATION DETAILS

This package relates to the application detailed below:

Address of site:	15 CANSDALE ST, YERONGA QLD 4104
Real property description of site:	RP150512/L1 Y'PILLY
Aspects of development and type of approval:	1. Material Change Of Use (Preliminary Approval) - Retirement Village including Aged Care Accommodation and ancillary Shop, Office and Restaurant
Description of proposal:	Preliminary Approval to override the Planning Scheme under S3.1.6 for a Material Change of Use for a Multi Unit Dwelling (Retirement Village and Aged Care Accommodation) with ancillary uses including a Shop, an Office and a Restaurant
Purpose:	Multi Unit Dwelling, Retirement Village, Aged Care Accommodation, Shop, Office and Restaurant
Council File Reference:	DRS/USE/H05-917956
Package status:	APPROVED - Version 3 (9th of October, 2006 01:49:53 PM)
Package generated on:	11th of October, 2006

PROJECT TEAM

The assessment of this application has been undertaken by:

[redacted]
ASSESSMENT MANAGER
Development Assessment Team
SOUTH BRISBANE
ADMINISTRATION CENTRE
Development and Regulatory
Services
Phone: (07) 340[redacted]

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Urban Planner
Development Assessment Team
SOUTH REGIONAL BUSINESS
CENTRE
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Architect
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Engineering Officer
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WEST BRISBANE
ADMINISTRATION CENTRE
Development and Regulatory
Services
Phone:

[redacted]
Pollution Officer
Development Assessment Team
BRISBANE ADMINISTRATION
CENTRE
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Phone: 340[redacted]

PAUL HILLS
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Phone: (07) 340[redacted]

KEVIN MATTHEWS
Principal Engineering Officer
Development Assessment Team
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Development and Regulatory
Services
Phone: 07 340[redacted]

[redacted]
Landscape Architect
Development Assessment Team
SOUTH BRISBANE
ADMINISTRATION CENTRE
Development and Regulatory
Services
Phone: 340[redacted]

DRAWINGS AND DOCUMENTS

The term 'drawings and documents', or similar expressions, means:

Drawing or Document	Number	Plan Date
Precinct Plan	SD 02 REV E	18-MAY-2006 (Plan Date)
Building Envelope Plan	SD 03 REV H	22-AUG-2006 (Plan Date)
Circulation Plan	SD 04 REV E	18-MAY-2006 (Plan Date)
Conceptual Staging Plan	SD05 REV G	18-AUG-2006 (Plan Date)
Conceptual Basement Plan	SD 06 REV D	18-MAY-2006 (Plan Date)
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Indicative Site Elevations	SD 07.2 REV D	04-MAY-2006 (Plan Date)
Building 1 - Envelope Articulation	SD 07.3 REV A	23-AUG-2006 (Plan Date)
Indicative Site Elevations	SD 08 REV D	04-MAY-2006 (Plan Date)
Context Sections	SD 09 REV C	21-MAR-2006 (Plan Date)
Site Sections	SD 10 REV C	21-MAR-2006 (Plan Date)
Site Sections	SD 11 REV C	21-MAR-2006 (Plan Date)
Landscape Master Plan	MP03 ISSUE D	21-AUG-2006 (Plan Date)
Landscape Sections Sheet 1	MP04 ISSUE C	21-AUG-2006 (Plan Date)
Landscape Sections Sheet 2	MP05 ISSUE C	21-AUG-2006 (Plan Date)
Landscape Details Sheet 1	MP06 ISSUE C	21-AUG-2006 (Plan Date)
Landscape Details - Sheet 2	MP07 ISSUE C	21-AUG-2006 (Plan Date)
Ecological Sustainability Initiatives	MP08 ISSUE B	27-MAR-2006 (Plan Date)
Landscape Sections - Sheet 3	MP11 ISSUE B	27-MAR-2006 (Plan Date)
Hydraulic Analysis Report - Cardno	JOB NO 3500/34	23-MAY-2006 (Plan Date)
Sewer Augmentation	PLAN NO S917956	03-OCT-2006 (Plan Date)

HIGHLIGHTS

Due to their importance, the following conditions have been highlighted in **bold** in this document: 5

ADVICE

Please see the attached document for any advices.

Section to Which These Conditions Relate: 1. Material Change Of Use (Preliminary Approval)

Section Name: Retirement Village including Aged Care Accommodation and ancillary Shop, Office and Restaurant

GENERAL/PLANNING REQUIREMENTS

	TIMING
1) Development of the site is to be generally in accordance with Yeronga Village Master Plan illustrated on Drawing No A Issue A and dated 26/09/2006. *GUIDELINE* *This condition refers to the Master Plan to which the Preliminary Approval relates and is the means of defining the extent of the approval.*	As indicated

2) For the purpose of this Preliminary Approval pursuant to Section 3.1.6(2) of the *Integrated Planning Act*, all assessable development on the site shall be subject to the following Level of Assessment Table and Applicable City Plan Codes as amended from time to time:

As indicated

Self Assessment	Applicable Code
1. **Home Business** where complying with the Acceptable Solutions in the Home Business Code	Home Business Code
2. **Outdoor Lighting** where complying with the Acceptable Solutions in the Light Nuisance Code	Light Nuisance Code
Code Assessment	**Applicable Code**
1. Operational Work for **Filling or Excavation**	Filling and Excavation Code
2. **Reconfiguring a lot**, other than volumetric subdivision not associated with an existing or approved building	Subdivision Code
3. **Satellite Dish** (where not exempt development)	Satellite Dish Code
4. **Single Unit Dwelling** (where not involving building work) and involving **reconfiguring a lot** to create the required freehold lot where: i. used in association with a **Retirement Village** (as defined in Chapter 3 Part 10 of the City Plan); or ii. used in association with **Aged Care Accommodation** (as defined in Chapter 3 Part 10 of the City Plan); and iii. complying with the conditions in the Preliminary Approval; and iv. any relevant "secondary codes" are to be considered part of the "primary code"; and v. complying with the Medium Density Residential provisions of the Residential Design Single Unit Dwelling Code	Residential Design - Single Unit Dwelling Code and Local Plan Code
5. **Multi Unit Dwelling** (as defined in Chapter 3 Part 10 of the City Plan) where: i. used for the purpose of a **Retirement Village** (as defined in Chapter 3 Part 10 of the City Plan); or ii. used for the purpose of **Aged Care Accommodation** (as defined in Chapter 3 Part 10 of the City Plan); and iii. complying with the conditions in the Preliminary Approval; and iv. any relevant "secondary codes" are to be considered part of the "primary code".	Residential Design - Medium Density Code and Local Plan Code
6. **Shop** or **Office** or **Restaurant** (as defined in Chapter 3 Part 10 of the City Plan) where: i. predominantly servicing residents within the site; and ii. complying with the conditions in the Preliminary Approval; and iii. the total combined area of all three	Centre Design Code, Centre Amenity and Performance Code and Local Plan Code

uses is no greater than 250 m^2 in gross floor area; and iv. any relevant "secondary codes" are to be considered part of the "primary code".	
Impact Assessment - Generally Appropriate	**Applicable Code**
1. Child Care Facility	Child Care Facility Code
2. Home Business where not complying with the self assessable Acceptable Solutions in the Home Business Code	Home Business Code
3. Short Term Accommodation (as defined in Chapter 3 Part 10 of the City Plan) where: i. used in association with a **Retirement Village** (as defined in Chapter 3 Part 10 of the City Plan); or ii. used in association with **Aged Care Accommodation** (as defined in Chapter 3 Part 10 of the City Plan); and iii. complying with the conditions in the Preliminary Approval; and iv. any relevant "secondary codes" are to be considered part of the "primary code"	Short Term Accommodation Code and Local Plan Code
4. Volumetric Subdivision where not associated with an existing or approved building	Subdivision Code
5. Multi Unit Dwelling (as defined in Chapter 3 Part 10 of the City Plan) where: i. used for the purpose of a **Retirement Village** (as defined in Chapter 3 Part 10 of the City Plan); or ii. used for the purpose of **Aged Care Accommodation** (as defined in Chapter 3 Part 10 of the City Plan); and iii. not complying with the Acceptable Solutions of the Residential Design - Medium Density Code; and iv. complying with the conditions in the Preliminary Approval; and v. the relevant "secondary codes" are to be considered part of the "primary code".	Residential Design - Medium Density Code
6. Utility Installation	
Impact Assessment - Generally Inappropriate	**Applicable Code**
1. Any other material change of use	

The above Level of Assessment Table shall be read in conjunction with City Plan 2000, Chapter 3, Section 2 - General Assessment Process - as at the date of this approval taking effect.

GUIDELINE
This condition is imposed to ensure that all future assessable development on the site shall be subject to the Level of Assessment Table above. This should be read in conjunctiono with the most recent version of amendments of City Plan 2000. The preliminary approval overrides City Plan 2000 pursuant to Section 3.1.6 of the Integrated Planning Act 1997. The applicable primary code(s) used in assessing any assessable development are those identified as being an applicable code(s) in the

3) Ensure that with any Material Change of Use and/or Reconfiguring a lot, which ever is sooner, all future development maintains the following: (a) The combined maximum Gross Floor Area for the development as shown on Precinct Plan Drawing SD 02 Rev E and dated 15/05/2006, and does not exceed 36,000m^2 where: (i) Building H has a maximum Gross Floor Area of 5,000 m^2; and (ii) the remainder of the buildings have a maximum combined Gross Floor Area of 31,000 m^2. (b) All buildings on the site are contained within the approved building envelope plan as shown on Drawing No. SD 03 Rev H and dated 22/08/2006; (c) The overall height of the buildings inclusive of all structures and shown on Drawing No SD 10 Rev C and dated 21/03/2006 is to be as follows: i. any five storey buildings do not exceed 18.4 metres above the minimum habitable floor level of Q100 plus 0.500metres (current level is 7.2 metres AHD); and ii. any four storey buildings do not exceed 15.4 metres above the minimum habitable floor level of Q100 plus 0.500metres (current level is 7.2 metres AHD); and iii. any three storey buildings do not exceed 12.4 metres above the minimum habitable floor level of Q100 plus 0.500metres (current level is 7.2 metres AHD); and (d) Any building setbacks along the northern property boundary with Leyshon Park are to be generally as shown on Drawing No. SD 03 Rev H and dated 22/08/2006 and to be no closer than: (i) Building A1 and A 2 - 6 metres; and (ii) Buildings B and C - 8 metres (e) Any building setbacks along the eastern property boundary to Fehlberg Park are to be generally as shown on Drawing No SD 03 Rev H and dated 22/08/2006 and MPO3 Issue D and dated 21/08/2006 and to be no closer than 25 metres from the existing eastern property boundary at the date of this approval. (f) Any building setbacks to the southern property boundary with Venner Road and Hyde Park are to be generally as shown on Drawing No. SD 03 Rev H and dated 22/08/2006 and to be no closer than: (i) Buildings H and E - 6 metres; and (ii) Building D - 8 metres (g) Any building setbacks to western property boundary on Cansdale Street are to be generally as shown on Drawing No. SD 03 Rev H and dated 22/08/2006 and to be no closer than 6 metres (h) No buildings, structures or uses are to occur within the waterway corridor except as shown on Drawing No SD 03 Rev H and dated 22/08/2006 and MPO3 Issue D and dated 21/08/2006. (i) The design elements to reduce the appearance of building bulk includes as a minimum the design elements shown in the following plans, Drawing No. SD 07.1 Rev D, SD 07.2 Rev D and SD 08 Rev D all dated 04/05/2006 and SD07.3 Rev A and dated 23/08/2006 ; (j) The rooftops contribute to the architectural distinction of the building and create a coherent roofscape for the building by the inclusion of the following design aspects: (i) The rooftop is designed to enable future inclusion of satellite dishes/telecommunication facilities in an unobtrusive manner; and (ii) Roofscape must be attractive and not marred by cluttered display of plant and equipment. (k) Any screening device to balconies or terraces are not fully enclosed and are designed as an integral part of the building and are installed/constructed as part of the construction of the building; *GUIDELINE* *This condition is imposed to outline where the proposal is to incorporate other matters not mentioned in the Acceptable Solutions in the relevant code(s). This condition should be*	As indicated Prior to the commencement of the use

4) Incorporate into the design and construction of any residential building, best practice sustainable development technology and design practices addressing the Brisbane City Council's 15 Principles of Sustainability including but not limited to: i. Passive design; ii. Water use; iii. Materials use; iv. Energy use; v. Site impacts; vi. Transport impacts; and vii. Social and community impacts *GUIDELINE* *This condition is imposed to ensure that the proposed buildings are designed to ensure that Brisbane City Council's 15 principles of sustainable design are met and incorporate best practice in sustainable development.*	As indicated
5) **All aspects of development as outlined within this section, to which the conditions relate in the "Preliminary Approval Package", are to be completed before midnight on 30 November 2012.** *GUIDELINE* *This condition is imposed pursuant to 3.5.21A(2)(a) of the Integrated Planning Act 1997. The intent of this condition is to specify the particular time assessable development or an aspect of assessable development is to be completed before the preliminary approval lapses. Any extension of the period stated in the condition is required to be made in accordance with Sections 3.5.22 and 3.5.33 of the Integrated Planning Act.*	**As indicated**

MONETARY CONTRIBUTIONS & SECURITIES

	TIMING
6) Water supply and Sewerage Headworks: Prior to endorsement of a "Community Management Statement", Prior to a Material Change of Use and/or Reconfiguring a Lot, which ever is sooner, pay to Council a monetary contribution towards the cost of water supply sewerage head works at the rate prevailing at the time when payment is made. The contribution is calculated on the current applicable rate per Equivalent Tenement based on the proposed use of the site. **This condition will be applied to any Material Change of Use and/or Reconfiguring a Lot application until such time as the "Infrastructure Charges Plan" is applied over the subject site as defined in Section 5.1.4 of the Integrated Planning Act.** *GUIDELINE* *This condition is imposed to require the payment of a proportional contribution towards a satisfactory water and sewerage treatment system within the locality of the site. For any enquiries about this condition, please contact the Engineering Delegate, Development and Regulatory Services.*	As indicated

7) Parkland Prior to endorsement of a "Community Management Statement", Prior to a Material Change of Use and/or Reconfiguring a Lot, which ever is sooner, pay to Council a monetary contribution towards the cost of parkland at the rate prevailing at the time when payment is made. The contribution is calculated on the current applicable rate as per Planning Scheme Policy 1 Development Contributions for Parks and Recreational Facilities Arising from Subdivision of Land and from Material Change of Use or Development of Land. Where a contribution of land has been made for parkland this can be offset against the parkland contribution for subsequent development approvals. **This condition will be applied to any Material Change of Use and/or Reconfiguring a Lot application until such time as the "Infrastructure Charges Plan" is applied over the subject site as defined in Section 5.1.4 of the Integrated Planning Act.** *GUIDELINE* *This condition is imposed to require the payment of a proportional contribution towards parkland within the locality of the site. For any enquiries about this condition, please contact the Engineering Delegate, Development and Regulatory Services.*	As indicated

ECOLOGY

	TIMING
8) All future development applications for a Material Change of Use and/or Reconfiguring a Lot, which ever is sooner, are to submit a Rehabilitation Plan which includes the following: (a) The Rehabilitation Plan is to be in the form of scaled plans and supporting documentation generally in accordance with the Masterplan Drawing A Issues A and dated 26/09/2006 and Drawing Nos MP03, MP04, MP05, MP06, MP07, MP08, and MP11 all dated 21/08/2006 and that includes at least the following information: i. The extent of the VMP is to include evaluation of all areas including, proposed road reserves, external works and development areas; ii. The location and description of existing vegetation including species and botanical name plus the height and canopy spread; iii. The location and extent of all site works including all proposed infrastructure and areas of earthworks. iv. Detail design of all civil works is to be cognisant of environmental values. Alternative solutions may be required in some instances, to protect significant vegetation (eg alternative service alignments, variations to batter slopes and tunnel boring); v. The location and description of all vegetation to be retained and that to be removed; vi. A description of all measures to be used to protect vegetation and habitat features to be retained during construction; vii. A description of all pruning and tree surgery works (to AS 4373/96) to maintain health and stability of trees and reduce potential hazards for future residents; viii. The location and extent of storage and stockpile areas for cleared vegetation and site mulch; ix. A description of all methods to salvage and/or re-use cleared vegetation. Generally cleared vegetation is to be mulched for reuse in landscape/rehabilitation works; and x. Details of all measures to protect and recover fauna during clearing operations, including; presence of a qualified wildlife officer during clearing operations, preclearing inspections, staging and sequence of clearing and recovery procedures. *GUIDELINE* *This condition is imposed when the proposed development includes areas to be rehabilitated. It is expected that rehabilitation works will be carried out to a high standard and maintained accordingly. The requirements of this condition may be included as part of an Environment Management Plan (EMP) OR Vegetation Management Plan (VMP). For enquiries about this condition, please contact the Ecologist, Development Assessment.*	As indicated

LANDSCAPE & OPEN SPACE

	TIMING
Prior to the commencement of any Material Change of Use and/or endorsement of a survey plan for Reconfiguring a Lot, which ever is sooner, undertake the following: (a) Transfer and surrender to the Crown to be dedicated as park and recreation reserve with Council as Trustee the land indicated as a pathway along part of the eastern property boundary within the site and shown on the Landscape Master Plan Drawing No. MP03 Issue D and dated 21/08/2006 *GUIDELINE* *This condition requires the dedication of the part of the site along the eastern boundary containing the pedestrian/cycle path.*	As indicated

10) All future development applications for a Material Change of Use, are to submit a Landscape Concept Plan which includes at least the following: (a) (i) **Existing site conditions:** existing contours, and vegetation on site and on adjoining properties (including footpath) which impact on the site. Details of heights, spread, DBH, location and accurate species nomenclature are to be provided. Any earthworks proposed within the vicinity of vegetation to be retained is to be documented. (ii) **Proposed site conditions:** proposed surface treatments and indicative spot levels, including but not limited to buildings, pedestrian pathways to private and public areas, proposed steps, driveways, car parking areas, field gullies, services, proposed overland flow paths, proposed batter extents and grade (above and below ground level) and retaining walls. Provide details on proposed locations, heights, materials and extent of proposed fencing. (iii) **Extent, function and character of areas to be landscaped:** proposed plant massing to address buffer planting and critical interface points, shade tree planting and onsite interface with parkland. Provide inset plans on proposed pedestrian congregation areas, communal and private open space areas, waterway and critical interfaces. (iv) **Proposed resolution of earthworks:** location, height and type of retaining walls, stabilisation of steep areas, interface with adjoining land uses and the footpath. (v) **Typical sections and construction detail:** for critical issues including sections showing depth of topsoil, mulch and drainage medium for proposed retaining walls within landscaped areas. (vi) **Specification notes:** standard specification notes including but not limited to soil preparation, methods for the protection of vegetation to be retained during construction activity on site, maintenance establishment and irrigation. (vii) **Proposed planting palette:** indicative tree, shrub, ground cover and accent plant species, together with intended size at time of planting. Provision of shade trees to pedestrian congregation areas and screen trees to park and sensitive public interfaces. (viii) **Proposed finishes palette:** for all hard landscape items such as paths, pavers, retaining walls, railings and fences and any other ground treatments such as decking. *GUIDELINE* *This condition outlines the minimum requirements of any landscaping plan submitted for the site to ensure landscaping of the site is to a high standard.*	As indicated

ENGINEERING

	TIMING
11) Prior to commencement of any Material Change of Use all buildings/structures have been designed in accordance with Council's *"Subdivision and Development Guidelines"* to ensure that minimum habitable floor levels are 500 mm above the 100 year (ARI) flood level (river and creek flooding) or 500 mm above the 50 year (ARI) (overland flow level) whichever is the greater. *GUIDELINE* *This condition is imposed when the site is affected by flooding. The 100 year ARI event is applicable to river and/or creek flooding. If the catchment is localised, the 50 year ARI event will be applicable unless the site is also affected by creek or river flooding in which case the higher flood level is to be used. The minimum habitable floor level at the time of this approval is 7.2 metres AHD and the current minimum level for non-habitable floor levels is 7.0 AHD. For flood level information, Council Flood Reports are now available from any of Council's Customer Service Centres and Regional Business Centres. The new Flood Report provides the latest flood information for a nominated property plus other useful information about flooding and your development.*	As indicated

12) Prior to commencement of use of any Material Change of Use and/or Reconfiguring a Lot construct the development in accordance with the approved hydraulics report prepared by Cardno dated 23rd May 2006, including i. External stormwater works as stated in Section 6.3 in the above report and shown on Figure 7 ii. Rehabilitation of the existing waterway and subject to the following additional requirements: iii. All fences proposed to be constructed across or over the overland flowpath are to allow the free passage of the overland flows; iv. Easements for overland flow and access purposes are to be granted free of cost and compensation to Council over those areas identified in the report; and v. Provide certification to the Engineering Delegate, Development and Regulatory Services that the development has been constructed in accordance with the approved hydraulic report. *GUIDELINE* *This condition is required to ensure that the development provides the outcomes as determined in the previously approved hydraulic report. For enquiries about this condition, please contact the Engineering Delegate, Development and Regulatory Services.*	As indicated
13) Prior to commencement of use of any Material Change of Use and/or Reconfiguring a Lot, submit a traffic report prepared in accordance with the City Plan, demonstrating that the traffic generated from the development stage and including the cumulative impact from all approved stages of development does not require any works to be undertaken as follows; (a) Upgrading of the intersection at Hyde Rd/Cansdale St/Venner Rd; and (b) along the entire frontage of the site to Cansdale Street including both sides of the Cansdale Street frontage; *GUIDELINE* *This condition is imposed when works within the road reserve are required. The condition is imposed so as to ensure that the required works are carried out in accordance with this approval and relevant standards. For enquiries regarding this condition, please contact the Engineering Delegate, Development and Regulatory Services.*	As indicated
14) Prior to the commencement of use of any Material Change of Use and/or Reconfiguring a Lot, construct the following external sewer headworks in accordance with Council's "Water and Sewerage Reticulation Standards": The system headworks component will be credited against the actual cost of construction of the required works comprising headworks. (a) A sewer from point A to point B as noted on Plan No. S917956; and (b) A sewer from point B to point C as noted on Plan No. S917956; *GUIDELINE* *This condition is imposed when it is necessary to bring sewerage infrastructure to the site. Plans must be prepared in accordance with Council's "Water and Sewerage Reticulation Standards".*	As indicated

**** End of Package ****

1
A05/171410
[redacted]
Yeronga Football Club Inc.
Po Box 6063
FAIRFIELD GARDENS QLD 4103

2
A05/174176
[redacted]
19 Ormadale Road
YERONGA QLD 4104

3
A05/182779
[redacted]
22 Diane Street
YERONGA QLD 4104

4
A05/182777
[redacted]
22 Diane Street
YERONGA QLD 4104

5
A05/183278
[redacted]
26 Diane St
YERONGA QLD 4104

6
A05/193895
[redacted]
Cnr Ryde Road & Rome Street
North
YERONGA QLD 4104

7
A05/193897
[redacted]
47 Anita Street
YERONGA QLD 4104

8
A05/193903
[redacted]
Re/Max Colonial
445 Ipswich Road
ANNERLEY QLD 4103

9
A05/194805
[redacted]
36 William Parade
FAIRFIELD QLD 4103

10
A05/194800
[redacted]
45 Forsyth Street
FAIRFIELD QLD 4103

11
A05/195950
[redacted]
65 Brisbane Corso
FAIRFIELD QLD 4103

12
A05/199261
[redacted]
122 Kadumba Street
YERONGA QLD 4104

13
A05/199264
[redacted]
14 Cook Street
YERONGA QLD 4104

14
A05/199266
[redacted]
Association
Att: Terry Neill, President, Ydra
Po Box 6351
FAIRFIELD QLD 4103



Yeronga Village MASTERPLAN

PLANS AND DOCUMENTS referred to in the APPROVAL dated - 3 [illegible] 2006

Drawing No: A Issue A Date: 26.09.2006

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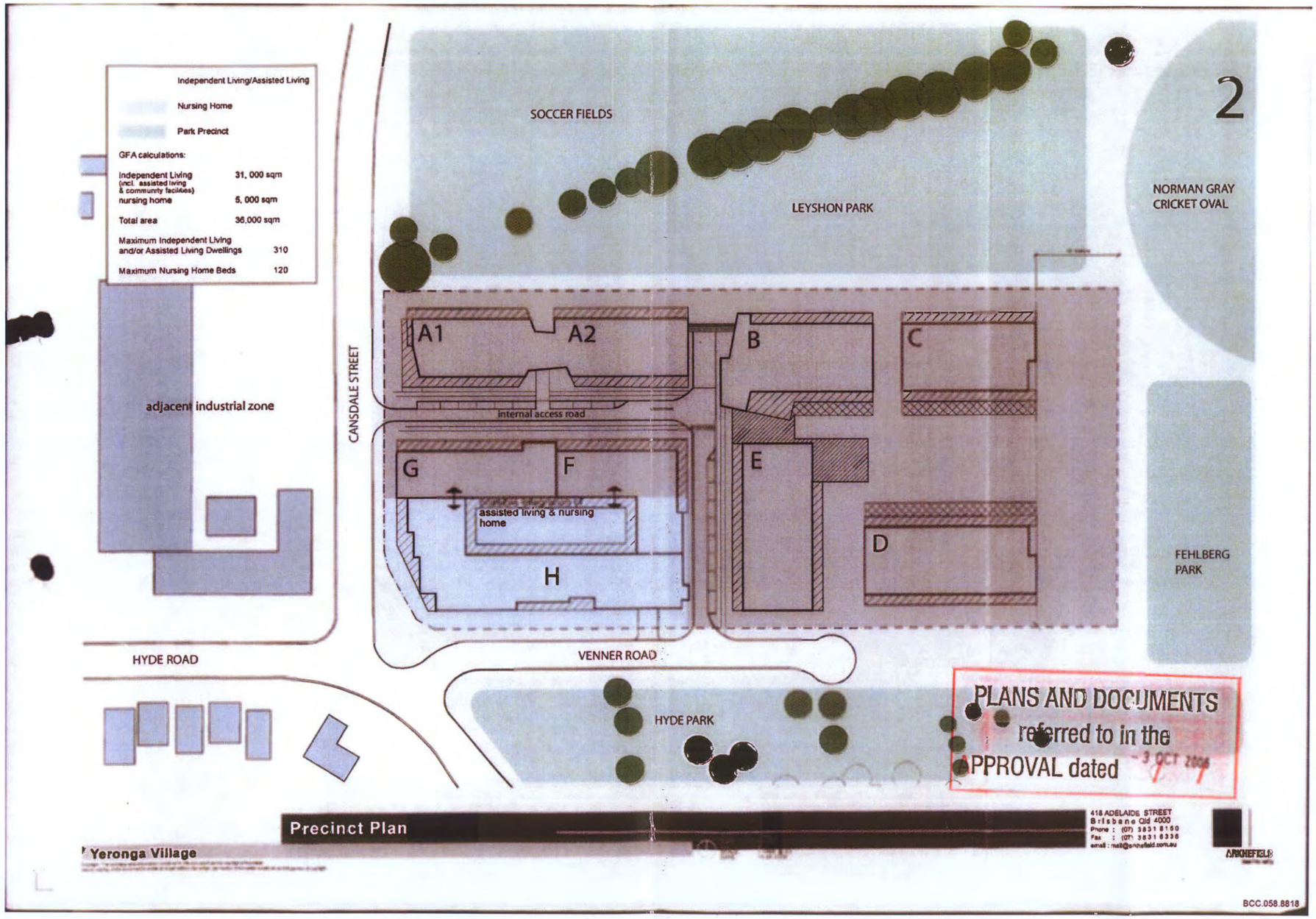
Independent Living/Assisted Living
Nursing Home
Park Precinct
GFA calculations:
Independent Living (incl. assisted living & community facilities) 31, 000 sqm
nursing home 5, 000 sqm
Total area 36,000 sqm
Maximum Independent Living and/or Assisted Living Dwellings 310
Maximum Nursing Home Beds 120
SOCCER FIELDS
LEYSHON PARK
NORMAN GRAY CRICKET OVAL
2
adjacent industrial zone
CANSDALE STREET
A1
A2
B
C
internal access road
G
F
E
assisted living & nursing home
H
D
FEHLBERG PARK
HYDE ROAD
VENNER ROAD
HYDE PARK
PLANS AND DOCUMENTS referred to in the APPROVAL dated - 3 OCT 2008
Precinct Plan
Yeronga Village
418 ADELAIDE STREET
Brisbane Qld 4000
Phone : (07) 3831 8150
Fax : (07) 3831 8338
email : mail@archefield.com.au
ARCHEFIELD
BCC.058.8818

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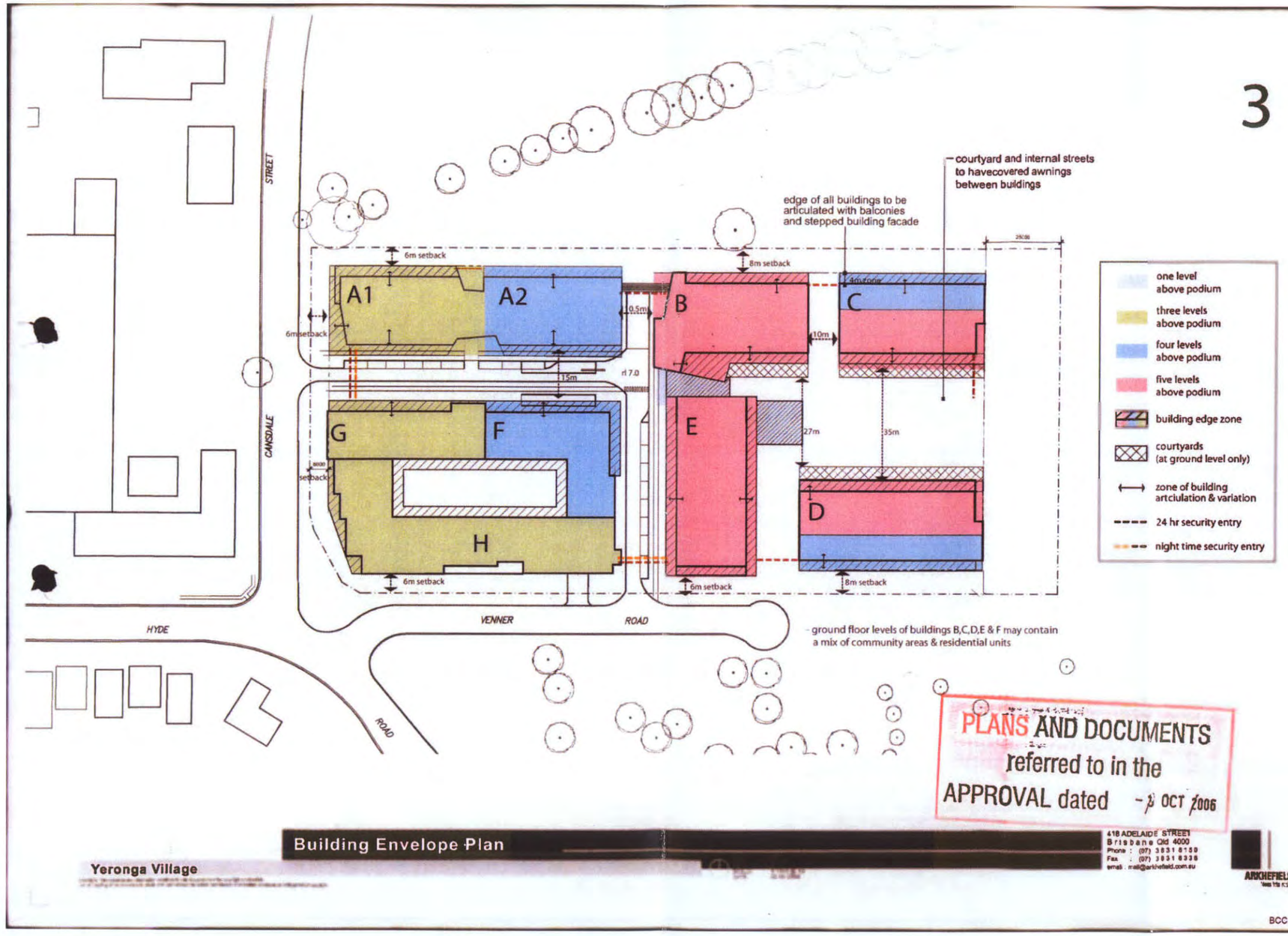

PLANS AND DOCUMENTS
referred to in the
APPROVAL dated - 3 OCT 2006

Building Envelope Plan

Yeronga Village

418 ADELAIDE STREET
Brisbane Qld 4000
Phone : (07) 3831 6150
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email : mail@arkhefield.com.au
ARKHEFIELD

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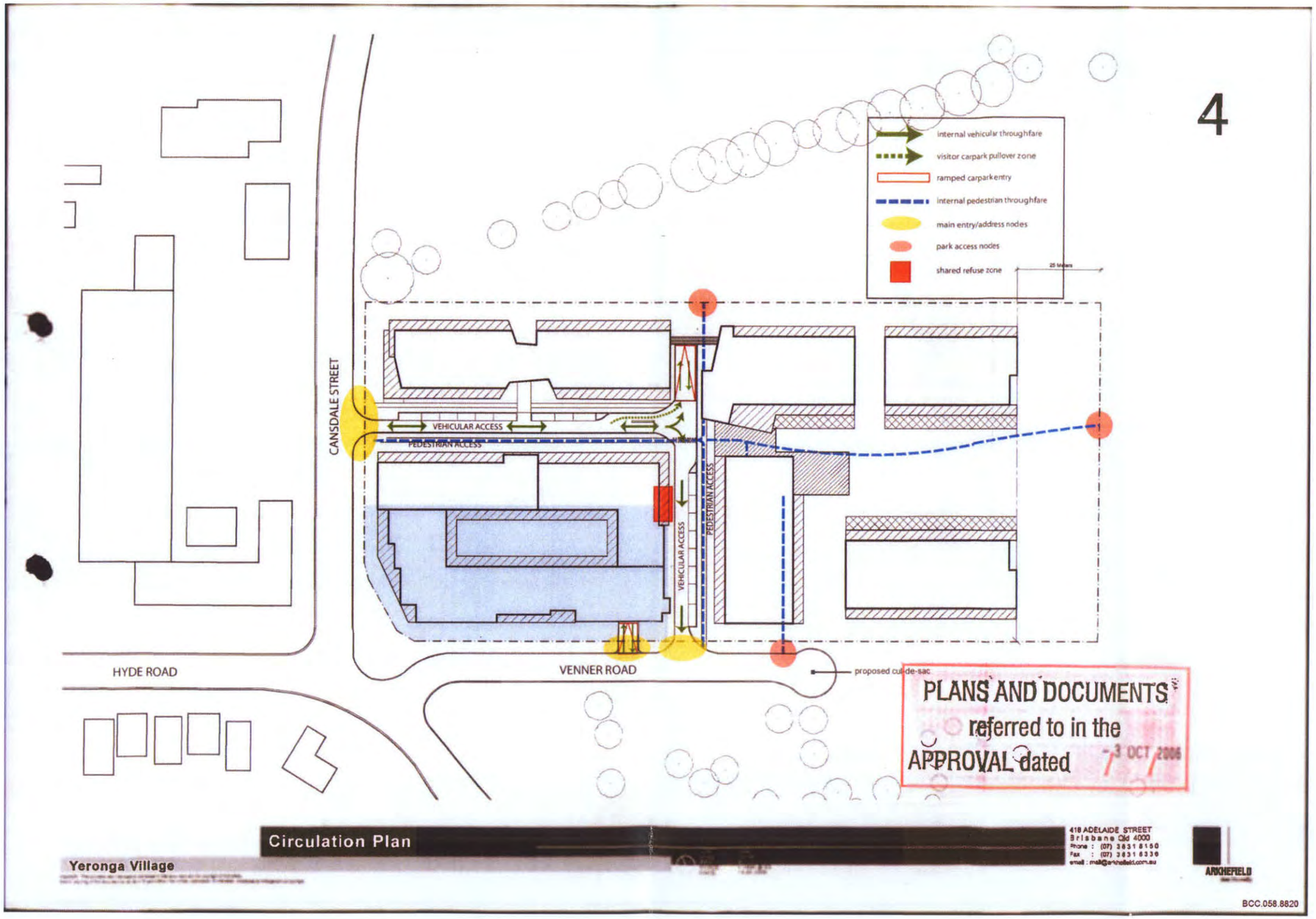

PLANS AND DOCUMENTS
referred to in the
APPROVAL dated 13 OCT 2006

Circulation Plan

Yeronga Village

418 ADELAIDE STREET
Brisbane Qld 4000
Phone : (07) 3831 8150
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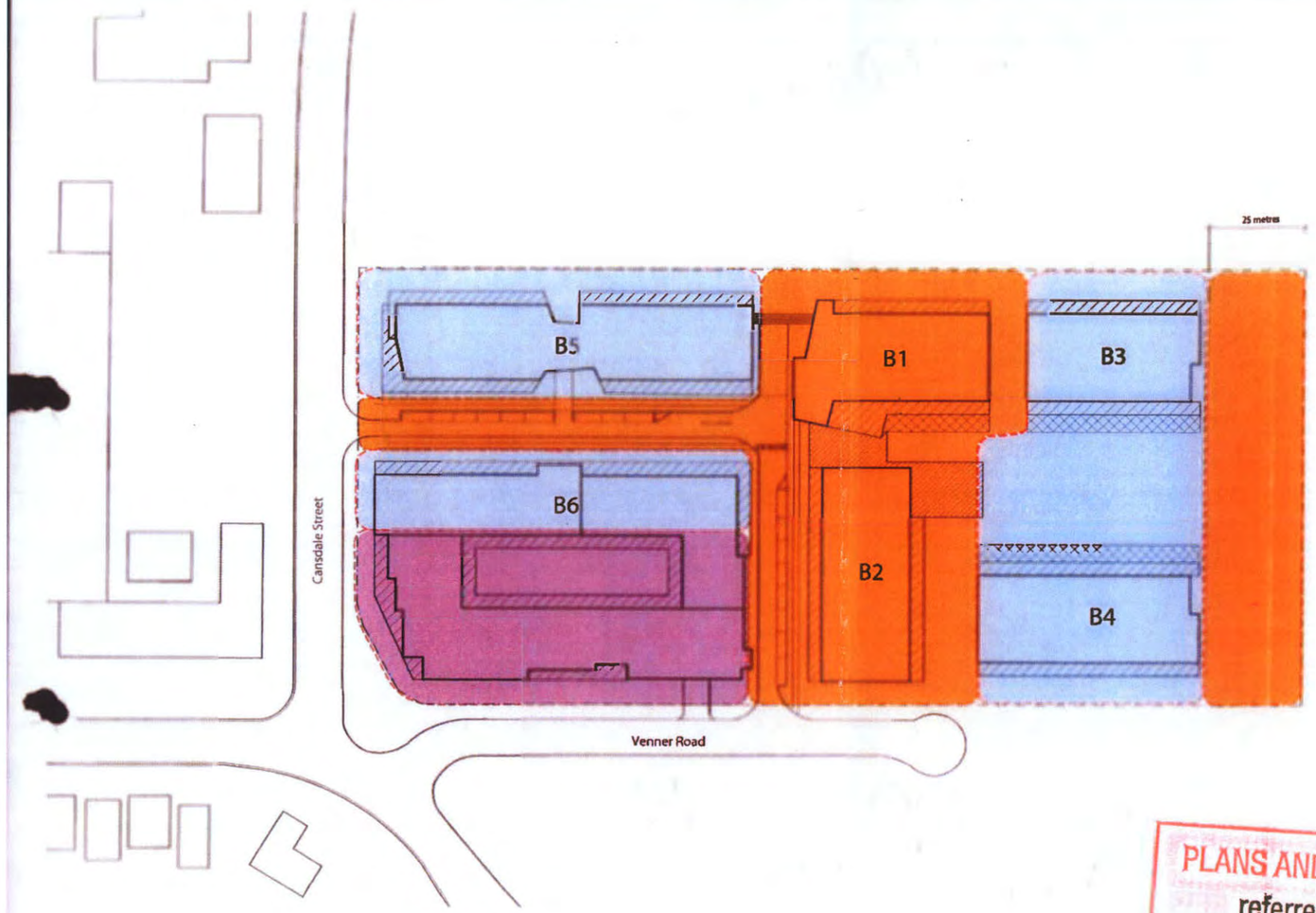

Note:

Stage 1 includes external works

Subsequent stages are indicative only and non-sequential. Individual buildings will be constructed at separate stages.

PLANS AND DOCUMENTS
referred to in the
APPROVAL dated - 3 OCT 2006

Conceptual Staging Plan

Yeronga Village

418 ADELAIDE STREET
Brisbane Qld 4000
Phone : (07) 3831 8150
Fax : (07) 3831 9336
email : mail@arkhefield.com.au

ARKHEFIELD

BCC.058.8821

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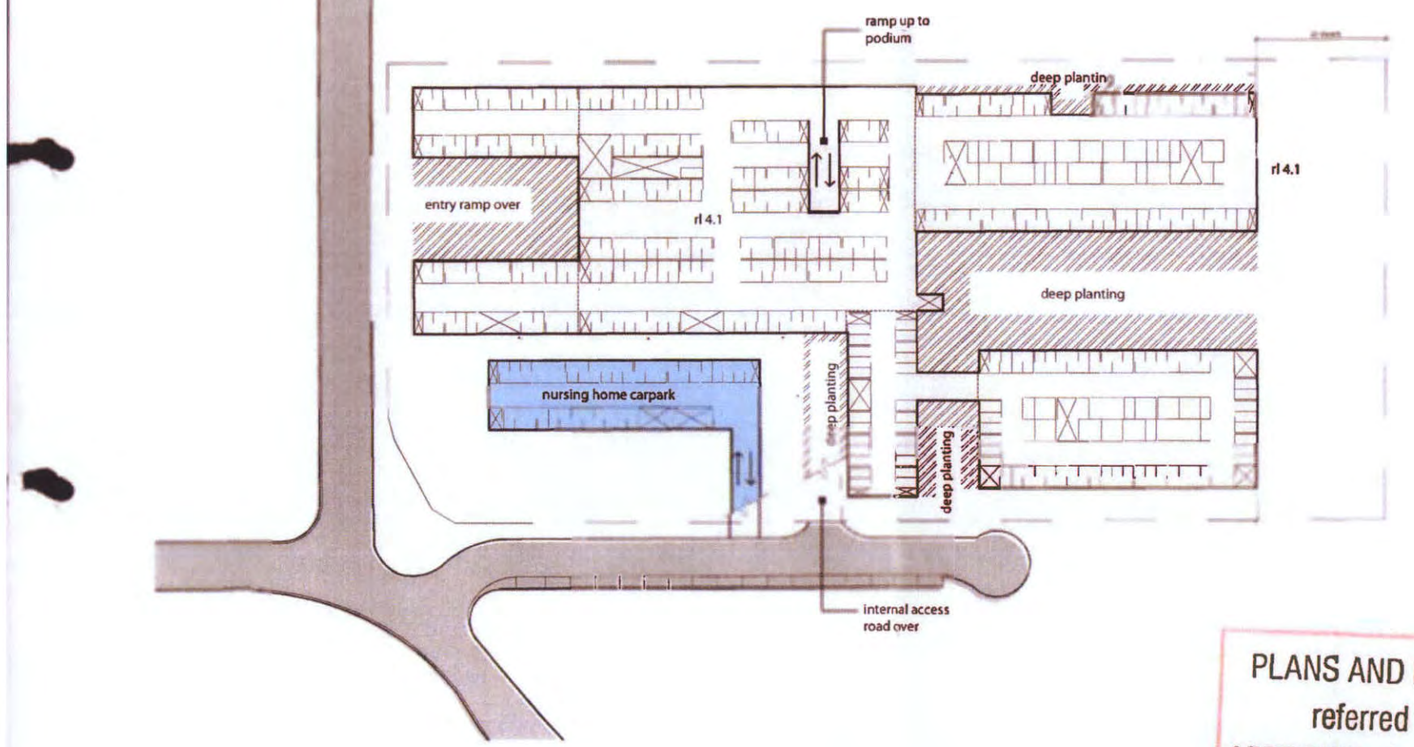

independant living & visitors carpark

nursing home carpark

road at ground level

residents' workshop, store room and outdoor room

carparking numbers:

residential up to - 278 cars
(1 per independant living unit)

staff & visitors -
basement up to - 105 cars
on grade up to - 17 cars

nursing home - 30 cars

total up to 430 cars

Basement is to be staged relative to above podium works as required. Layout is indicative only.

PLANS AND DOCUMENTS
referred to in the
APPROVAL dated - 3 OCT 2006

Conceptual Basement Plan

Yeronga Village

418 ADELAIDE STREET
Brisbane Qld 4000
Phone : (07) 3831 8188
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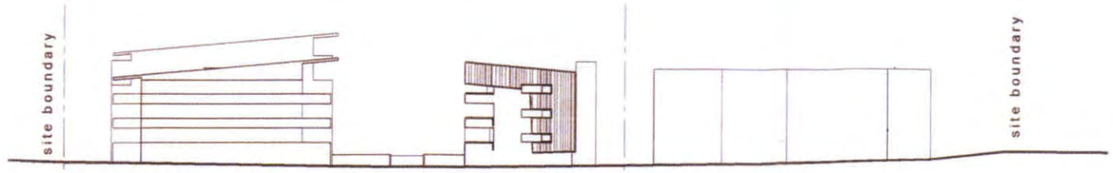
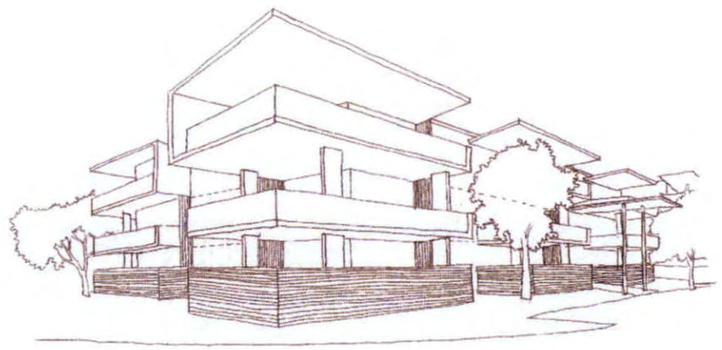
ARKHEFIELD

BCC.058.8822

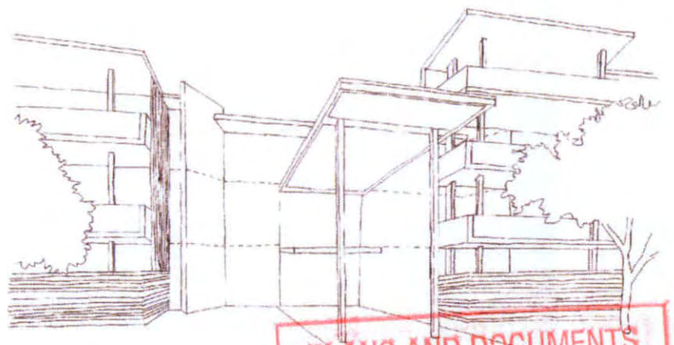
7.1



Cansdale St elevation 1:500

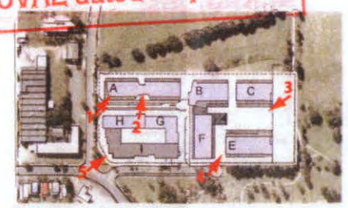


View 1



View 2

PLANS AND DOCUMENTS
referred to in the
APPROVAL dated - 3 OCT 2006



Perspective Key

Indicative Site Elevations

Yeronga Village

418 ADELAIDE STREET
Brisbane Qld 4000
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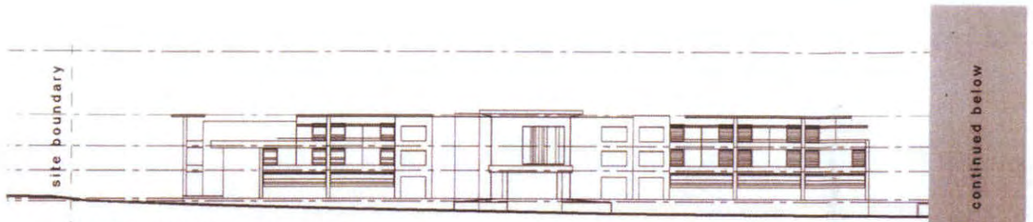
email : mail@archefield.com.au

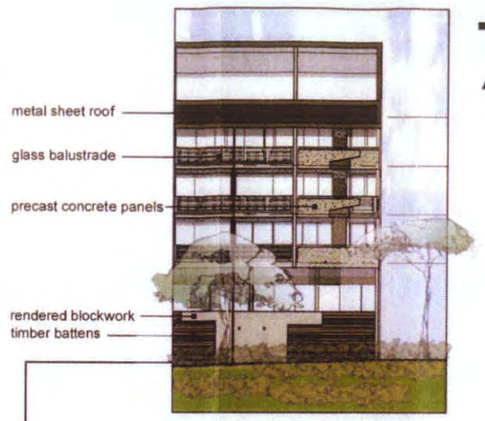
ARCHEFIELD

BCC.058.8823

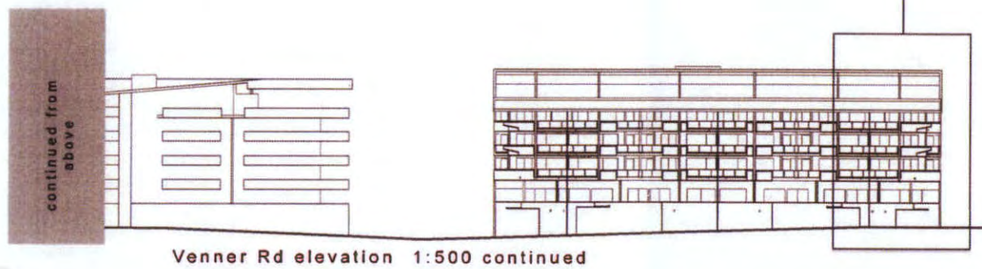
7.2



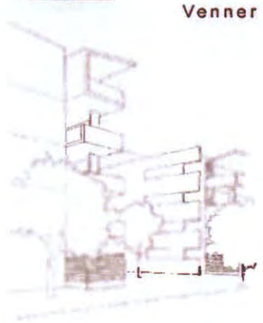
Venner Rd elevation 1:500



indicative elevations



Venner Rd elevation 1:500 continued



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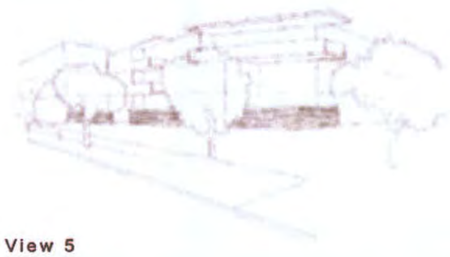

View 5

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Perspective Key

Indicative Site Elevations

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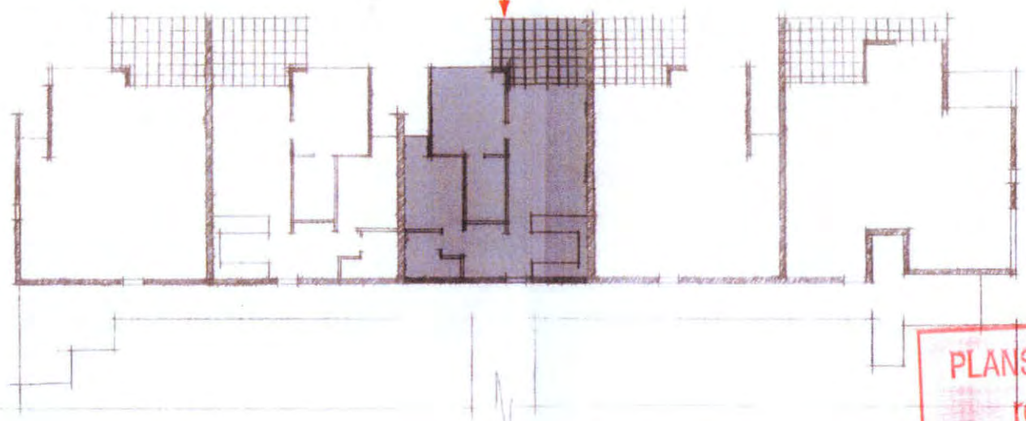
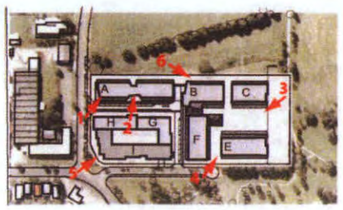
BCC.058.8824

7.3

Indicative Unit Plan



Typical Floor Plan Showing Facade Articulation 1:200



Perspective Key



View 6

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Building 1 - Envelope Articulation

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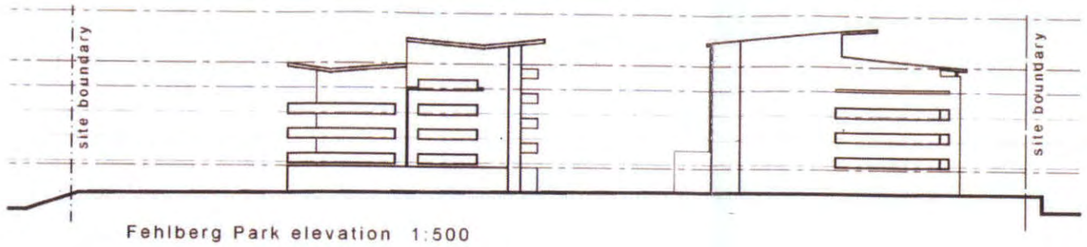
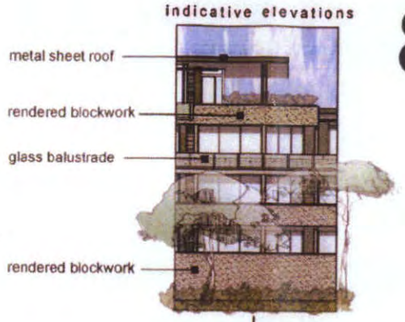
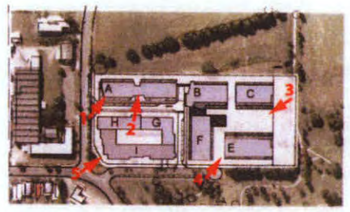


Fehlberg Park elevation 1:500

indicative elevations





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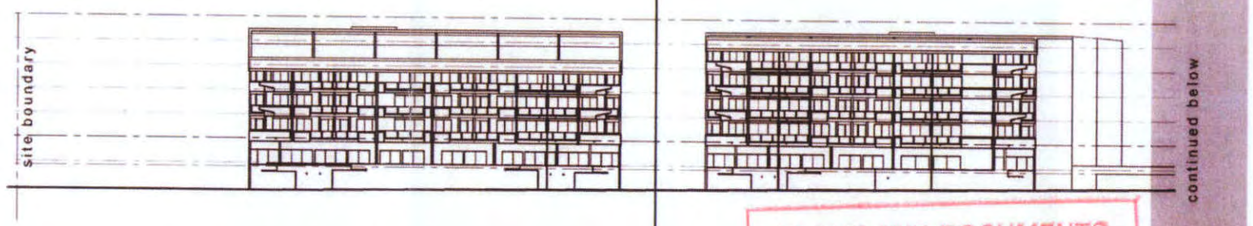

Leyshon Park elevation 1:500

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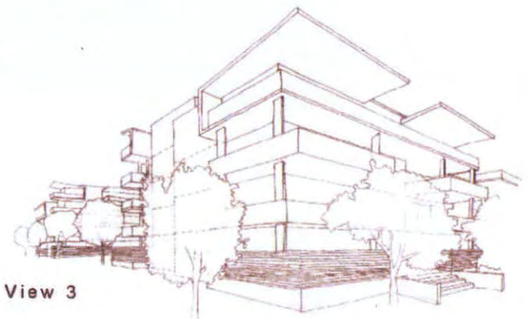

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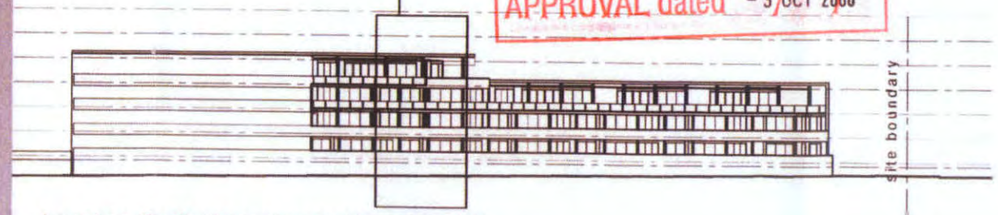

Leyshon Park elevation continued 1:500

Indicative Site Elevations

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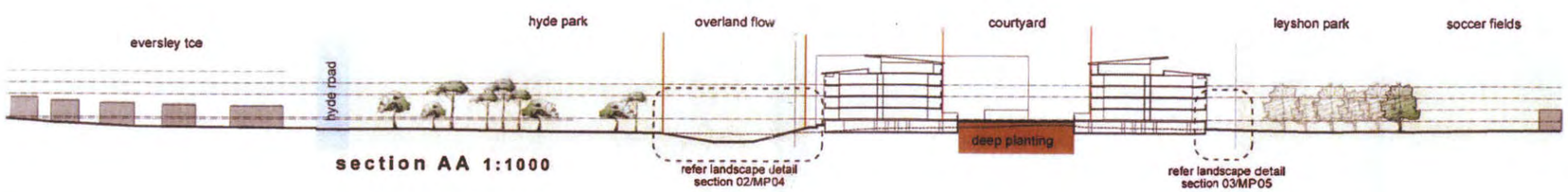
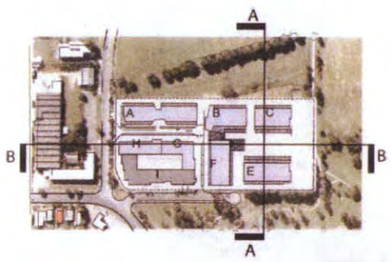


section AA 1:1000



section BB 1:1000



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Context Sections

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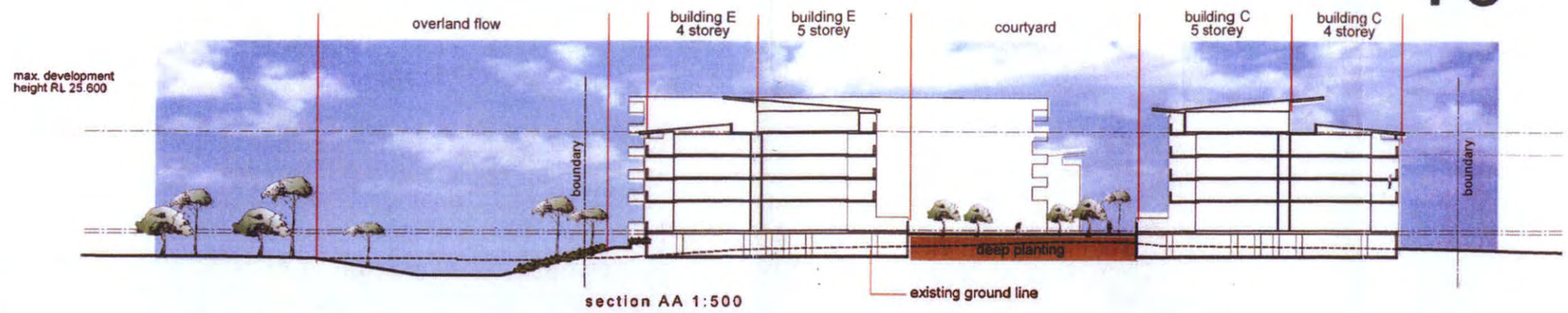

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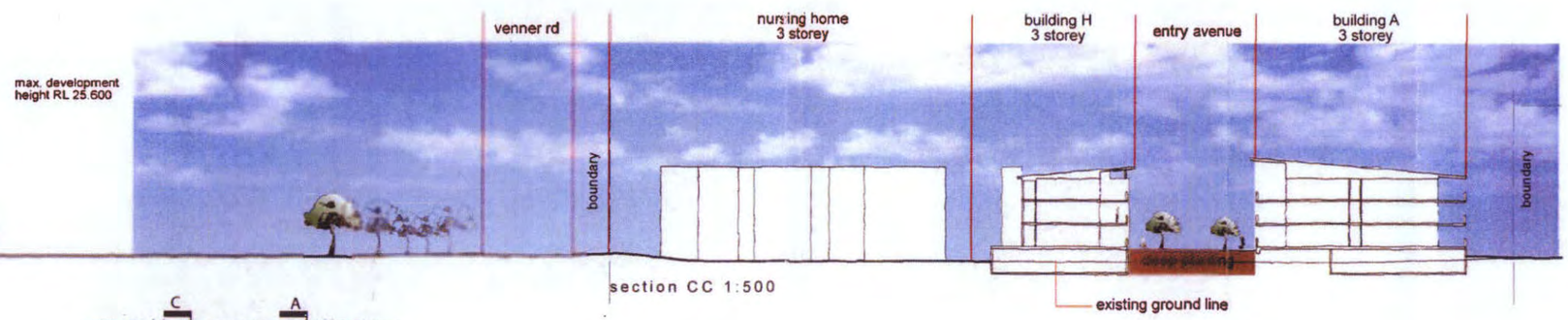

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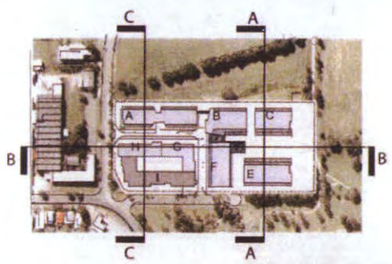

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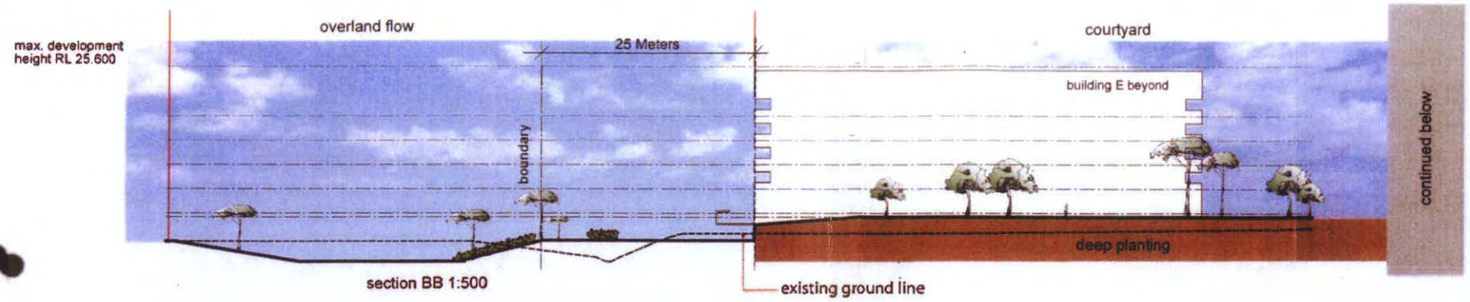

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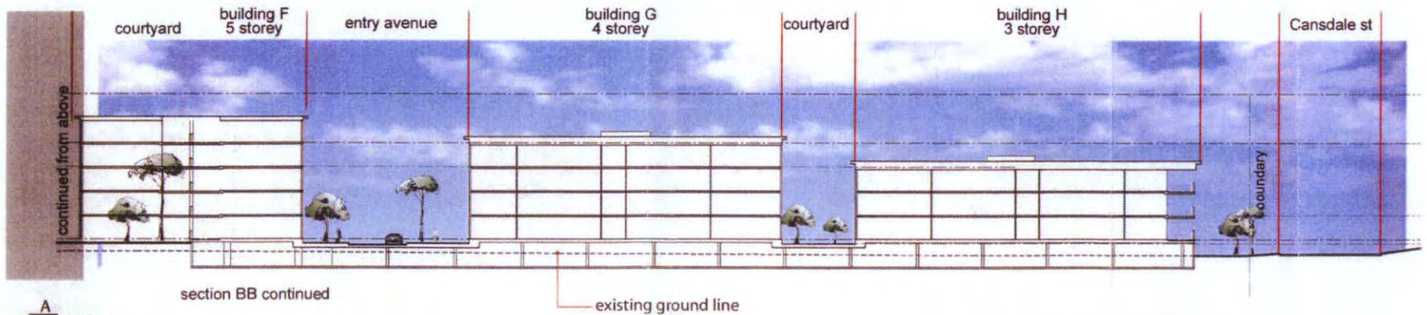

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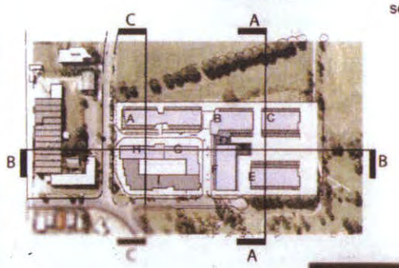

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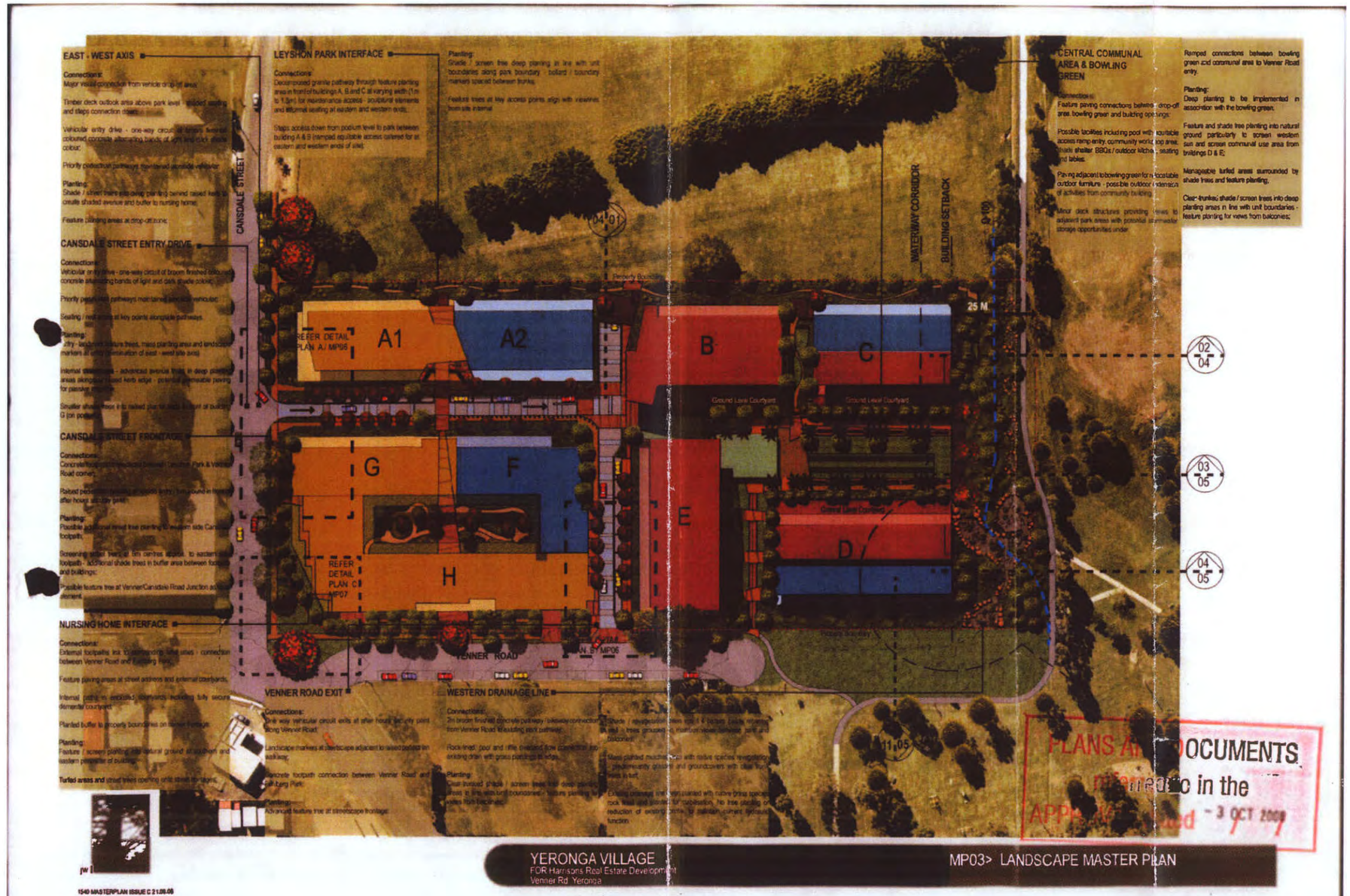
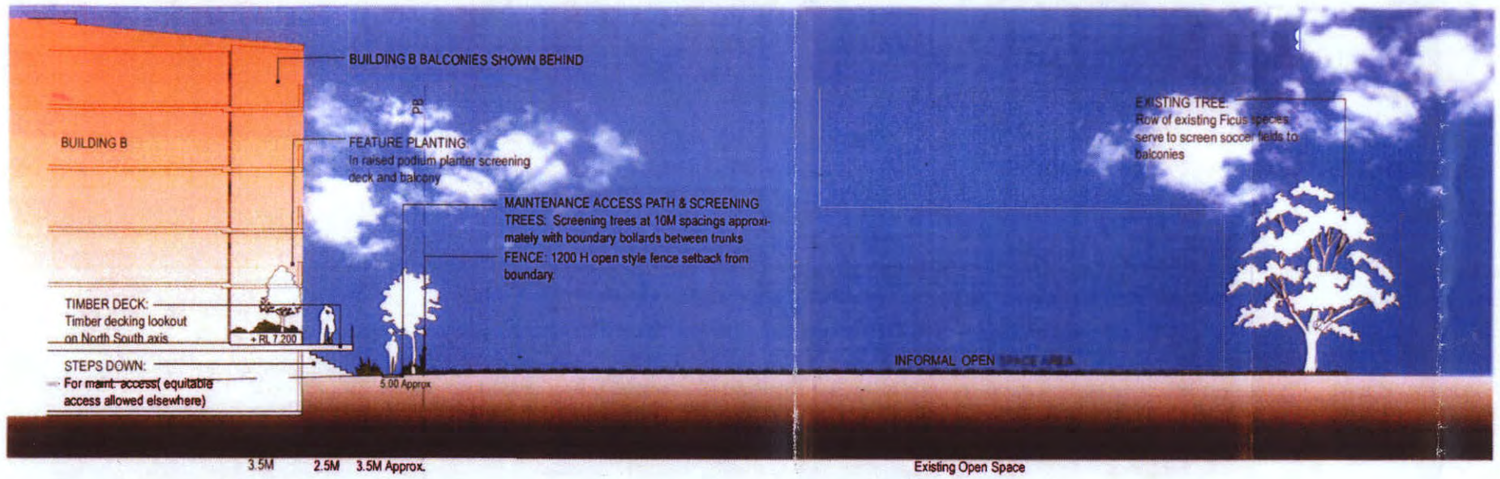

EAST - WEST AXIS
Connections:
Major visual connection from vehicle drop-off area;
Timber deck outlook area above park level - shaded seating and steps connection down;
Vehicular entry drive - one-way circuit of broom finished coloured concrete alternating bands of light and dark shade colour;
Priority pedestrian pathways maintained across vehicular;
Planting:
Shade / screen trees into deep planting behind raised kerb to create shaded avenue and buffer to nursing home;
Feature planting areas at drop-off zone;
CANSDALE STREET ENTRY DRIVE
Connections:
Vehicular entry drive - one-way circuit of broom finished coloured concrete alternating bands of light and dark shade colour;
Priority pedestrian pathways maintained across vehicular;
Seating / rest areas at key points alongside path ways;
Planting:
Entry - feature / accent feature trees, mass planting areas and landscape markers at entry termination of east - west site axis;
Internal avenue trees - advanced avenue trees in deep planting areas alongside raised kerb edge - potential permeable paving for passive parking;
Smaller shade trees in kerb outstands at entry to ground level courtyard;
CANSDALE STREET FRONTAGE
Connections:
Concrete footpath connection between Leyshon Park & Venner Road corner;
Raised pedestrian crossing at vehicle entry - ramped up from and after hours security gate;
Planting:
Possible additional street tree planting to western side Cansdale footpath;
Screening shrub hedge at 5m centres adjacent to eastern footpath - additional shade trees in buffer area between footpath and buildings;
Possible feature tree at Venner/Cansdale Road Junction as element;
NURSING HOME INTERFACE
Connections:
External footpaths link to adjoining site areas - connection between Venner Road and Kingsley Park;
Feature paving areas at street address and external courtyards;
Internal paths to courtyards - including fully secure to dementia courtyard;
Planted buffer to property boundaries on raised mounds;
Planting:
Feature / screen planting and natural ground at southern and eastern perimeter of building;
Turfed areas and street trees opening onto street frontage;
LEYSHON PARK INTERFACE
Connections:
Decomposed granite pathway through feature planting area in front of buildings A, B and C at varying width (1m to 1.5m) for maintenance access - sculptural elements and informal seating at eastern and western ends;
Steps access down from podium level to park between building A & B (ramped equitable access catered for at eastern and western ends of site);
Planting:
Shade / screen tree deep planting in line with unit boundaries along park boundary - bollard / boundary markers spaced between trunks;
Feature trees at key access points align with viewlines from site internal;
CENTRAL COMMUNAL AREA & BOWLING GREEN
Connections:
Feature paving connections between drop-off area, bowling green and building openings;
Possible facilities including pool with equitable access ramp entry, community work / loop area, shade shelter BBQs / outdoor kitchen, seating and tables;
Paving adjacent to bowling green for relocatable outdoor furniture - possible outdoor extension of activities from community building;
Minor deck structures providing views to adjacent park areas with potential stormwater storage opportunities under;
Ramped connections between bowling green and communal areas to Venner Road entry;
Planting:
Deep planting to be implemented in association with the bowling green;
Feature and shade tree planting into natural ground particularly to screen western sun and screen communal use areas from buildings D & E;
Manageable turfed areas surrounded by shade trees and feature planting;
Clear-trunkau shade / screen trees into deep planting areas in line with unit boundaries - feature planting for views from balconies;
CANSDALE STREET
VENNER ROAD EXIT
Connections:
One way vehicular circuit exits at after hours security point along Venner Road;
Landscape markers at streetscape adjacent to raised planted embankment;
Concrete footpath connection between Venner Road and Kingsley Park;
Planting:
Advanced feature tree at streetscape frontage;
WESTERN DRAINAGE LINE
Connections:
2m broom finished concrete pathway / sleeper connection from Venner Road to existing park pathway;
Rock-lined pool and rills overland flow channel into existing drain with grass plantings at edge;
Planting:
Clear-trunked shade / screen trees into deep planting areas in line with unit boundaries - feature planting for views from balconies;
WATERWAY CORRIDOR
BUILDING SETBACK
25 M
Property Boundary
REFER DETAIL PLAN A / MP05
REFER DETAIL PLAN C MP07
REFER DETAIL PLAN B MP06
VENNER ROAD
A1
A2
B
C
D
E
F
G
H
Ground Level Courtyard
04-01
02/04
03/05
04/05
11/05
PLANS AND DOCUMENTS referred to in the APPROVED dated - 3 OCT 2008
YERONGA VILLAGE
FOR Harrisons Real Estate Development
Venner Rd Yeronga
MP03> LANDSCAPE MASTER PLAN
1540 MASTERPLAN ISSUE C 21.08.08
BCC.058.8812



01 MP04 **LANDSCAPE SECTION**
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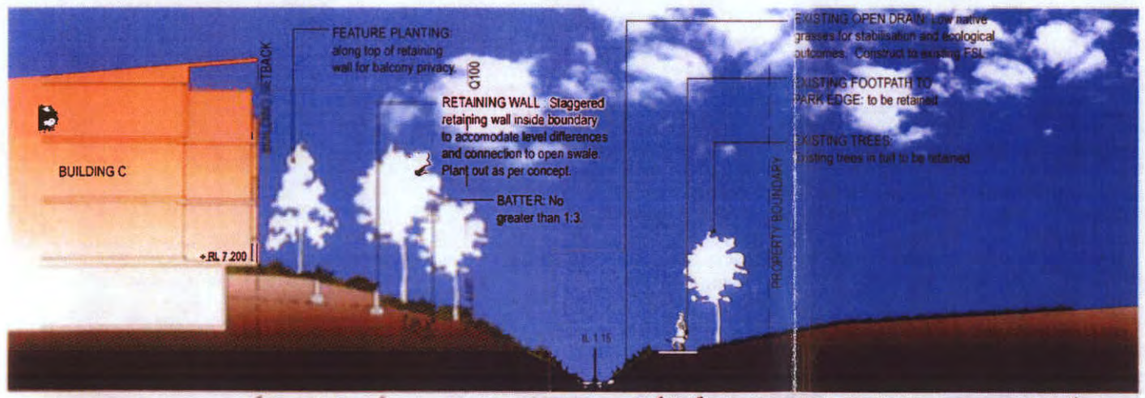

02 MP04 **LANDSCAPE SECTION**
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PLANS AND DOCUMENTS
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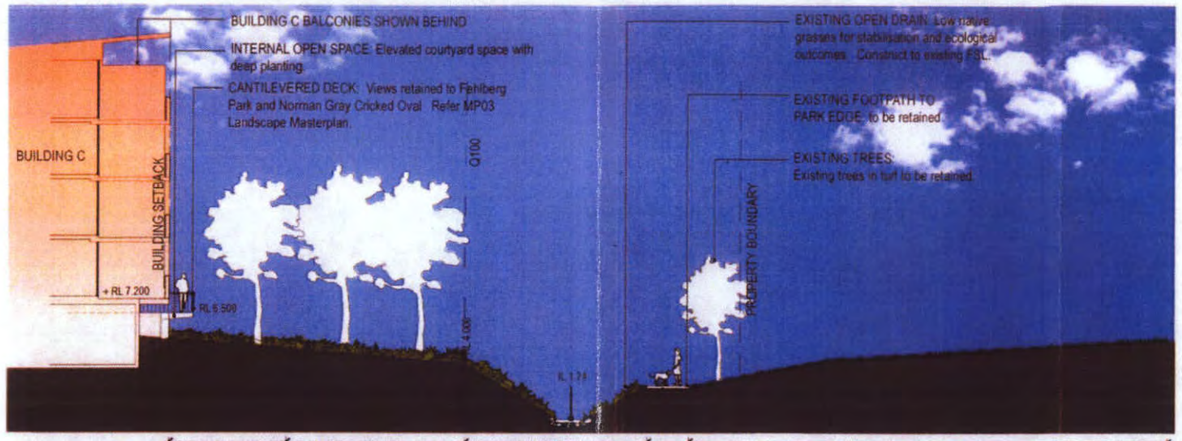
1540 MASTERPLAN ISSUE C 21.09.06

YERONGA VILLAGE
FOR Harrisons Real Estate Developments
Venner Rd, Yeronga

MP04> Landscape Sections - Sheet 1

BCC.058.8813



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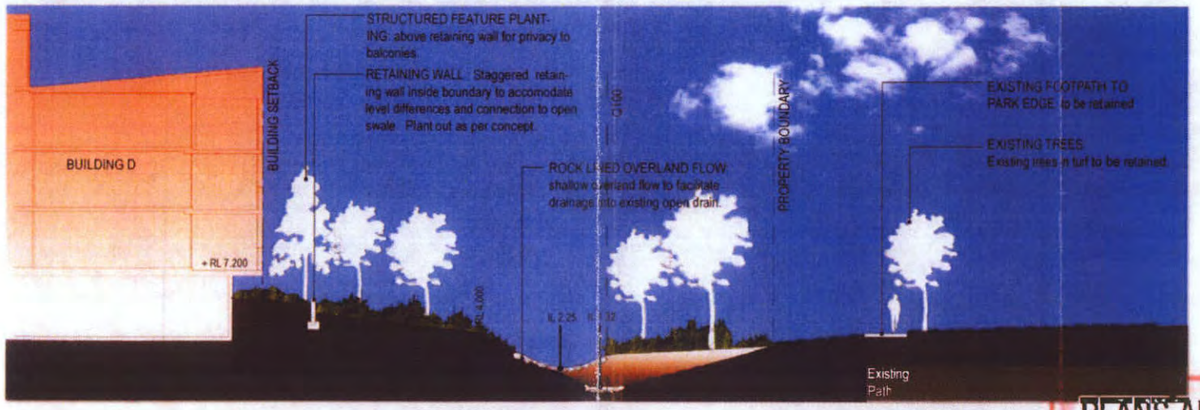

04 MP05 **LANDSCAPE SECTION**
Scale 1:200



JW
1540 MASTERPLAN ISSUE C 21.09.06

YERONGA VILLAGE
FOR Harrisons Real Estate Development
Venner Rd. Yeronga

MP05> Landscape Sections - Sheet 2

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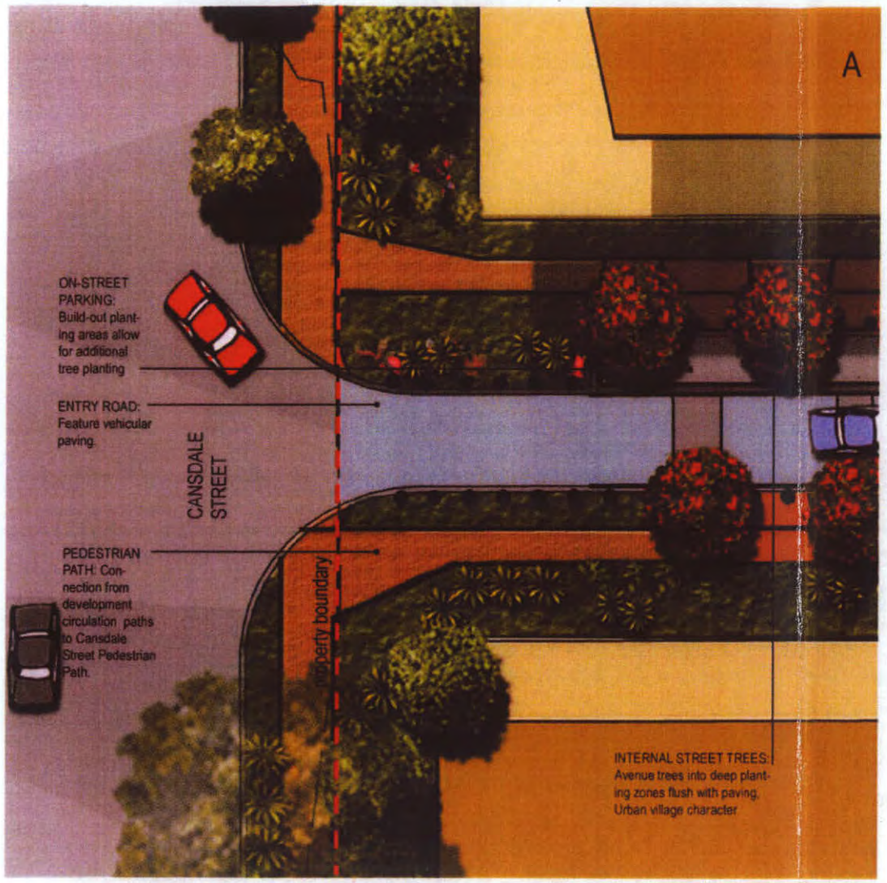
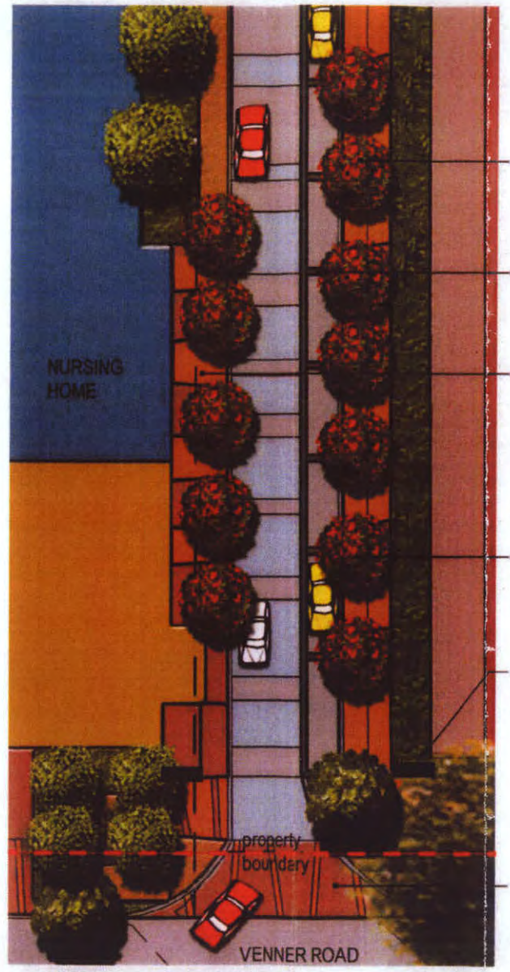


A MP06 CANSDALE STREET ENTRY - DETAIL PLAN
Scale 1:200 @ A3



B MP06 VENNER ROAD EXIT - DETAIL PLAN
Scale 1:200 @ A3

PLANS AND DOCUMENTS
referred to in the
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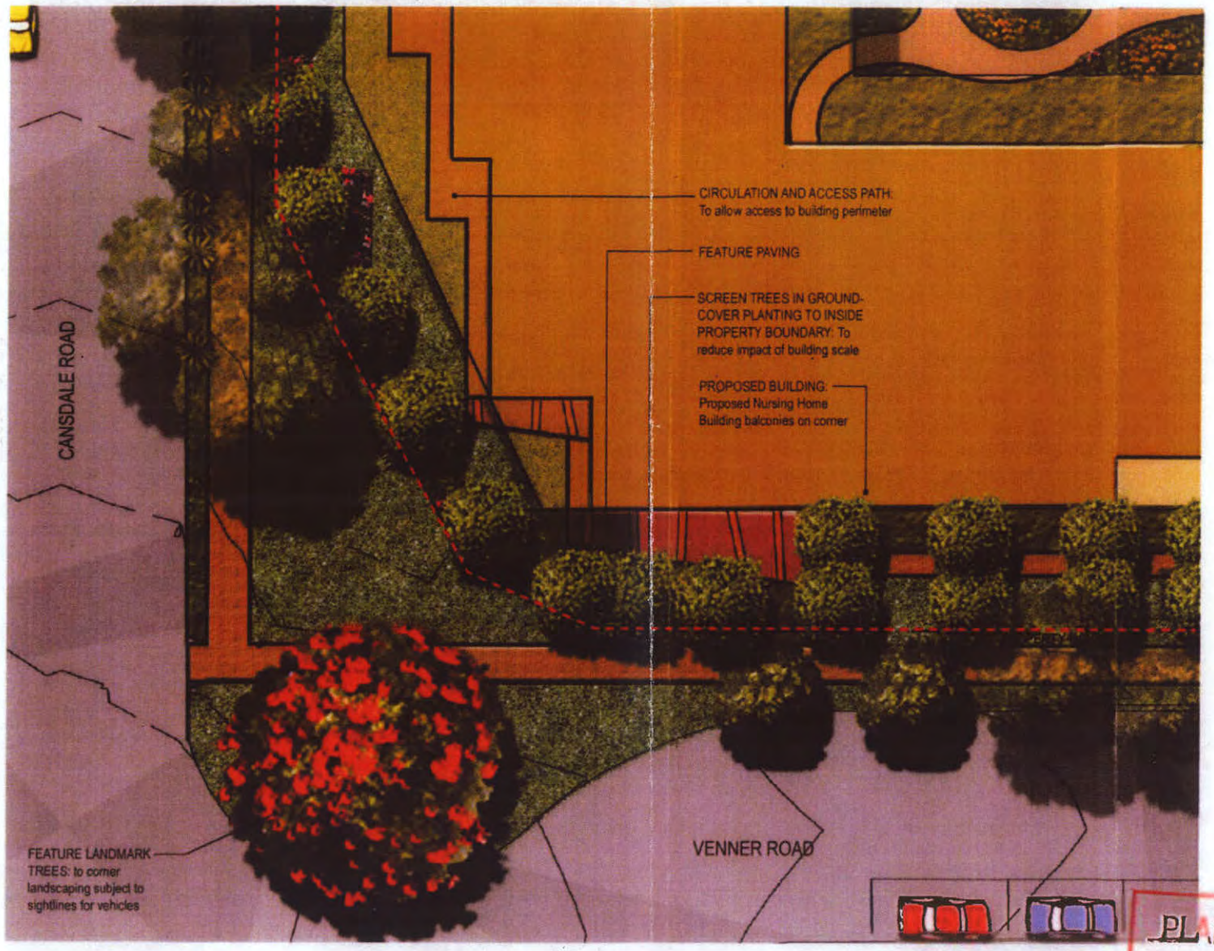
1540 MASTERPLAN ISSUE C 21.06.06

YERONGA VILLAGE
FOR Harrisons Real Estate Development
Venner Rd. Yeronga

MP06> Landscape Details - Sheet 1

BCC.058.8815



C
MP07

VENNER ROAD/ CANSDALE STREET CORNER - DETAIL PLAN
Scale 1:200 @ A3

PLANS AND DOCUMENTS
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YERONGA VILLAGE
FOR Harrisons Real Estate Development
Venner Rd, Yeronga

MP07> Landscape Details - Sheet 2

BCC.058.8816



A.



B.



C.

IMAGE KEY

A. Boulder edging / low walls to provide bank stability and
B. deep planting areas alongside constructed swales.
C. Use of graded rock sizes, curving alignments and pool
D. and riffle sections to reflect natural channel conditions.
E. Possible flush kerbs and gravel mulch for harvesting of
F. rainwater adjacent to hard-stand areas.
G. Above-ground overland flows incorporated into landscaping.
H. Bollards to prevent vehicle access at flush kerbs.
I. Riverine planting into benched areas above inverts for water
J. quality and amenity. Jutematting in steep areas for
K. bank stabilisation and weed control.
L. Boardwalk crossings at key points for park permeability.



D.



E.



F.



G.



H.







K.



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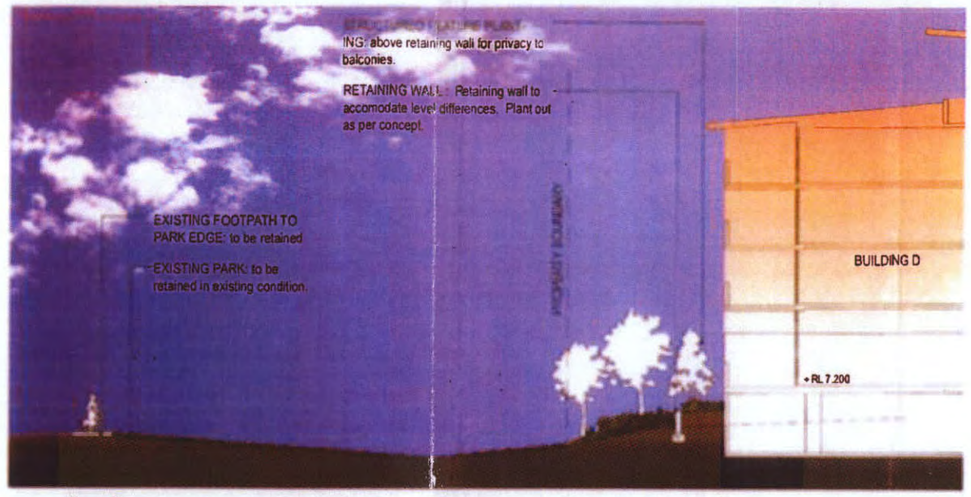
JW
1540 MASTERPLAN ISSUE B 27.03.06

YERONGA VILLAGE
FOR Harrisons Real Estate Development
Vennner Rd. Yeronga

MP08> ecological sustainability initatives

BCC.058.8817



05 MP11 LANDSCAPE SECTION
Scale 1:200

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1540 MASTERPLAN ISSUE B 27.03.06

YERONGA VILLAGE
FOR Harrisons Real Estate Development
Venner Rd Yeronga

MP11> Landscape Sections - Sheet 3

BCC.058.8830

Cardno
Engineering the Future



Yeronga Retirement Village

Hydraulic Analysis

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23 May 2006
Job No. 3500/34

Harrisons Real Estate Development

BCC.058.8834

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RPEQ 4744

Document Control

Version	Date	Author		Reviewer	
		Name	Initials		Initials
1	26 September 2005	[redacted]	KB	[redacted]	MG
2	29 March 2006		KB		MG
3	31 March 2006		KB		MG
4	23 May 2006		[redacted]		[redacted]

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YERONGA RETIREMENT VILLAGE
HYDRAULIC ANALYSIS

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APPENDIX B Hydraulic Grade Line Calculations – Cansdale Street
APPENDIX C Landscape Concept

1. INTRODUCTION

It is proposed to construct a retirement village on a site at the corner of Cansdale Road and Venner Road in Yeronga (the study site). Figure 1 shows the location of the site. The lot is described as Lot 1 on RP150512.

A preliminary investigation into the hydraulic issues associated with the development was carried out by Cardno in March 2005 as part of the initial submission to Council. The analysis identified the hydraulic constraints affecting the site and identified a potential design solution for drainage of the site. An information request was received from Council on the 21 June 2005 outlining a number of issues for which further information was required. A report was issued in September 2005 addressing these concerns. A second information request was issued by Council on the 2 February 2006 outlining some additional issues to be addressed. A meeting was held with Council to discuss these concerns and a resolution was meet on a number of the concerns raised. This report provides further information on the following concerns:

"The proposed entertainment area is to be set at RL 4.1 m AHD which does not meet the flood immunity standard of 100 year ARI Brisbane River Flood (RL 6.7 m AHD). Note 6 to Table B2.2.1 of the SDG requires a retirement village to comply with Table B2.2.2.

A creek or water requires Q100 analysis and the proposed application includes a Q50 analysis. This is in accordance with Table B2.2.1 of the Subdivision and Development Guidelines (SDG) however for development in the waterway the Q100 analysis is required.

The proposal has not addressed the trapped sag, west of the site in Cansdale Street. This area is currently drained by an overland flow path through the site. Filling the site without accounting for drainage from the west and north of the site may cause an adverse impact on adjacent properties and roads."

In response to the information request, detailed modelling of the works required to obtain a satisfactory hydraulic solution has been completed. The proposed works have been developed in consultation with ecologists and landscape architects to ensure that the outcome achieved maximises the environmental values of the waterway corridor. Modelling has considered both the need to cause no adverse impact and the desirability of including the design solution as part of an overall flood mitigation strategy for the catchment.

This report presents the results of the modelling investigations.

2. SITE DESCRIPTION

The development site covers an area of approximately 2.79 ha. Ground levels throughout the site are generally between 5 m AHD and 6 m AHD. The site is currently used for industrial purposes. The western half of the site contains sheds and parking areas while the eastern half of the site is predominately grassed with some heavier vegetation such as trees and shrubs along the eastern boundary.

The extent of this flooding assessment is not limited to the development site as described above. Drainage paths considered in this assessment are presented in Figure 2. From this figure it can be seen that the main drainage path within the catchment is located on the eastern boundary of the site. The catchment drains in a northerly direction to the Brisbane River through Leyshon Park and Downs Oval and beneath the Brisbane Corso. The drain takes the form of an excavated channel with a concrete invert.

Smaller tributary flows enter the main channel approximately 80 metres upstream of the southern boundary of the development site. At this location stormwater drainage pipes from the west and the east meet and stormwater continues down the main open channel.

Despite the fact that the channel is not a natural waterway, a Waterway Corridor has been defined that affects the site (refer Figure 2). The corridor has been defined 30 metres either side of the low flow invert of the channel. As the centreline of the waterway is about eight metres inside the eastern boundary of the site, the corridor affects about a 38 metre width of the site.

3. PREVIOUS STUDIES

A flood study of the area was conducted by Brisbane City Council in June 2003 (*Yeronga Local Stormwater Management Plan (LSMP) June 2003*). This report has been referenced as part of the current assessment. In addition, Council made available the models developed for the LSMP for the current investigation. The models provided base information for use in the detailed modelling undertaken for this investigation.

The major storm event considered for the local stormwater management plan had a recurrence interval of 50 years. This is considered appropriate given that the drain can be classified as a designed open channel, for which the major storm event for the specification of fill and floor levels is the 50 year event according to Table B2.2.1 of the *Subdivision and Development Guidelines* (2000). Consequently, the 50 year event was considered for the analysis of local catchment flooding when investigating the drainage requirements for the proposed development.

As shown in Figure 6, the flood mitigation measures proposed in the *Yeronga Local Stormwater Management Plan* include retaining the existing concrete invert of the channel and increasing the width of the grassed base of the channel by 12 metres (p30 and Appendix L) along the eastern boundary of the site and downstream (north) of the site. A Mannings n value of 0.04, which corresponds to grass, was adopted for the channel to maximise its flow carrying capacity.

The works envisaged for the area also include the excavation of channels to convey the runoff from the eastern and western portions of the catchment to the main drain on the eastern boundary of the site. The proposed base width of the eastern and western channels is 10 metres and 8 to 12 metres respectively. As for the main channel, grass lined channels with a Mannings n value of 0.04 was envisaged. Bank slopes of 1 in 4 were adopted for the channel.

Based on the dimensions indicated in the LSMP and existing ground levels in the vicinity of the drain, the main drain following the completion of channel works would have a top width of about 39 metres. The western drain would have a top width of between 36 and 40 metres and the eastern drain a top width of about 30 metres.

The channel design presented in the LSMP is preliminary. It is likely that Council will give consideration to obtaining a design more conscious of environmental and safety issues if the flood mitigation works are implemented. However, such a design would necessitate the construction of a wider channel to provide for flatter bank slopes and the reduced flow capacity associated with a level of vegetation higher than grass. If the bank slopes were to be flattened to improve safety (as proposed for the development at the request of Council), the top width of the channels could need to increase by as much as 13 metres (a top width of 52 metres) as a worst case.

Further, it is also important to note that the proposed location of the main channel and western channel in the LSMP affect private property (i.e. the proposed site) and would require the resumption of a significant area in order to be constructed. The existing drain is not contained within an easement and therefore Council has no current right to modify the drain without the consent of the owner of the property.

4. GOVERNING FLOOD LEVELS

Based on a flood report obtained from Council and the *Yeronga Local Stormwater Management Plan* (City Design June 2003), the applicable flood levels to the site are listed in Table 1. Table 1 also lists the peak flood levels calculated by the current study (refer Section 6).

Table 1 Defined Flood Levels

Event	Brisbane River Flooding (mAHD)	Local Flooding (mAHD)			
		Yeronga LSMP		Current Modelling	
		Existing	Post Mitigation	Existing	Post Mitigation
100 Year	6.7	-	-	-	-
50 Year	5.5	3.70 – 4.35	3.70 – 3.74	3.89 – 4.38	3.62 – 3.65
20 Year	3.7	-	-	-	-
10 Year	-	3.25 – 4.27	3.10 – 3.24	3.51 – 4.18	3.20 – 3.22
2 Year	-	3.00 – 4.23	2.80 – 2.97	3.03 – 3.69	2.72 – 2.74

The figures quoted in Table 1 for local flooding include the levels predicted for the site following the completion of proposed flood mitigation works. The proposed mitigation works that affect the site are shown in Figure 6 and described in Section 3.

Based on Table B2.2.1 of the *Subdivision and Development Guidelines* (2000), the design levels applicable to the development are listed in Table 2.

Table 2 Design Levels for Development

Case	Brisbane River		Local Flooding		Governing Level (mAHD)
	Design Level	Level (mAHD)	Design Level	Level (mAHD)	
Allotment fill	100y ARI + 0.3m	7.0	50y ARI + 0.3m	4.68	7.0
Habitable Floor	100y ARI + 0.5m	7.2	50y ARI + 0.5m	4.88	7.2
Non-Habitable Areas	100y ARI + 0.3m	7.0	50y ARI + 0.3m	4.68	7.0
Carparking*	20y ARI	3.7	50y ARI	4.38 existing 3.65 mitigated	**4.38 existing** **3.65 mitigated**

Note: Basement car parks can be set below the nominated level provided that suitably waterproofed perimeter walls, air vents, and entry/exit ramps at the car park entrance are above the 100 year ARI flood levels for all sources including the Brisbane River (i.e. 6.7 m AHD).

A basement car park (floor level 4.1 m AHD) is proposed for the development. As the entry/ exit to the basement car park will be from the podium level (7.0 m AHD minimum), the Council requirements with respect to basement car park immunity will be achieved.

5. FLOOD MODELLING

5.1 Overview

The existing stormwater drainage system in the area consists of a series of overland flow paths, stormwater pipes and open channels. Given this interaction between surface and underground drainage, XP-STORM was considered the most suitable package for modelling the investigation area. Version 8.5 of XP-STORM was used for the analysis.

XP-STORM is capable of modelling hydrology and hydraulics in a single model, and includes the algorithms used in RAFTS. It was therefore possible to import the Council RAFTS model of the catchment to the XP-STORM model to derive inflow hydrographs for the hydraulic layer of the XP-STORM model that were consistent with those obtained by Council.

The following sections of the report discuss the various components of the XP-STORM model and the modelling procedures adopted for this assessment. A schematic of the XP-STORM model developed for the site is provided in Figure 3.

5.2 XP Storm Hydrology

As part of the preparation of the *Yeronga Local Stormwater Management Plan* (2003) Brisbane City Council developed a RAFTS model to represent the hydrology of the East Yeronga catchment. The data from the RAFTS model was transferred to the hydrology layer of the XP-STORM model. Table 3 summarises the parameters adopted for each sub-catchment. Sub-catchment boundaries are shown on Figure 4.

Table 3 Sub-Catchment Details

Sub-Catchment	Area (ha)	Fraction Impervious (%)	Slope (m/m)	Manning's Roughness
AB	22.30	44	0.045	0.035
CDE	10.50	65	0.048	0.025
F	3.66	81	0.040	0.025
G	13.23	36	0.020	0.033
HM	42.57	50	0.016	0.025
N	2.95	90	0.045	0.025
O	3.40	29	0.016	0.033
P	3.95	3.4	0.070	0.025
Q	9.90	47	0.012	0.025
R	8.80	33	0.010	0.040
Main1	2.20	30	0.040	0.037
Main4	1.96	20	0.020	0.040
Main7 (D2)*	2.17	20	0.020	0.040
Main12	4.22	15	0.020	0.036
Main17	3.42	23	0.010	0.039
Main22	4.33	23	0.010	0.039
Main26	1.50	20	0.010	0.037

* Node Main7 is labelled D2 in the developed case model.

XP-STORM allows the specification of configuration parameters which apply globally to the model. One of the configuration parameters that can be set is the value of the storage multiplier B_x, which is directly analogous to the B_x factor in RAFTS. In order to achieve calibration for the Yeronga LSMP, a B_x factor of 1.75 was adopted for the RAFTS model. This storage coefficient was applied as a configuration parameter (BX=1.75) to the XP-STORM model. A configuration parameter was also set to specify that runoff routing was to be completed in accordance with the algorithms used in RAFTS.

Three detention basins were included in the Council RAFTS model of the catchment and were thus duplicated in the XP-STORM model. The first basin is formed between the Gold Coast Railway line and the Yeronga TAFE (Node AB). The second basin, which is smaller than the first, is formed between Fairfield Road and the Gold Coast Railway Line (Node CDE). The third detention basin is located towards the downstream end of the main channel, and discharges just upstream of the Brisbane Corso (Node Q). This basin is formed in the residential streets to the east of the main channel. Table 4 reports the storage information, drawn from the Council model, used to model each of these detention zones. In this table the depth of storage reported is relative to the invert of the node to which the storage is assigned.

Table 4 Detention Basin Details

Basin 1 (Node AB)		**Basin 2 (Node CDE)**		**Basin 3 (Node Q)**	
Node Invert = 4.20 mAHD		Node Invert = 1.96 mAHD		Node Invert = 2.00 mAHD	
Depth* (m)	**Area (m²)**	**Depth* (m)**	**Area (m²)**	**Depth* (m)**	**Area (m²)**
0	0	0	0	0	0
1.1	5	0.5	2	1.2	61
1.8	16	1.0	2	1.3	1800
2	30	1.2	10	1.4	2010
2.2	55	1.4	20	1.5	3710
2.3	100	1.5	80	1.6	5620
2.4	170	1.6	320	1.7	8030
2.5	310	1.6	800	1.8	10200
2.6	480	1.7	1080	1.9	12400
2.7	620	1.8	1760	2	13930
2.8	770	1.9	2550	2.1	16820
3.1	1120	2.0	3250		
3.3	1440	2.2	2820		
3.5	1600	2.5	1667		
4.3	1904				
5.3	2477				
5.8	3190				
6.3	3966				

** Depth is relative to the invert of the node to which the storage is assigned.*

Rainfall losses were set to match those adopted by Council, namely 15 mm of initial loss followed by a continuing loss rate of 2.5 mm per hour.

Rainfall intensities were taken from the Brisbane Intensity Frequency Duration curve provided in the BCC Supplement to QUDM (Appendix A to Section 6 of the Brisbane City Council *Subdivision and Development Guidelines* (2000)).

To be consistent with the Yeronga LSMP, events with recurrence intervals of 2, 10, and 50 years were modelled. Storm durations ranging from 30 minutes to 2 hours were considered for the analysis. A storm with a duration of 60 minutes was found to produce peak flow rates in the vicinity of the site.

The peak flows predicted by the hydrology layer of XP-STORM are presented in Table 5. The table also reports the corresponding (Council) RAFTS discharge. It can be seen from these results that the peak flows predicted by the XP-STORM model closely agree with the discharges determined for the Yeronga LSMP. Given this close agreement, it was considered that the hydrology component of the XP-STORM model was providing satisfactory results.

Table 5 XP-STORM Hydrology Results - 60 Minute Duration Storm

Sub-Catchment	2 year ARI Discharge (m^3/s)		10 year ARI Discharge (m^3/s)		50 year ARI Discharge (m^3/s)	
	STORM	RAFTS	STORM	RAFTS	STORM	RAFTS
AB	4.97	4.79	8.79	8.55	12.06	12.01
CDE	3.43	3.35	5.33	5.24	6.96	6.95
F	1.30	1.29	1.98	1.95	2.55	2.55
G	2.47	2.72	4.14	3.95	5.94	5.81
HM	7.63	7.37	13.47	13.00	19.29	19.08
N	1.07	1.06	1.61	1.59	2.07	2.06
O	0.64	0.61	1.12	1.09	1.61	1.58
P	1.16	1.14	1.83	1.79	2.40	2.39
Q	1.98	1.91	3.48	3.31	4.98	4.88
R	1.10	1.05	2.04	1.93	3.05	2.94

Note: STORM refers to results from XP-STORM, RAFTS to results from Council model

5.3 XP Storm Hydraulics

5.3.1 Overview of Hydraulic Model

Detailed survey was collected for the region downstream (north) of approximately Hyde Road to the Brisbane River. The survey, completed by PMM Group (Drawing 7203-2a) included spot levels and cross sections through the existing drain. This information was augmented by design data for pipes and culverts in the vicinity of the study area.

Based on discussions with Council (Mr Neville Gibson) it is understood that the survey upon which the Council hydraulic model is based was taken from aerial (helicopter) survey and that the levels obtained from the aerial photogrammetry are quite variable in the channel.

Therefore, in addition to potential variations associated with the different models used for the Yeronga LSMP (MIKE-11 and HEC-RAS) and the current investigation (XP-STORM), the fact that detailed survey was used for the current investigation will produce calculated flood levels which differ from those obtained by Council. As the model is based on detailed survey rather than aerial photogrammetry, it is considered that the results obtained from the new modelling will be more reliable than those presented in the Yeronga LSMP.

5.3.2 Cross Section Information

As noted in Section 5.3.1, cross sectional information was obtained from the detailed survey of the site. A total of 28 cross sections were used to define the water courses within the model area in the developed case (one additional cross section was included in the existing case model). The location of each of these cross sections is shown in Figure 5.

Manning's n roughness coefficients were applied to the centre, left and right banks of each cross section. The value of the Manning's coefficients adopted for the model varied from 0.03 to 0.08, similar to the values adopted for the Yeronga LSMP. Downstream of the development site the channel is well maintained with mowed grassed slopes and a concrete invert. Therefore the roughness along this section of the model was generally set at 0.03 for the entire width of the cross section.

Roughness values were increased within the western and eastern overland flow paths due to the presence of more significant vegetation along these watercourses. These roughness estimations were based on aerial photography and site inspection.

5.3.3 Structures

The detailed survey indicated stormwater pipes under the western and eastern overland flow paths. These pipes convey runoff from catchments upstream of the site and discharge it to the main channel approximately 40 metres north of Venner Road. The details of these pipes are presented in Table 6.

Table 6 Stormwater Pipe Dimensions (Existing)

Line	Dimensions	Number of pipes	Total Length (m)
Fairfield Rd to Main Drain	1200 dia RCPC	2	137
Fairfield Rd to Main Drain	1200H x 1800W Oval	2	277
Hyde Rd to Main Drain	1650 dia RCPC	1	170

Brisbane Corso crosses the main channel at the downstream end of the model, just upstream of the Brisbane River. A bank of culverts allows runoff to pass under the road. The details of these culverts are presented in Table 7. Invert levels at the inlet of the culvert indicate that there is a significant drop in bed level from the main channel to the culvert invert.

Table 7 Brisbane Corso Culvert Details

XP-STORM Link Location	Geometry	No. of culverts	Length (m)	Upstream Invert (mAHD)	Downstream Invert (mAHD)
Main23-24	1650& RCPC	4	27.3	-0.45	-0.80

5.3.4 Boundary Conditions and Simulation Details

Previous modelling for the Yeronga LSMP (Brisbane City Council June 2003) was based upon a constant tailwater level of 1.2 m AHD in the Brisbane River, which is equivalent to the Mean High Water Springs tide level. The same boundary condition was adopted for the current modelling at the downstream end of the model (node Main26) with the model reverting to normal depth if required.

The XP-STORM model was run for a period of 24 hours at 5 second time steps.

5.4 Proposed Mitigation Option

5.4.1 Overview of Proposed Council Mitigation Scheme

As part of the Brisbane City Council Yeronga LSMP, mitigation options were investigated to relieve some of the flooding pressures already experienced by residents within the catchment. The final proposed relief configuration included the following components (from the *Yeronga Local Stormwater Management Plan* (June 2003)):

- Widening of the western overland flow path from Hyde Road, through Venner Road to the confluence with the main drain. In the existing case this flow path is poorly defined. Under the proposed relief conditions the base of this channel would be increased to between 8 metres and 12 metres.
- Widening of the eastern overland flow path from Fairfield Road, through Fehlberg Park to the confluence with the main drain. As with the western flow path, this channel is poorly defined under existing conditions. The proposed mitigation solution indicates a widening of the base of this channel to approximately 10 metres with 1v:4h batter slopes.
- Widening of the main channel downstream of the confluence with the eastern and western overland flow paths. The proposed mitigation option indicates that the concrete lined channel invert should be maintained with the channel widened by 12 metres. This widening may occur as 6 metres either side of the concrete invert or 12 metres to one side depending on the location of other elements within the floodplain such as houses. In the vicinity of the site, this would produce a channel with a top width of about 39 metres assuming 1 in 4 bank slopes.
- Diversion of part of the piped stormwater from sub-catchment G to the piped system of sub-catchment O. Under existing conditions, the pipe infrastructure at the outlet of sub-catchment G is not sufficient to convey the 2 year ARI discharge. Sub-catchment runoff in addition to the capacity of the pipe in the 2 year event will be diverted to sub-catchment O.

A number of other mitigation measures were recommended involving upgrading and replacing pipe drainage infrastructure throughout the catchment. The measures relevant to the currently proposed development only have been mentioned here. Figure 6 presents the proposed mitigation solution diagrammatically and is drawn from Appendix L of the LSMP.

5.4.2 Proposed Mitigation Solution

The extent to which the site is flooded for the 50 year local flooding event (Figure 2) is limited to within about 15 to 20 metres of the boundary of the site. Based purely on hydraulic grounds, the development could proceed to the limit of inundation (i.e. to within 15 to 20 metres of the eastern boundary of the site) without impacting on existing flooding.

However, the situation is complicated by the following factors:

- **Waterway corridor**

  A waterway corridor has been defined based on a nominal 30 metre offset from the centre of the drain (refer Figure 2). A width of between 38 metres and 57 metres on the eastern boundary of the site is within the defined waterway corridor.

  Performance Criteria P3 of the Filling and Excavation Code of City Plan requires that filling or excavation must not cause any increase in flooding or drainage problems. Acceptable Solution 3.1 to the performance criteria is to ensure that no filling or excavation is located within a waterway corridor. Compliance to the acceptable solution would quarantine a significant area without providing any hydraulic benefit. As an alternate solution, as noted above the site could be filled to the existing flood line (i.e. 15 to 20 metres from the property boundary) without adversely impacting on flood levels.

  Council has agreed to development up to a 25 metre setback from the property boundary on the eastern side, within the waterway corridor.

- **Flood Mitigation Works**

  The Yeronga LSMP (refer Section 3 and Section 5.4.1) notes the need for flood mitigation works to occur to reduce the incidence of flooding in areas upstream of the site.

  With reference to Figure 6, the mitigation solution recommended in the Yeronga LSMP significantly encroaches on the proposed development site. As no easement exists on the site for drainage, Council would either need to obtain permission from the land owner for works to be completed on the land or purchase the land for drainage purposes.

  Further, the proposed works will affect land that is presently free from inundation rather than being sited within the parkland to the east that is subject to inundation.

  Given the above, the logical location for the mitigation works is within the Council controlled open area to the east of the site rather than within the site.

Based on discussions with Council mitigation works within the open channel along the eastern boundary of the site will be limited to those proposed by Council. Some beautification of the channel will be carried out through landscaping (refer to Appendix C for landscape concept plans) however the essential properties of the channel will be preserved. The landscaping concept is consistent with the hydraulic modelling assumptions.

It can be noted that the proposed diversion of flow from subcatchment G (refer Section 5.4.1) was not included in the modelled mitigation measures. This will conservatively increase the modelled flow in the eastern tributary of the drain.

6. MODELLING RESULTS

6.1 General

As mentioned in the previous section, Council has agreed to a 25 metre setback from the property boundary on the eastern side at the limit of development within the site. The open drain will be retained essentially in its existing conditions and beautification landscaping conducted as per the concept design presented in Appendix C. The proposed landscaping works are consistent with the hydraulic parameters (such as Manning's n roughness coefficients) adopted in the XP-STORM modelling. Considering these points, only the existing case was modelled for this study.

As noted in Section 5.3.1, the flood levels predicted by the XP-STORM modelling of the catchment differ from those calculated using MIKE-11 and HEC-RAS for the Yeronga LSMP. This can be attributed to the use of different hydraulic models for the two studies and, more significantly, the use of cross sections based on detailed survey for the current investigation.

When quantifying the performance of the proposed works, comparisons were made between the flood level estimates obtained from the current modelling and those presented in the Yeronga LSMP.

Peak flow rates and velocities calculated for the existing case scenario are provided in Appendix B.

6.2 Existing Situation

The peak flood levels calculated for the existing situation are presented in Table 8 also presents the peak flood levels reported in the Yeronga LSMP at cross sections in close proximity to nodes in the XP-STORM model.

In the western tributary upstream of the site, the flood level predicted by the XP-STORM model is less than that presented in the Yeronga LSMP by between 570 mm and 140 mm for the 2 and 50 year events respectively. In the eastern tributary upstream of the site, the flood levels predicted by the XP-STORM model are generally less than those presented in the Yeronga LSMP by up to 130 mm. The Council model predicts a level up to 100 mm lower than that obtained from the current model immediately upstream of the site.

Within the main channel in the vicinity of the site, the XP-STORM model predicted levels up to 200 mm higher than those presented in the Yeronga LSMP. In the vicinity of the Brisbane Corso the difference in flood level is greater, with the XP-STORM model predicting that the Corso will control levels upstream to a greater extent than calculated in the Yeronga LSMP modelling.

From the results presented above it was concluded that the current modelling provided a satisfactory prediction of flood levels within the catchment despite not exactly matching the results previously reported. However, this is to be expected given the differences in modelling and base data for the XP-STORM and Yeronga LSMP models (refer Section 6.1).

Table 8 Existing Case Results

Council Cross Section	XP-Storm Node	2 year Event Peak Levels			10 year Event Peak Levels		
		LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
Western Tributary							
	HM	-	4.46	-	-	4.59	-
	Trib A	-	4.05	-	-	4.16	-
Y2020	Trib B	4.27	3.64	-0.63	4.39	4.16	-0.23
	Trib B.1	-	3.62	-	-	4.16	-
Y2010	TribC	4.23	3.62	-0.61	4.27	4.16	-0.11
Eastern Tributary							
	AB	-	4.67	-	-	4.90	-
	CDE	-	3.80	-	-	3.96	-
	FRd	-	3.80	-	-	3.96	-
	F	-	3.73	-	-	3.91	-
	G	-	3.61	-	-	3.79	-
Y140	Main1	3.85	3.73	-0.12	4.03	3.91	-0.12
Y130	Main2	3.78	3.69	-0.09	3.95	3.88	-0.07
Y120	Main3	3.71	3.64	-0.07	3.86	3.82	-0.04
Y110	Main4	3.68	3.61	-0.07	3.83	3.79	-0.04
Y100	Main5	3.65	3.57	-0.08	3.79	3.75	-0.04
Y79	Main6	3.39	3.51	0.12	3.61	3.70	0.09
Main Channel							
	Main 7	-	3.18	-	-	3.59	-
	Main 8	-	3.12	-	-	3.57	-
	Main 9	-	3.10	-	-	3.56	-
Y75	Main 10	2.98	3.06	0.08	3.24	3.54	0.30
	Main 11	-	3.04	-	-	3.53	-
Y70	Main 12	3.05	3.03	-0.02	3.34	3.52	0.18
	Main 13	-	3.02	-	-	3.52	-
	Main 14	-	3.00	-	-	3.52	-
Y60	Main 15	2.95	2.98	0.03	3.23	3.51	0.28
	Main 16	-	2.96	-	-	3.50	-
Y50	Main 17	2.87	2.93	0.06	3.12	3.48	0.36
	Main 18	-	2.92	-	-	3.48	-
Y40	Main 19	2.59	2.90	0.31	2.79	3.47	0.68
	Main 20	-	2.88	-	-	3.46	-
	Main 21	-	2.85	-	-	3.45	-
Y30	Main22	2.03	2.84	0.81	2.48	3.44	0.96
u/s Corso	Main23	1.75	2.82	1.07	2.5	3.44	0.94
d/s Corso	Main24	1.4	2.65	1.25	1.63	3.10	1.47

Council Cross Section	XP-Storm Node	2 year Event Peak Levels			10 year Event Peak Levels		
		LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
	Main 25	-	2.64	-	-	3.09	-
	Main 26	-	2.48	-	-	2.93	-
Nodes off Main Channel							
	O	-	3.03	-	-	3.52	-
	P	-	2.93	-	-	3.48	-
	Q	-	2.84	-	-	3.44	-
	R	-	6.09	-	-	6.13	-
	N	-	3.03	-	-	3.52	-

Council Cross Section	XP-Storm Node	50 year Event Peak Levels			100 year Event Peak Levels		
		LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
Western Tributary							
	HM	-	4.67	-	-	4.72	-
	Trib A	-	4.36	-	-	4.45	-
Y2020	Trib B	4.52	4.36	-0.16	-	4.45	-
	Trib B.1	-	4.36	-	-	4.45	-
Y2010	TribC	4.35	4.36	0.01	-	4.45	-
Eastern Tributary							
	AB	-	5.16	-	-	5.40	-
	CDE	-	4.09	-	-	4.18	-
	FRd	-	4.09	-	-	4.18	-
	F	-	4.05	-	-	4.13	-
	G	-	3.94	-	-	4.09	-
Y140	Main1	4.17	4.05	-0.12	-	4.13	-
Y130	Main2	4.11	4.01	-0.09	-	4.10	-
Y120	Main3	4.07	3.96	-0.11	-	4.09	-
Y110	Main4	4.05	3.94	-0.11	-	4.09	-
Y100	Main5	4.02	3.94	-0.08	-	4.08	-
Y79	Main6	3.96	3.93	-0.03	-	4.08	-
Main Channel							
	Main 7	-	3.92	-	-	4.08	-
	Main 8	-	3.92	-	-	4.07	-
	Main 9	-	3.91	-	-	4.06	-
Y75	Main 10	3.69	3.90	0.21	-	4.05	-
	Main 11	-	3.89	-	-	4.04	-
Y70	Main 12	3.79	3.89	0.10	-	4.04	-
	Main 13	-	3.89	-	-	4.04	-

		50 year Event Peak Levels			100 year Event Peak Levels		
Council Cross Section	XP-Storm Node	LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
	Main 14	-	3.89	-	-	4.04	-
Y60	Main 15	3.72	3.88	0.16	-	4.04	-
	Main 16	-	3.87	-	-	4.03	-
Y50	Main 17	3.67	3.86	0.19	-	4.02	-
	Main 18	-	3.86	-	-	4.02	-
Y40	Main 19	3.56	3.85	0.29	-	4.02	-
	Main 20	-	3.85	-	-	4.01	-
	Main 21	-	3.84	-	-	4.00	-
Y30	Main22	3.5	3.84	0.34	-	4.00	-
u/s Corso	Main23	3.52	3.83	0.31	-	4.00	-
d/s Corso	Main24	1.9	3.31	1.41	-	3.38	-
	Main 25	-	3.31	-	-	3.38	-
	Main 26	-	3.14	-	-	3.21	-
Nodes off Main Channel							
	O	-	3.89	-	-	4.04	-
	P	-	3.86	-	-	4.02	-
	Q	-	3.84	-	-	4.00	-
	R	-	6.16	-	-	6.18	-
	N	-	3.89	-	-	4.04	-

Note *Nodes on eastern boundary of site shaded*
Refer to Figure 3 and Figure 5 for node locations
Council cross sections column specifies section at or near XP-Storm node location

6.3 Stormwater Drainage Network Upgrades

Detailed survey of the site indicates two stormwater pipes that traverse the site as shown on Figure 7. The development proposed for the site makes it necessary to realign these pipes.

- ***Cansdale Street***

Existing stormwater infrastructure includes a sag on Cansdale Street approximately 77 metres north of the intersection of Venner Road and Cansdale Street. A total catchment of 3.6 ha drains to this point and is then conveyed to the open channel via a 900 mm diameter stormwater pipe. A field inlet is located approximately 89 metres north east of the sag.

The proposed development for the site includes the construction of a basement car park in the north western corner of the site making it is necessary to realign this pipe as shown in Figure 7. As part of the conditions required by Council, it was also necessary to upgrade this pipe to entirely convey the 100 year discharge.

It was decided to alter the pipe alignment to pass around the basement car park and connect to the existing field inlet. In order to design the upgraded pipe line such that no adverse impacts were experienced at Cansdale Street a hydraulic grade line analysis was carried out. The full results of these calculations are reported in Appendix C. Key outcomes from this assessment are summarised in Table 9. The total length of pipe has increased from 263 metres to 280 metres. The results of this assessment will be finalised during detailed design.

Table 9 Cansdale Street Pipe Upgrade Results

Pipe Section	A	B	C
Contributing Catchment Area (ha)	3.15	0.47	0.98
Total Flow Q100 (m^3/s)	1.90	2.17	2.72
Pipe Section Length (m)	40.3	66.4	172.9
Pipe Diameter (mm)	900	1050	1200
Upstream invert level (m AHD)	5.00	4.00	2.50
Downstream Invert Level (m AHD)	4.50	2.50	1.35
Upstream Head (m AHD)	4.31	3.41	2.19
Downstream Head (m AHD)	3.86	2.99	1.35

- ***South East Corner***

As shown on Figure 7, a single 1650 mm diameter stormwater pipe crosses the south eastern corner of the development site. This pipe conveys stormwater runoff from catchments upstream and discharges it into the upstream end of the open drain, at the point where piped runoff from the west also enters the drain. Again, due to the proposed development it was necessary to realign this pipe to pass around the boundary of the site rather than through it. The proposed pipe alignment is shown on Figure 7.

Analysis of the effect of this realignment was carried out using the XP-STORM model developed for the flood assessment. The addition of a man hole and extra pipe length to this section of the stormwater drainage system means that additional losses are incurred. In order to ensure no worsening of flood levels in the vicinity of the pipe, it was necessary to upgrade the pipe by adding a second 1650 diameter pipe. Current invert levels were maintained. Based on the alignment shown in Figure 7 it is clear that an extra section of pipe has been added. The total length of pipe has increased from 77 metres to 96 metres. The results of this analysis are summarised in Table 10. The results of this assessment will be finalised during detailed design.

Table 10 South East Corner Pipe Upgrade Results

	100 year ARI			50 year ARI		
Node	Existing WSL (mAHD)	Developed WSL (mAHD)	Mitigated WSL (mAHD)	Existing WSL (mAHD)	Developed WSL (mAHD)	Mitigated WSL (mAHD)
Trib B	4.45	4.46	4.37	4.36	4.38	4.26
Trib B.1	4.45	4.46	4.37	4.36	4.38	4.26
Trib C	4.45	4.46	4.37	4.36	4.38	4.26
	10 year ARI			2 year ARI		
Node	Existing WSL (mAHD)	Developed WSL (mAHD)	Mitigated WSL (mAHD)	Existing WSL (mAHD)	Developed WSL (mAHD)	Mitigated WSL (mAHD)
Trib B	4.16	4.19	3.98	3.64	3.77	3.58
Trib B.1	4.16	4.19	3.98	3.62	3.76	3.49
Trib C	4.16	41.9	3.98	3.62	3.76	3.46

7. CONCLUSION

It is proposed to construct a retirement village on a site at the corner of Cansdale Road and Venner Road in Yeronga (the study site). Figure 1 shows the location of the site.

Development of the site is constrained by the presence of a waterway corridor that affects the eastern part of the site (refer Figure 2) and flood mitigation measures proposed in the *Yeronga Local Stormwater Management Plan* (June 2003) (refer Figure 6). The waterway corridor boundary is approximately 38 metres from the eastern boundary of the site, thus limiting development within this area. However, Council has agreed to a 25 metre set back from the eastern boundary. The open drain will remain unchanged under developed conditions thus no impact on flood levels is expected.

Some stormwater drainage infrastructure has been upgraded to accommodate for the aspects of the proposed development such as basement car parks. The Cansdale Street sag has been redesigned and the pipe realigned to convey the 100 year ARI discharge to the open channel, around the edge of the development. Similarly, the pipes traversing the south eastern corner of the development have also been upgraded and realigned.

FIGURES

Figure 1 **Locality Plan**

Figure 2 **Drainage Paths**

Figure 3 **XP-STORM Model Layout**

Figure 4 **Catchment Boundaries**

Figure 5 **Cross Section Locations**

Figure 6 **Previous Proposed Mitigation Option**

Figure 7 **Stormwater Pipe Locations**

Figure 8 **Headwall Configuration**

APPENDIX A

Peak Flows and Velocities

	Existing Case Peak Velocities (m/s)		
Node	Q50	Q10	Q2
G-Main4	0.60	0.29	0.17
O-Main12	0.25	0.65	0.22
P-Main17	0.25	0.25	0.24
F-Main1	0.29	0.31	0.25
R-Main22	0.15	0.12	0.09
N-Main12	0.20	0.20	0.19
Main22-23	1.61	1.61	1.52
Main24-25	-0.38	-0.36	-0.29
Main25-26	0.74	0.74	0.73
Main17-18	0.99	1.00	1.01
Main18-19	0.87	0.86	0.81
Main19-20	-0.84	-0.85	-0.85
Main20-21	1.05	1.03	1.03
Main21-22	1.00	0.99	1.01
Main12-13	0.90	0.88	0.85
Main13-14	1.09	1.08	1.04
Main14-15	1.20	1.19	1.15
Main15-16	0.99	0.99	0.95
Main16-17	-0.91	-0.89	-0.88
Drain4	-	-	-
Main10-11	1.00	0.99	1.01
Main11-12	0.71	0.68	0.64
Drain3	-	-	-
Drain1	-	-	-
Drain2	-	-	-
AB-CDE	0.82	0.77	0.70
CDE-FRd	0.39	0.34	0.30
Q-Main22	0.65	0.56	0.40
244.1	1.00	0.83	0.66
PipesL21	1.14	1.15	1.20
CorsoPipes	2.33	1.86	1.33
PipesD5	-	-	-
OverlandC	0.34	0.29	0.23
PipesC	1.10	1.06	0.99
OverlandD	0.45	0.38	0.47
PipesD	0.93	0.89	0.87
OverlandE	-0.33	-0.27	-0.17
PipesE	0.97	0.99	0.91
OverlandA	0.39	0.34	0.23
PipesA	1.33	1.31	1.21

	Existing Case Peak Velocities (m/s)		
OverL47	0.64	0.54	0.41
PipesL47	2.09	2.07	2.08
OverL48	0.57	0.47	0.27
PipesL48	2.35	2.32	2.25
OverM5D2	-	-	-
PipesM5D2	-	-	-
Weir	0.00	0.00	0.00
FREE	1.00	1.00	1.00

	Existing Case Peak Discharges (m^3/s)		
Node	**Q50**	**Q10**	**Q2**
G-Main4	8.45	4.03	2.27
O-Main12	2.24	5.87	2.00
P-Main17	3.44	3.55	3.40
F-Main1	3.89	3.41	3.12
R-Main22	3.04	2.03	1.10
N-Main12	2.38	2.46	2.24
Main22-23	20.31	16.12	11.42
Main24-25	-17.07	-13.28	-8.79
Main25-26	20.13	15.99	11.39
Main17-18	20.03	15.25	10.28
Main18-19	19.11	14.99	10.18
Main19-20	-16.87	-12.09	-7.86
Main20-21	18.50	14.61	10.07
Main21-22	18.21	14.45	10.05
Main12-13	22.83	16.66	10.46
Main13-14	21.61	15.85	10.22
Main14-15	21.00	15.54	10.16
Main15-16	20.25	15.27	10.08
Main16-17	-17.61	-12.21	-7.82
Drain4	-	-	-
Main10-11	23.35	16.53	10.16
Main11-12	21.97	16.12	10.03
Drain3	-	-	-
Drain1	-	-	-
Drain2	-	-	-
AB-CDE	11.12	8.02	6.61
CDE-FRd	14.88	10.04	5.36
Q-Main22	4.88	3.48	1.98
244.1	14.61	9.23	4.36
PipesL21	1.08	1.09	1.14
CorsoPipes	5.04	4.00	2.85
PipesD5	-	-	-
OverlandC	10.51	6.67	3.15
PipesC	1.09	0.99	0.94
OverlandD	10.04	6.33	2.89
PipesD	0.84	0.84	0.82
OverlandE	-8.01	-4.50	-1.31
PipesE	0.92	0.93	0.86
OverlandA	11.39	7.47	3.00
PipesA	1.51	1.48	1.37

	Existing Case Peak Discharges (m^3/s)		
OverL47	14.95	9.23	3.53
PipesL47	4.56	4.52	4.48
OverL48	17.23	10.10	2.70
PipesL48	5.13	5.08	4.92
OverM5D2	-	-	-
PipesM5D2	-	-	-
Weir	0.00	0.00	0.00

APPENDIX B

Hydraulic Grade Line Calculations – Cansdale Street

Hydraulic Grade Line Calculations for Cascade Street Spu
Major Event Q100

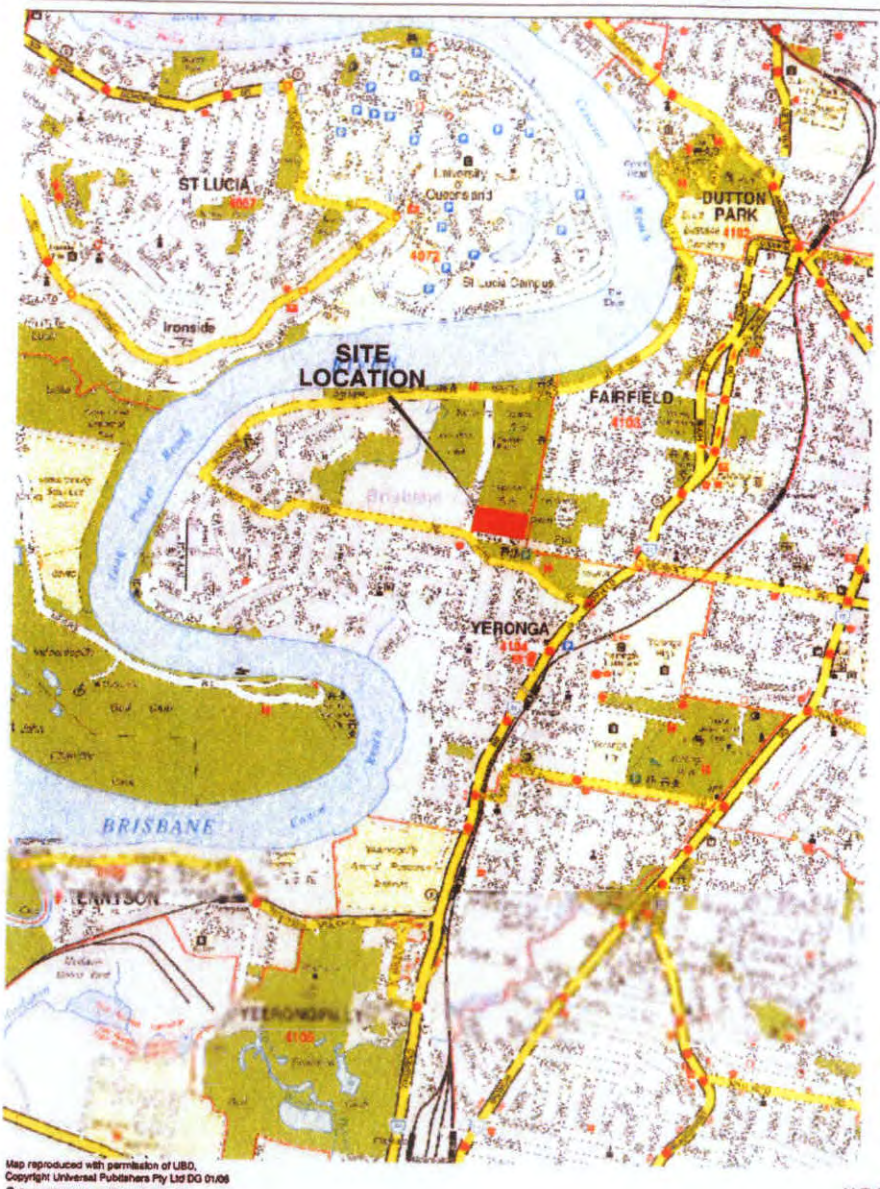
Section	Catchment Data						Pipe Data																	
	Sub Catch Area	Sub Cat Intensity	fr	C100	CA	Runoff	Ic	Intensity	Total CA	Total Flow	Diameter	Velocity	US IL	dIs/L	Length	A	R	flow time	Head loss			MH	MH	Action head	
	Continuous	Dominant																							
	m²	mm	mm/hr		ha	m³/s	min	mm/hr	ha	m³/s	m	m/s	mAHD	mAHD	m	m²	m	min	pipe	0.013	Ku=Xs	Ug/Qo	Loss	Loss	mAHD	mAHD
																							coef*	m		

APPENDIX C

Landscape Concept

Yeronga Retirement Village
Hydraulic Analysis

Cardno



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N.T.S.

FIGURE 1
SITE LOCALITY PLAN

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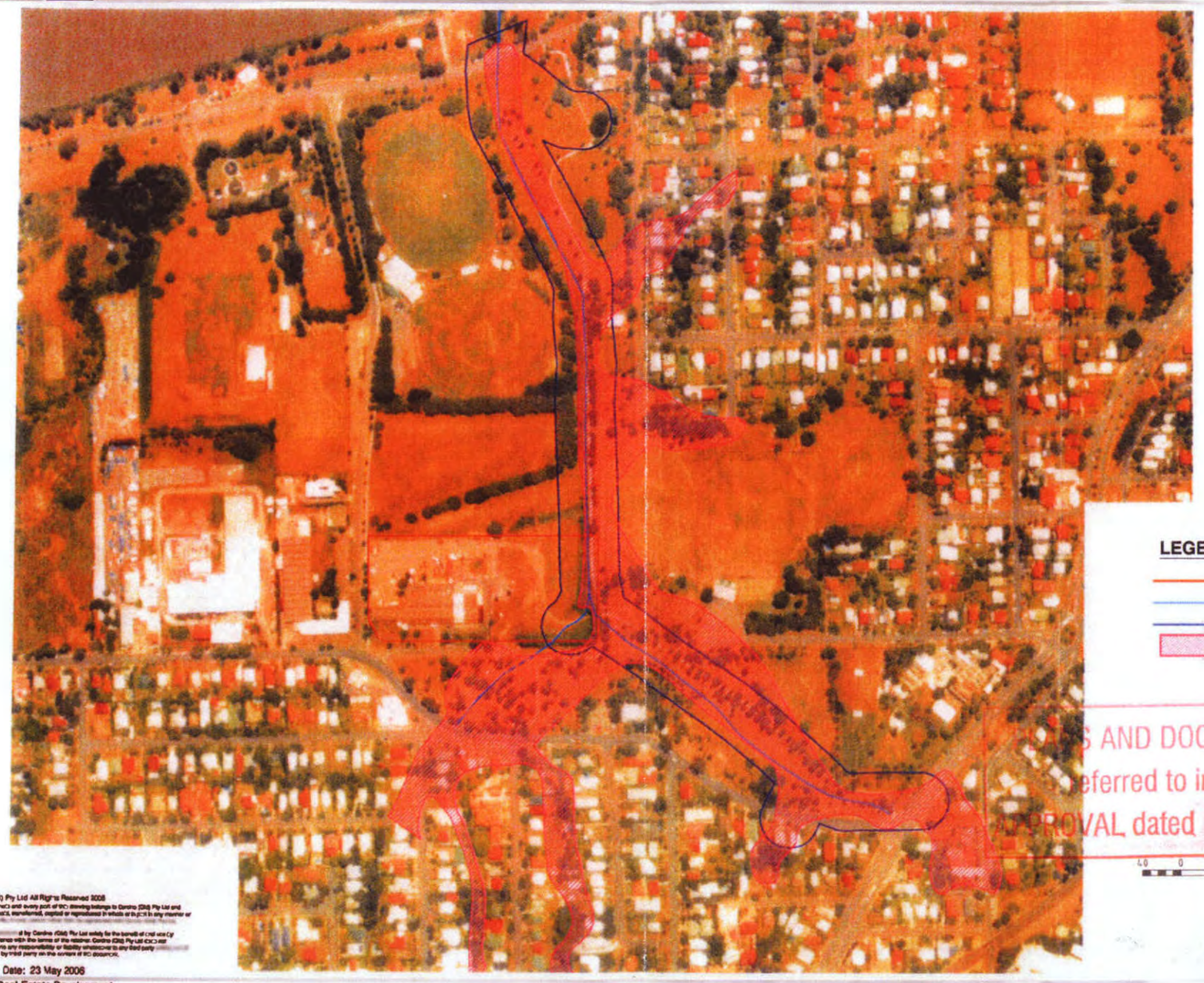
Harrisons Real Estate Development

Project No.: 3500/34

BCC.058.8832

Yeronga Retirement Village
Hydraulic Analysis

Cardno



N

LEGEND

- SITE BOUNDARY
- DRAINAGE PATH
- WATERWAY CORRIDORS
- Q50 Existing Inundation (Yeronga LSMP)

S AND DOCUMENTS
eferred to in the
APPROVAL dated - 3 OCT 2006

40 0 40 80 120 160 200m
1:4000

Scale 1:4000 (A3)

FIGURE 2
DRAINAGE PATHS

Project No.: 3500/34

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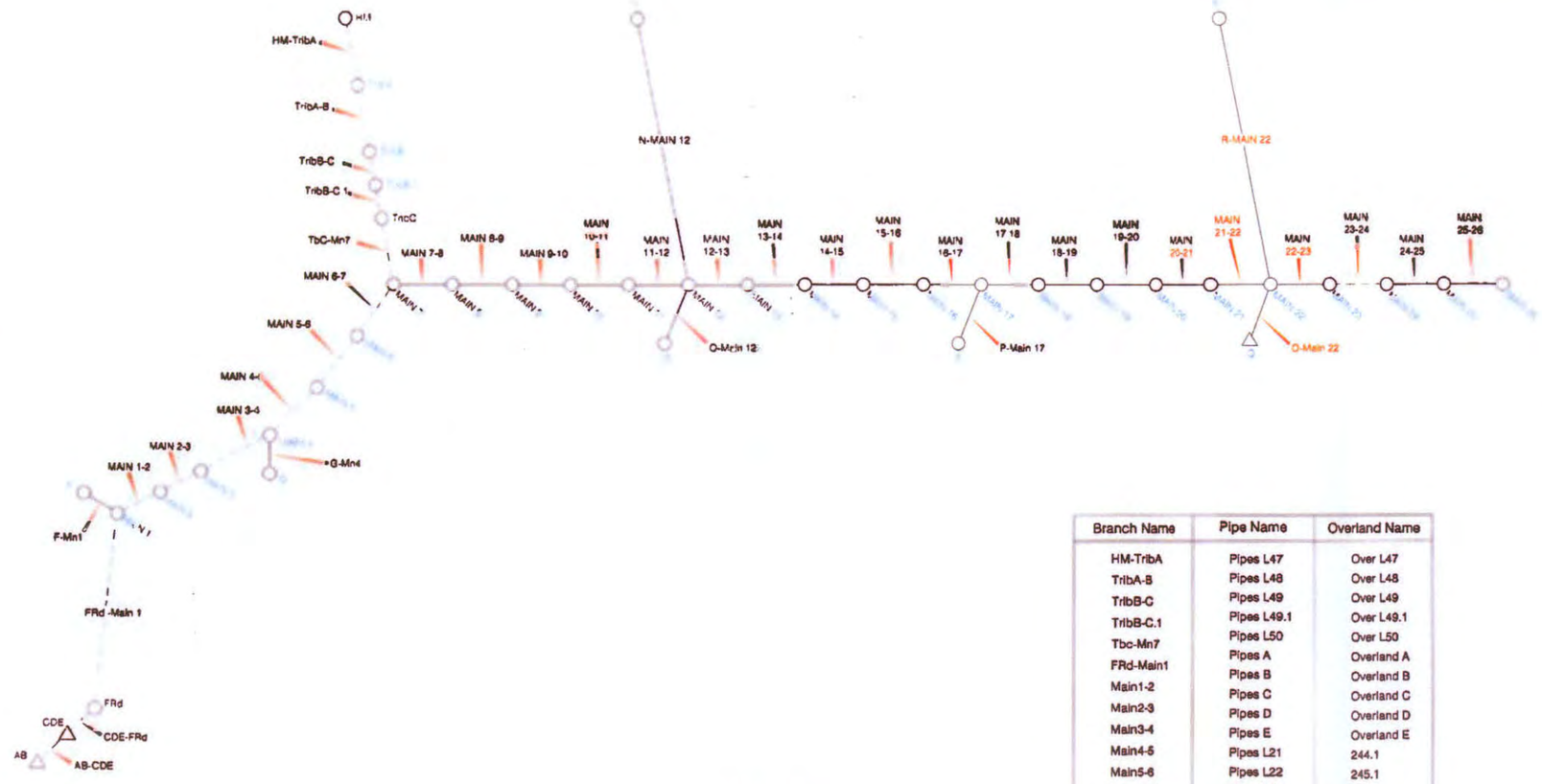

Branch Name	Pipe Name	Overland Name
HM-TribA	Pipes L47	Over L47
TribA-B	Pipes L48	Over L48
TribB-C	Pipes L49	Over L49
TribB-C.1	Pipes L49.1	Over L49.1
Tbc-Mn7	Pipes L50	Over L50
FRd-Main1	Pipes A	Overland A
Main1-2	Pipes B	Overland B
Main2-3	Pipes C	Overland C
Main3-4	Pipes D	Overland D
Main4-5	Pipes E	Overland E
Main5-6	Pipes L21	244.1
Main6-7	Pipes L22	245.1
Main23-24	Pipes L23	246.1
Drain 5	Corso Pipes	Weir
	Pipes D5	-

LEGEND

- - - - MULITI LINKS

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N.T.S.

FIGURE 3
XP-STORM MODEL LAYOUT

Project No.: 3500/34
Last Date: 23 May 2005 - 3:19pm

BCC.058.8864

Yeronga Retirement Village
Hydraulic Analysis

Gardino



75 0 75 150 225 300 375m
1:7500

Scale 1:7500 (A3)

FIGURE 4

CATCHMENT BOUNDARIES

Project No.: 3500/34

Rev: Orig. Date: 23 May 2006

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BCC.058.8865

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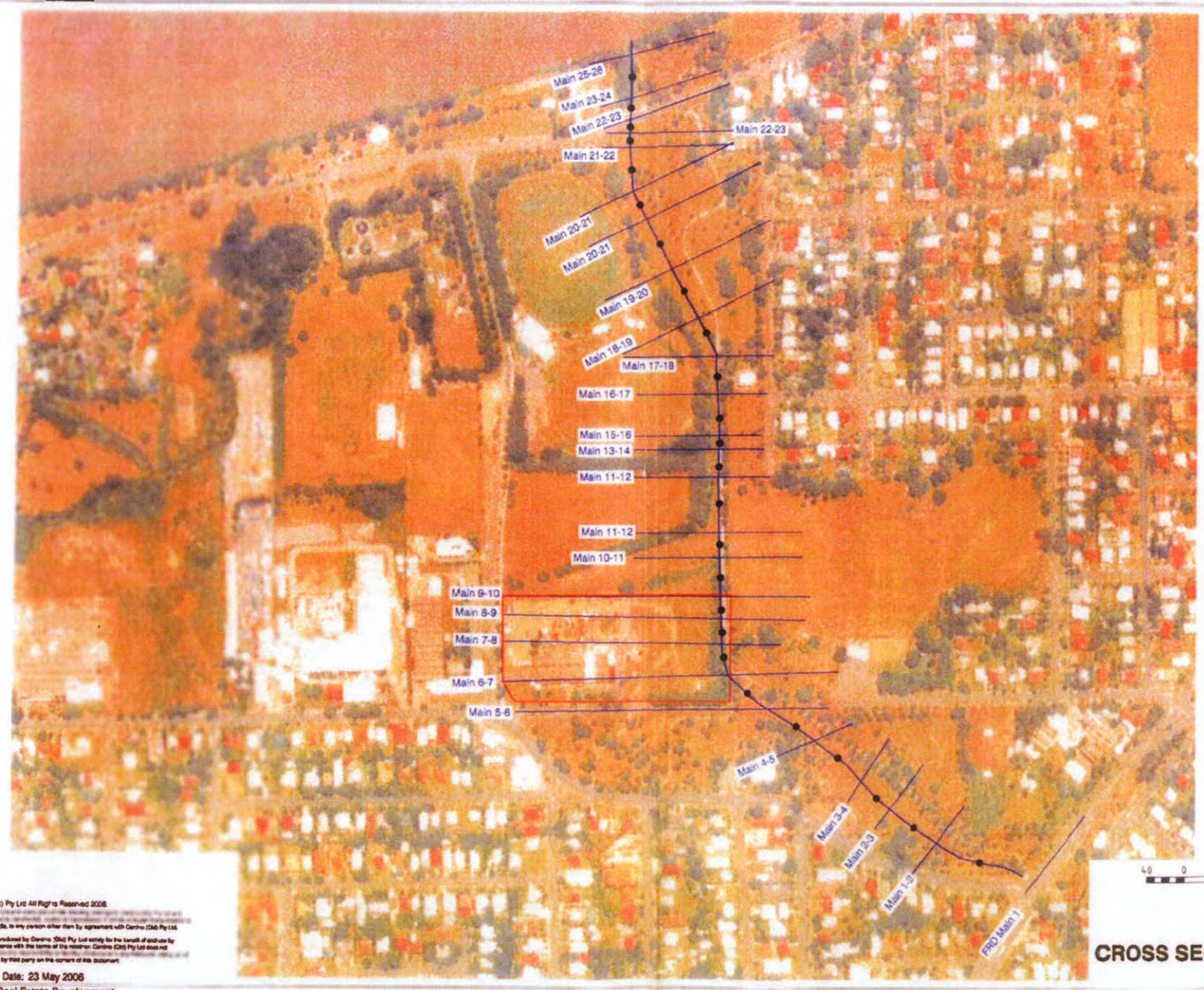

40 0 40 80 120 160 200m
1:4000

Scale 1:4000 (A3)

FIGURE 5
CROSS SECTION LOCATIONS

Project No.: 3500/34

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40 0 40 80 120 160 200m
1:4000

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FIGURE 6

PREVIOUS PROPOSED MITIGATION OPTIONS

Project No.: 3500/34

BCC.058.8867

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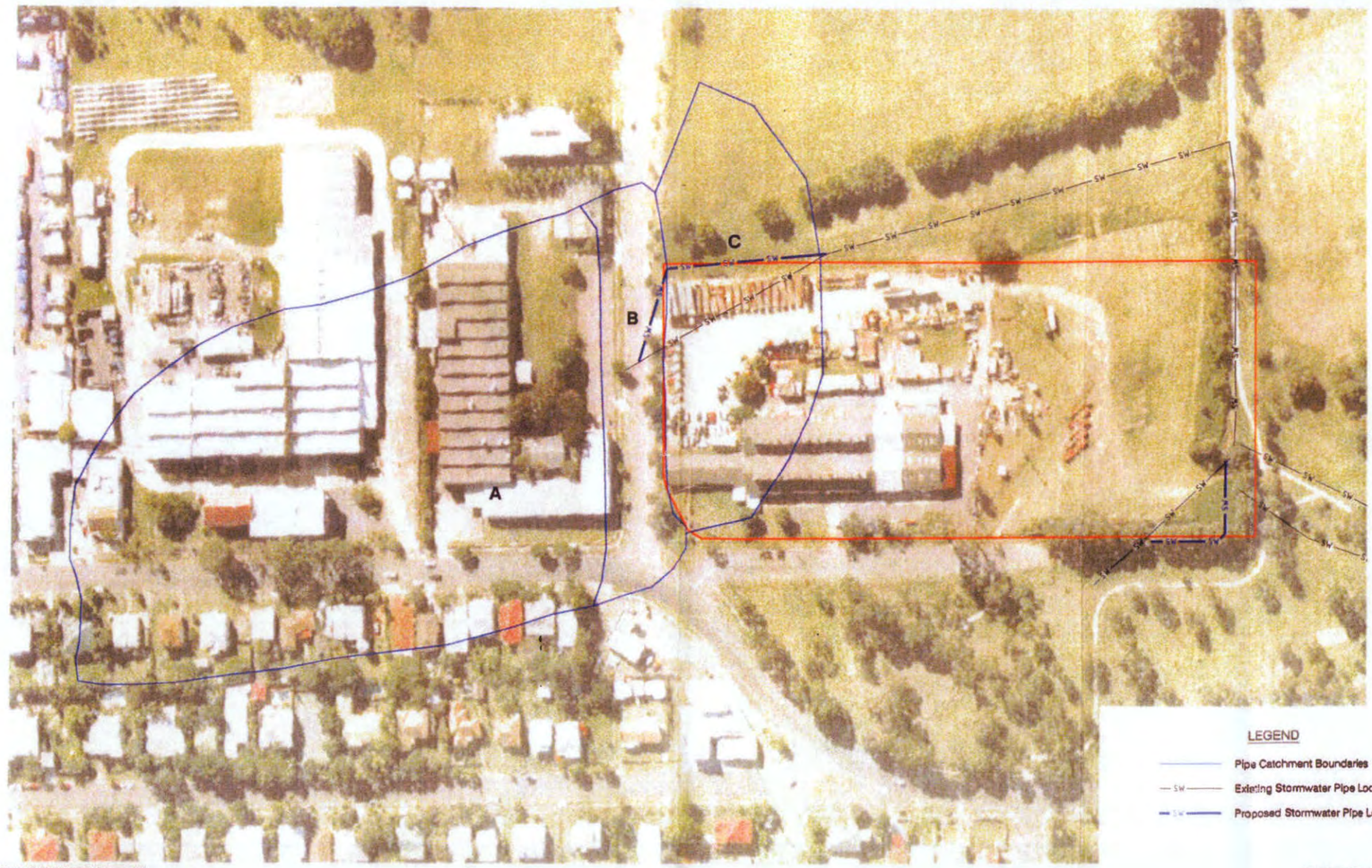

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FIGURE 7
STORMWATER PIPE LOCATIONS

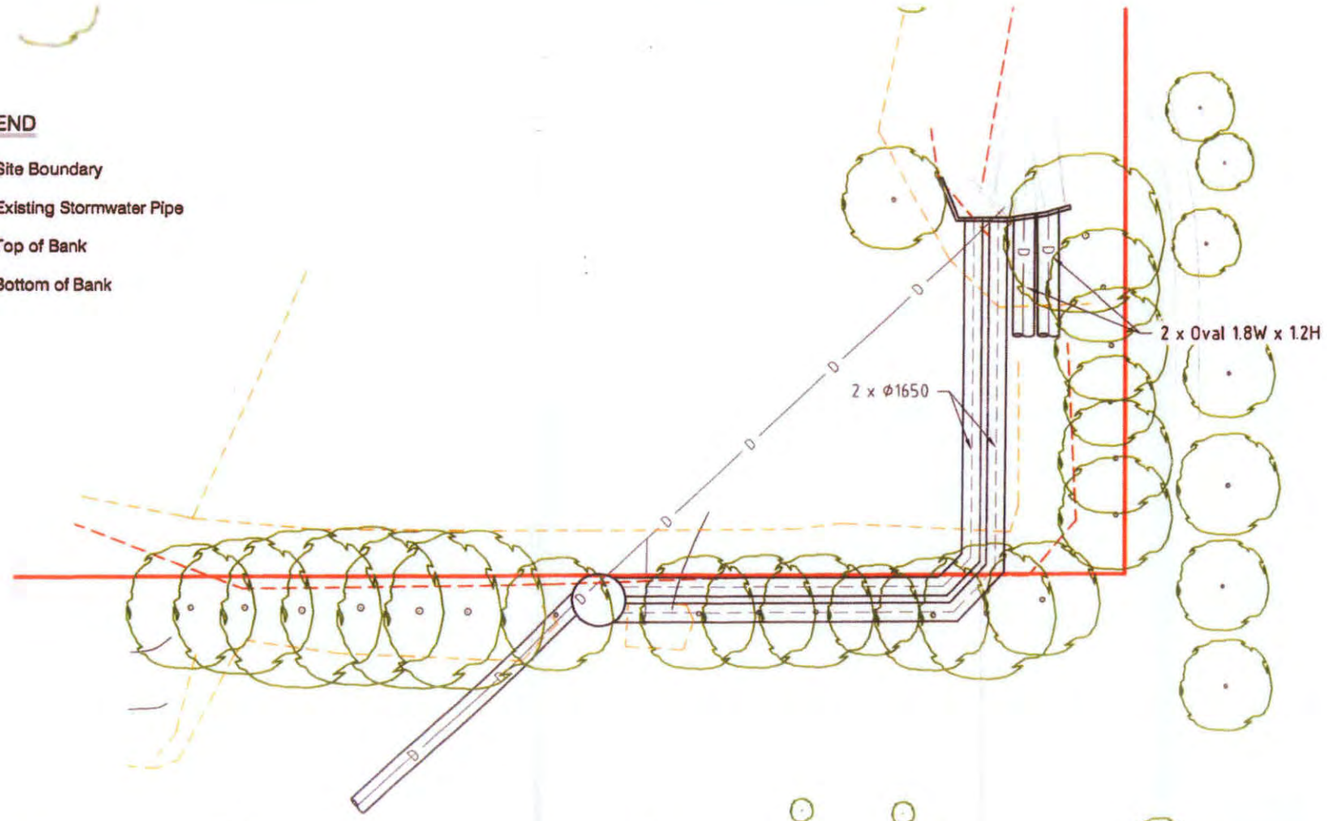
Project No.: 3500/34

Yeronga Retirement Village
Hydraulic Analysis

Cardno

LEGEND

- Site Boundary
- Existing Stormwater Pipe
- Top of Bank
- Bottom of Bank



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5 0 5 10 15 20 25m
1:500

Scale 1:500 (A4)

FIGURE 8
HEADWALL CONFIGURATION

Rev: Orig. Date: 23 May 2006

Harrisons Real Estate Development

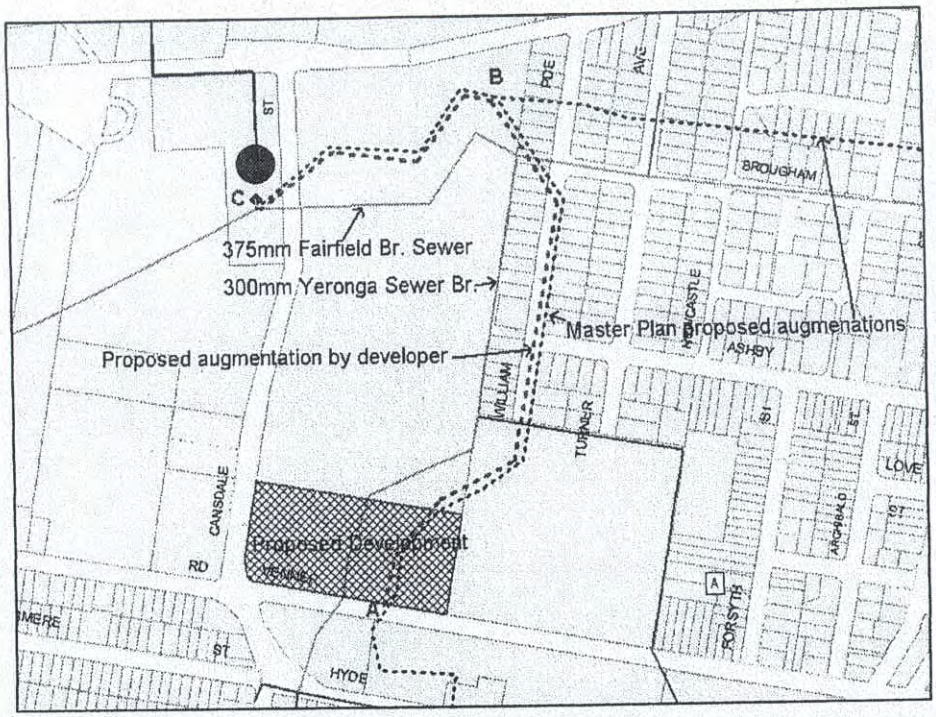
Project No.: 3500/34

PRINT DATE 23 May, 2006 - 3:27pm

CAD FILE J:\3500-34\Acad\Hydraulic Analysis\Figure 8 - Headwall Configuration.dwg

BCC.058.886

Fig 6 – Proposed augmentations



5.0 SUMMARY OF INVESTIGATION

5.1 Water Supply

The existing infrastructure has the capacity to provide water services to proposed development and therefore no external augmentation works are required.

5.2 Waste Water Disposal

External augmentation works are required in order to connect the development site to the existing gravity system. That is,

AB – 225mm pipe
BC – 300mm pipe

PLAN NO: S917956 SEWER AUGMENTATION
Dated: 3/10/2006

PLANS AND DOCUMENTS
referred to in the
3 OCT 2006
APPROVAL dated

BCC.106.0756

8746/06 COUNCIL'S DELEGATE

BRISBANE CITY COUNCIL

DECISION ARRIVED AT BY THE URBAN PLANNING AND ECONOMIC DEVELOPMENT COMMITTEE AS DELEGATE OF COUNCIL DURING THE SPRING RECESS 2006, ON A MATTER USUALLY COMING UNDER THE JURISDICTION OF THE URBAN PLANNING AND ECONOMIC DEVELOPMENT COMMITTEE

Recommendation of 3 October 2006

Presented to Council for Information Purposes on 31 October 2005

B DEVELOPMENT APPLICATION – INTERGRATED RETIREMENT VILLAGE AT 15 CANSDALE STREET, YERONGA
DRS/USE/H05-917956

33. The Team Leader, Development Assessment Team South, reports that a development application has been submitted by PMM Group on behalf of ME Harrison Investment Co Pty Ltd, as follows:

Development Aspects	Preliminary Approval to override the Planning Scheme under S3.1.6 for a Material Change of Use for a Multi Unit Dwelling (Retirement) Village and Aged Care Accommodation with ancillary uses including a Shop, an Office and a Restaurant
General Description	Multi Unit Dwelling, Retirement Village, Aged Care Accommodation, Shop, Office and Restaurant
Land Ownership	Jukasupe Pty Ltd
Address of the Site	15 Cansdale Street, Yeronga
Described as	Lot 1 on RP150512, Parish of Yeerongpilly
Containing an area of	27,920 square metres

34. The proposal involves the following elements:

Preliminary Approval:

- 230 independent living units
- 135-bed care facility
- 80 serviced apartments.

35. The Team Leader advises that the application was lodged as an impact assessable application under *City Plan 2000* and as such public notification was required. Twenty submissions were received and the concerns of the submitters have been considered. The submissions and representations are submitted.

36. Continuing, the Team Leader advises that the subject application required Referral Coordination with referral to the Department of Main Roads as a Concurrence Agency and Energex Ltd, Office of Urban Management and the Environmental Protection Agency (Contaminated Land) as an Advice Agency.

37. The Team Leader recommends that the application be approved subject to reasonable and relevant conditions. The Committee agreed with Councillor Geraldine Knapp having earlier excluding herself due to a declaration of material personal interest in the development application.

38. **RECOMMENDATION**:

(i) That it be and is hereby resolved that whereas:

(a) A development application was properly made on the 11 April 2005 pursuant to Section 3.2.1 of the *Integrated Planning Act 1997*, described as follows:

Development Aspects	Preliminary Approval to override the Planning Scheme under S3.1.6 for a Material Change of Use for a Multi Unit Dwelling (Retirement) Village and Aged Care Accommodation with ancillary uses including a Shop, an Office and a Restaurant
General Description	Multi Unit Dwelling, Retirement Village, Aged Care Accommodation, Shop, Office and Restaurant
Land Ownership	Jukasupe Pty Ltd
Address of the Site	15 Cansdale Street, Yeronga
Described as	Lot 1 on RP150512, Parish of Yeerongpilly
Containing an area of	27,920 square metres

(b) been assessed against the applicable codes, Chapter 3 Section 2.5.2 Impact Assessment.

The Council -

(A) Upon consideration of the application, the relevant codes under *City Plan 2000* and those matters set forth in Section 3.5.4 (2) of the *Integrated Planning Act 1997* relevant to the application, considers that:

(1) The subject site is suitable for the proposed use
(2) The proposal would not detrimentally affect the amenity of the neighbourhood
(3) The amenity of the future residents on the site can be achieved to an acceptable standard
(4) The proposal will not have a detrimental impact on the surrounding road network.

(B) Accordingly considers that were the following reasonable and relevant conditions imposed on the development, it would be appropriate that the proposed development be carried out on the subject land:

- best practice sustainability principles to be incorporated
- limit the gross floor area onsite to 36,000 square metres (1:1.3)
- a maximum height of five storeys above a minimum habitable floor level (podium level)
- code assessment for a Multi Unit Dwelling (Retirement village) and ancillary uses as proposed
- design guidelines for future building design
- landscape plans for the interface with adjoining park
- rehabilitation of the waterway corridor and vegetation management
- upgrades to Infrastructure – water and sewer
- external works to upgrade drainage, traffic movement, street tree planting.

(ii) Whereas the Council determines as in (i) hereof, **THE COUNCIL APPROVES THE DEVELOPMENT APPLICATION** referred to above, subject to the conditions in the attached Development Approval Package submitted at attachment "B" and accordingly will:

(a) notify the applicant of the decision

(b) notify the Dutton Park Ward Councillor of this decision

(c) advise the Department of Main Roads, as a concurrence agency, of the decision at the expiration of the applicants negotiated decision period

(d) advise Energex, as an advice agency, of the decision at the expiration of the applicants negotiated decision period

(e) advise the Manager of City Planning of the decision

(f) advise the submitters of the decision at the expiration of the applicant's negotiated decision period.

1
A05/171410
[redacted]
Yeronga Football Club Inc.
Po Box 6063
FAIRFIELD GARDENS QLD 4103

2
A05/174176
[redacted]
19 Ormadale Road
YERONGA QLD 4104

3
A05/182779
[redacted]
22 Diane Street
YERONGA QLD 4104

4
A05/182777
[redacted]
22 Diane Street
YERONGA QLD 4104

5
A05/183278
[redacted]
26 Diane St
YERONGA QLD 4104

6
A05/193895
[redacted]
Cnr Hyde Road & Rome Street
North
YERONGA QLD 4104

7
A05/193897
[redacted]
47 Anita Street
YERONGA QLD 4104

8
A05/193903
[redacted]
Re/Max Colonial
445 Ipswich Road
ANNERLEY QLD 4103

9
A05/194805
[redacted]
36 William Parade
FAIRFIELD QLD 4103

10
A05/194800
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45 Forsyth Street
FAIRFIELD QLD 4103

11
A05/195950
[redacted]
65 Brisbane Corso
FAIRFIELD QLD 4103

12
A05/199261
[redacted]
122 Kadumba Street
YERONGA QLD 4104

13
A05/199264
[redacted]
14 Cook Street
YERONGA QLD 4104

14
A05/199266
Yeronga District Residents
Association
[redacted]
Po Box 6351
FAIRFIELD QLD 4103

Urban Planning and Economic Development Committee Presentation

15 Cansdale St, Yeronga

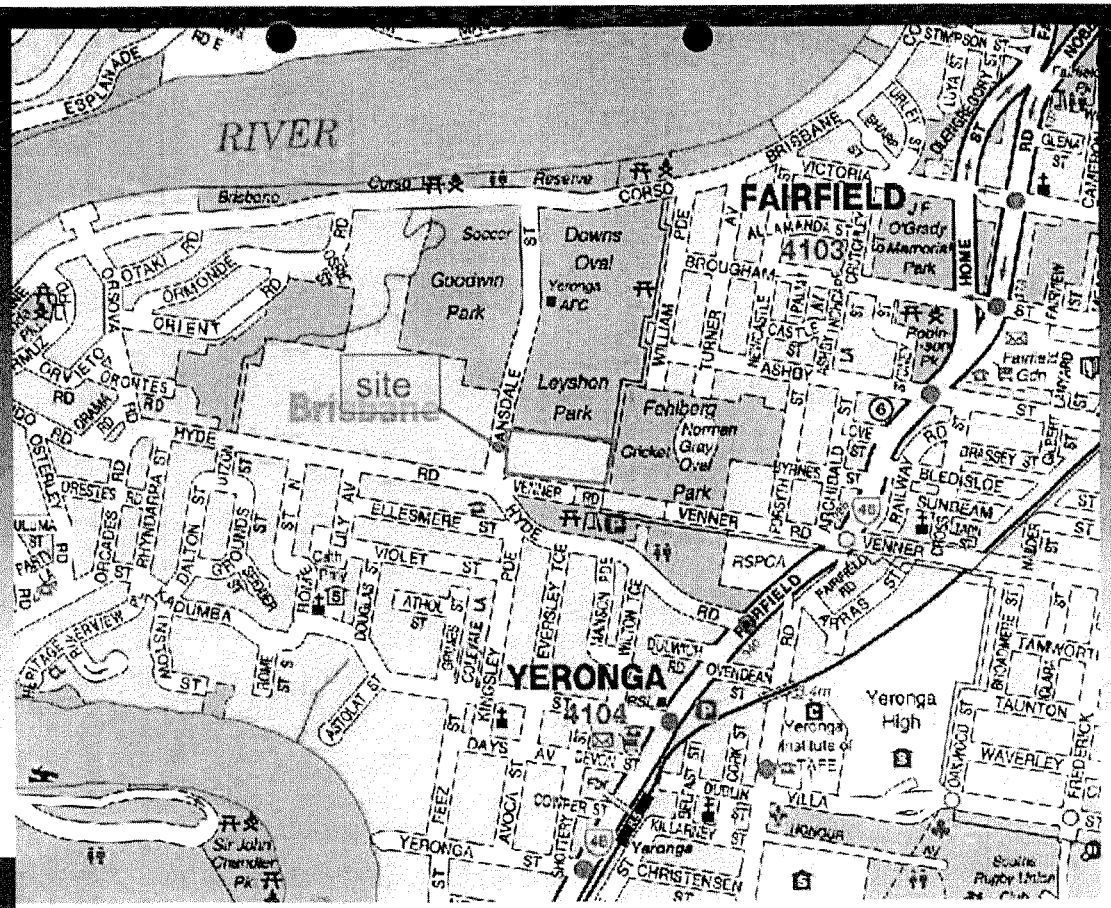
BRISBANE CITY

3 October 2006

(115)

Purpose:

Seek endorsement for the approval of the development application for a Preliminary Approval Overriding the Planning Scheme for a Material Change of Use (Multi Unit Dwelling - Retirement Village) at Yeronga.


RIVER
FAIRFIELD
4103
YERONGA
4104
site
Brisbane
Goodwin Park
Downs Oval
Leyshon Park
Fehlberg Cricket Park
Norman Gray Oval
O'Grady Memorial Park
Yeronga High
Yeronga Institute of TAFE
Sir John Chandler Pk
Yeronga
ESPLANADE
BRISBANE
VICTORIA
CORSO
HYDE
VENNER
ELLESMERE
VIOLET
ATHOL
DAYS
YERONGA
CHRISTENSEN
KILLARNEY
DUBLIN
VILLA
TAUNTON
WAVERLEY
TAMWORTH
FREDERICK
SUNBEAM
BLEDISLOE
ASHBY
BROUGHAM
ALLAMANDA
ORIENT
ORMONDE
OTAKI
ORONTES
ORCADES
RHYNDARRA
DALTON
KINGSLEY
EVERSLEY TCE
MANSON PDE
WILTON TCE
DULWICH
OVENDEAN
FAIRFIELD
RSPCA
RAILWAY
HOME
STIMPSON
GLENA
FAIRVIEW
Fairfield Gdn
Robinson Pk
Cath Park
Soccer
Reserve
Brisbane Corso
BRISBANE CITY

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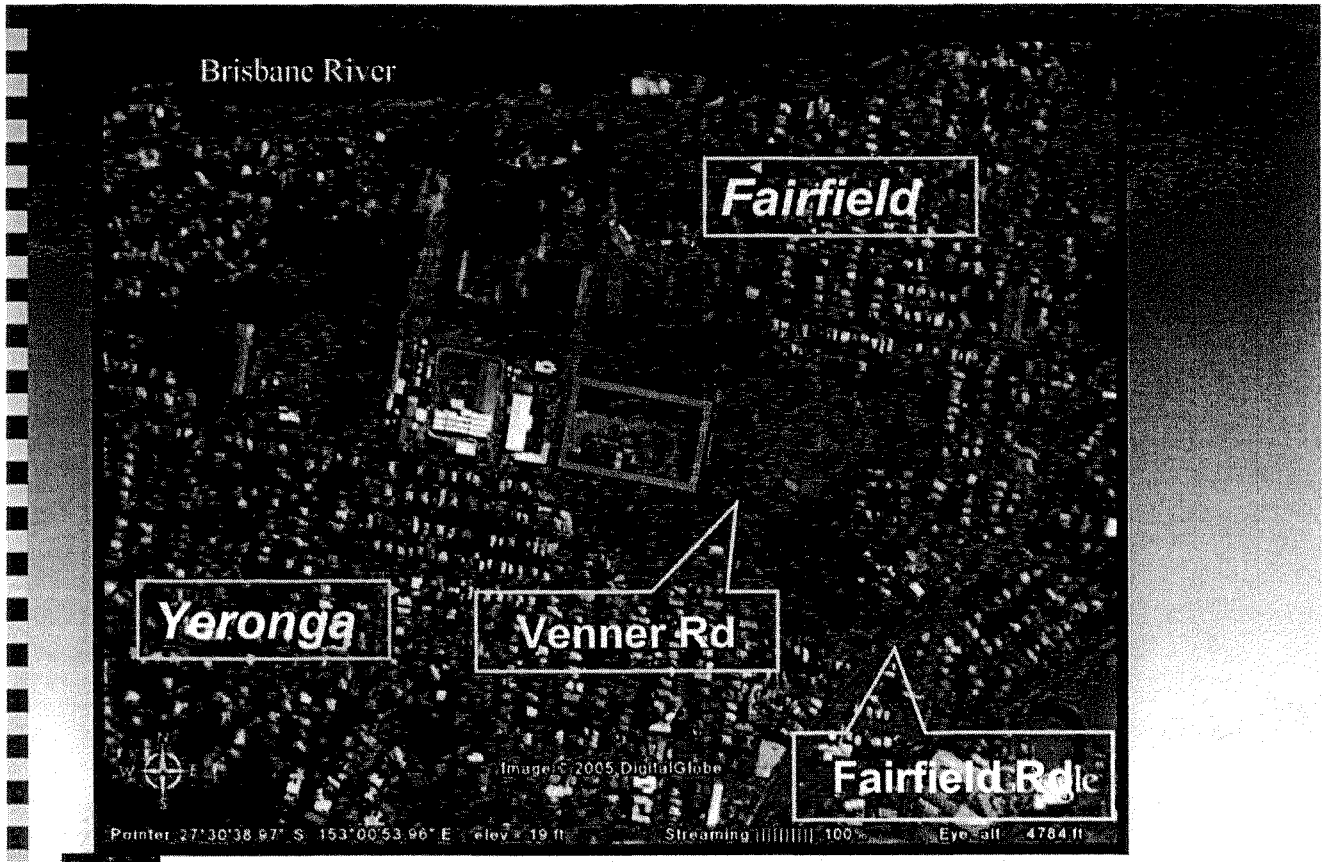


Aerial Photo

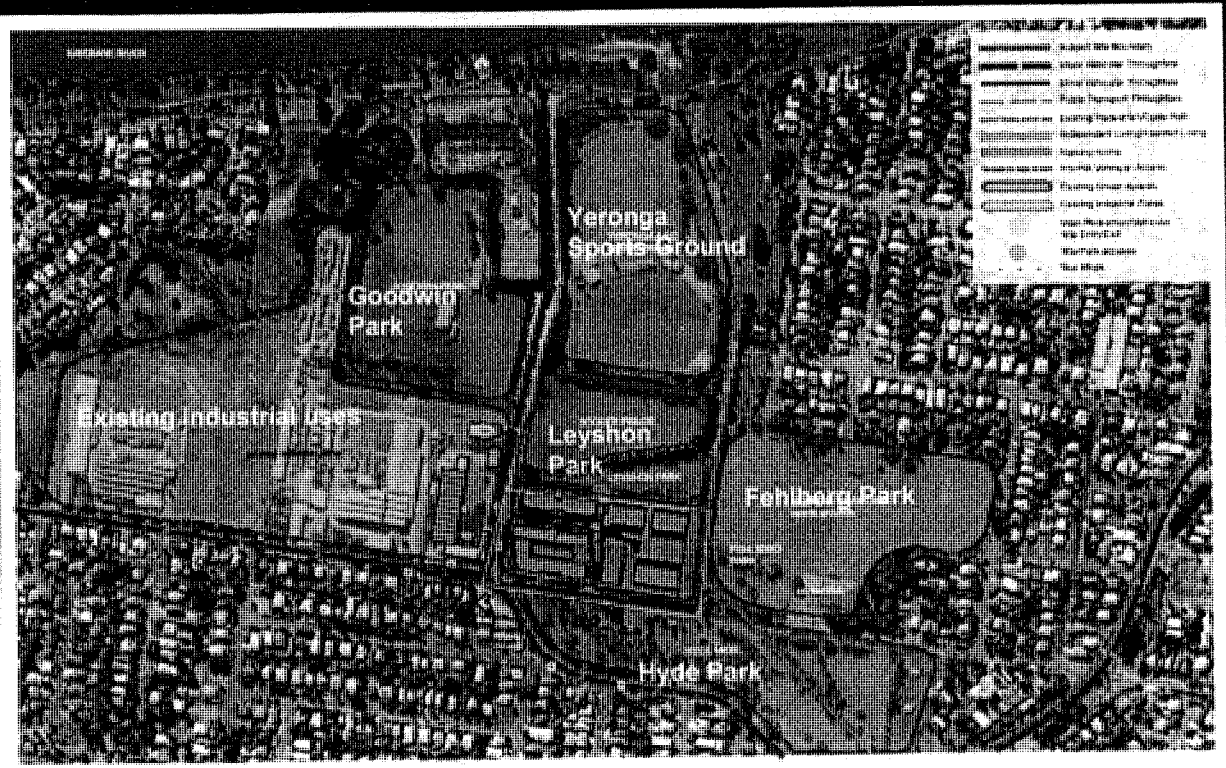
Proposal

Tri-care residential facility - 310 units and 135 beds

(135 bed nursing home, 80 serviced apartments, 230 independent living units)

- GFA - 36,000m2 (Plot Ratio 1.3)
- Parking - approx 400 vehicles
- Height - 3 to 5 storeys (above Q100 flood level)
- Staged Development (over 5 to 7 years)
- Ancillary Uses -

  (dining facility, health facilities, recreational area, swimming pool, lawn bowls, café and shop with less than 250 m^2 GFA)



BRISBANE CITY

Site Location Plan

Proposal

Preliminary Approval Overriding the Planning Scheme for a Material Change of Use (Multi Unit Dwelling - Retirement Village) at Yeronga

City Plan 2000:

Area Designation - Light Industry
Level of Assessment - Impact
Stephens District Local Plan

Consultation

·**Referral Coordination** - DMR (Concurrence); EPA (Contaminated Land)Energex, OUM (Advice)

·**City Planning** - Manager

·**Urban Management**

Submissions - 13 objections and 7 letters of support

Bulk and Scale (height), Flooding, Traffic, Impact on Parks and their uses, Parking, Character of local area

·**E&C Planning Guidance**: supports recommendation to approve

8 KEY ISSUES Resolved

- **Planning Process**

(Level of Assessment, Level of detail, precedents, staging and sequencing of development)

- **Hydraulic**

(overland flow, flooding, lawful point of discharge,)

- **Bulk and Scale**

(shadowing, setbacks, site layout, height, plot ratio, landscape treatment, parkland interface)

- **Environmental**

(vegetation management, waterway corridor, contamination, stormwater quality, air quality, noise)

- **Infrastructure**

(water supply, sewerage, external works)

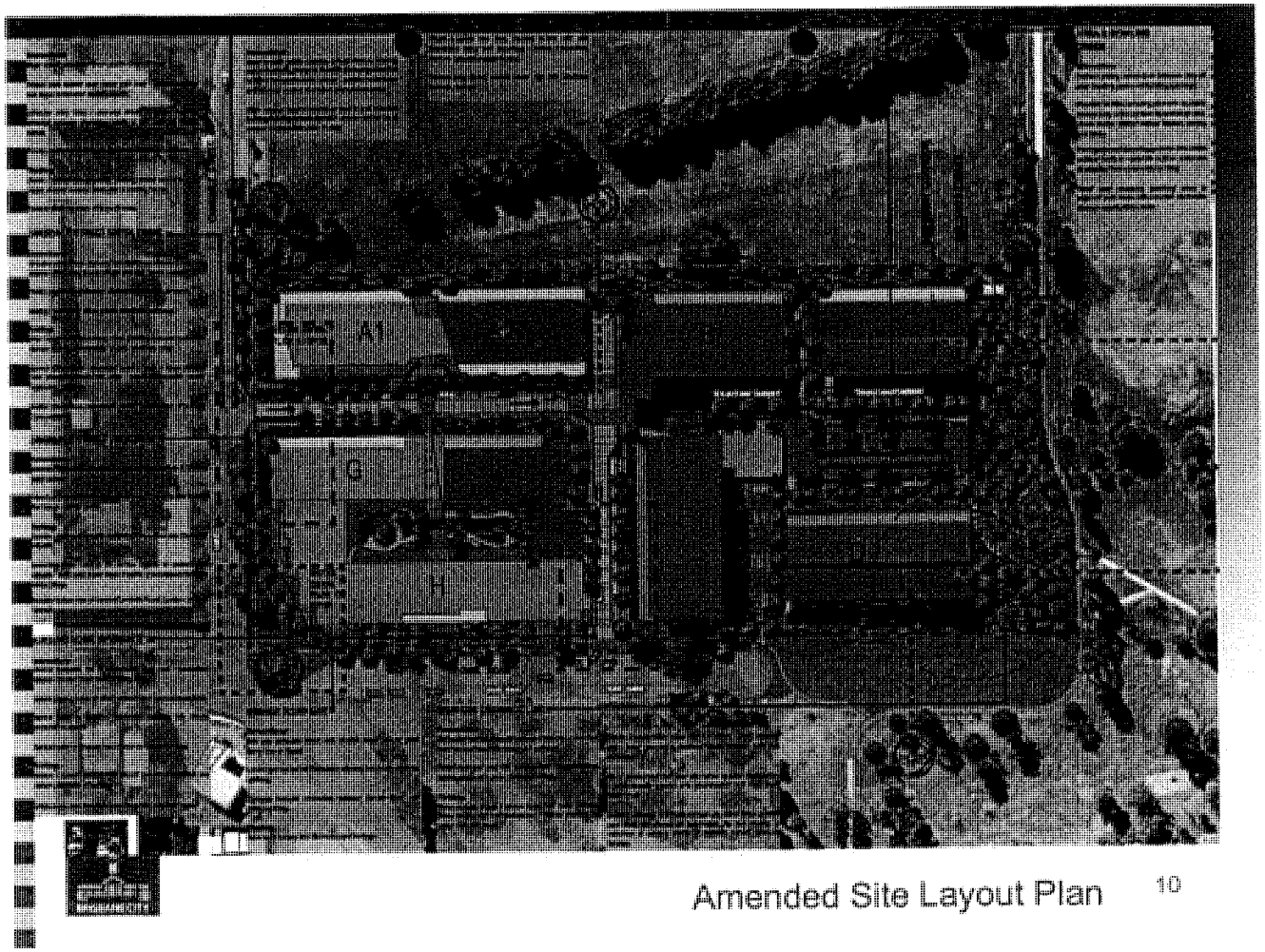
- **Traffic**

(access, on street parking, car park allocation, external works)

- **Consultation**

(local councillor, referral coordination, statutory)

- **Sustainable Development Principles**



Amended Site Layout Plan

11

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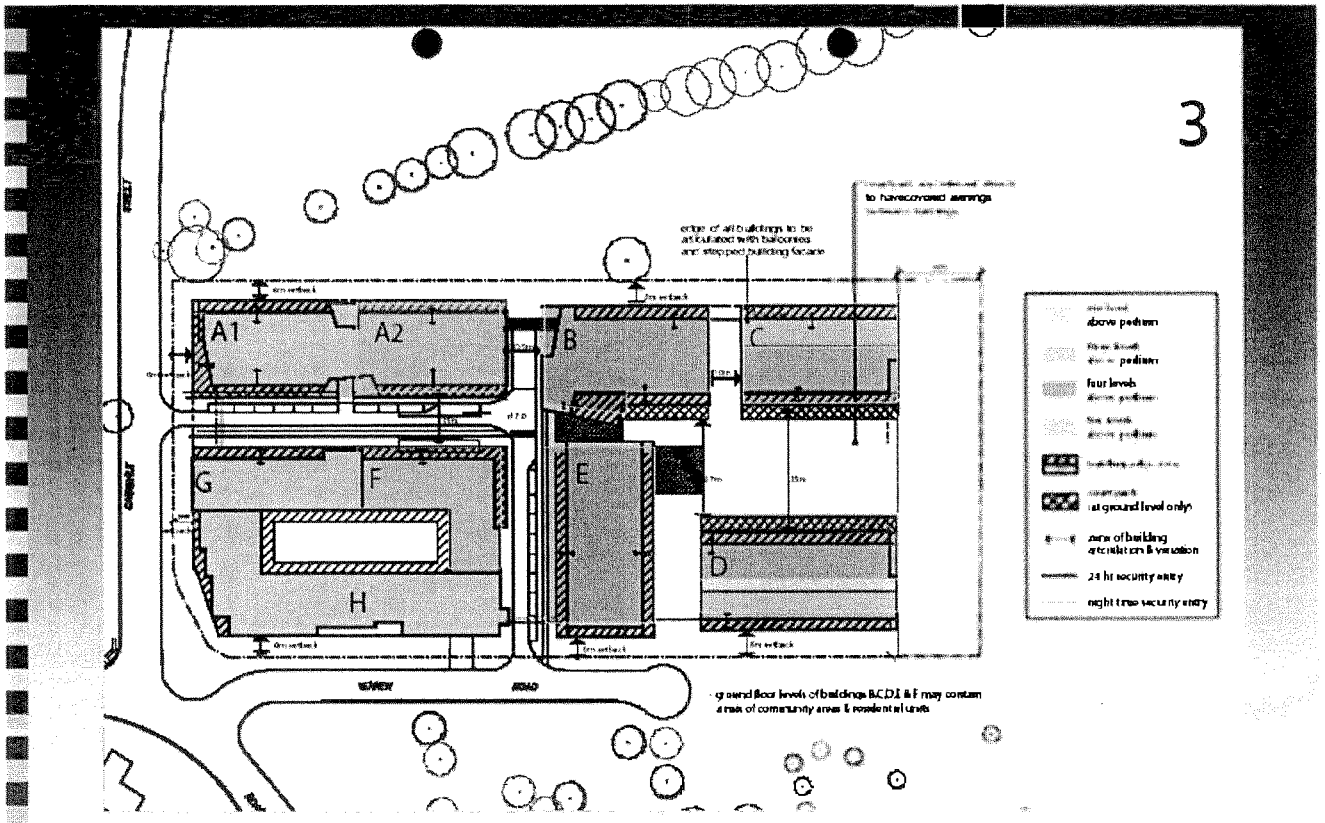


Building Envelope Plan

RECOMMENDATION TO URBAN PLANNING AND ECONOMIC DEVELOPMENT COMMITTEE

(114)

Development Application under the Integrated Planning Act 1997: Integrated Retirement Village on land at 15 Cansdale Street, Yeronga – ME Harrison Investment Co Pty Ltd
DRS/USE/H05-917956

1. The Senior Urban Planner, Development Assessment Team South, reports that a development application has been submitted by PMM Group on behalf of ME Harrison Investment Co Pty Ltd as follows:

1)	Development Aspects:	Preliminary Approval to overide the Planning Scheme under S3.1.6 for a Material Change of Use for a Multi Unit Dwellin g (Retirement) Village and Aged Care Accommodation with ancillary uses including a Shop, an Office and a Restaurant,
2)	General Description:	Multi Unit Dwelling, Retirement Village, Aged Care Accommodation, Shop, Office and Restaurant
3)	Land Ownership:	Jukasupe Pty Ltd;
4)	Address of the Site:	15 Cansdale St, Yeronga;
5)	Described as:	Lot 1 on RP150512, Parish of Yeerongpilly;
6)	Containing an area of:	27,920 square metres;

The proposal involves the following elements:

Preliminary Approval
- 230 independent living units
- 135-bed care facility
- 80 serviced apartments

The Urban Planner advises that the application was lodged as an Impact assessable application under Brisbane City Plan 2000 and as such public notification was required. Twenty submissions were received and the concerns of the submitters have been considered. The submissions and representations are attached.

2. Continuing, the Urban Planner advises that the subject application required Referral Coordination with referral to the Department of Main Roads as a Concurrence Agency and Energex Ltd, OUM and EPA (Contaminated Land) as an Advice Agency.

3. The Urban Planner recommends that the application be approved subject to reasonable and relevant conditions.

4. RECOMMENDATION:

I. That it be and is hereby resolved that whereas:

(a) A development application was properly made on the 11 April 2005 pursuant to Section 3.2.1 of the *Integrated Planning Act 1997*, described as follows:

i)Development Aspects:	Preliminary Approval to overide the Planning Scheme under S3.1.6 for a Material Change of Use for a Multi Unit Dwelling (Retirement Village and Aged Care Accommodation) with ancillary uses including a Shop, an Office and a Restaurant
ii)General Description:	Multi Unit Dwelling (Retirement Village and Aged Care Accommodation), Shop, Office and Restaurant.
iii)Land Ownership:	Jukasupe Pty Ltd;
iv)Address of the Site:	15 Cansdale St, Yeronga;
v)Described as:	Lot 1 on RP150512, Parish of Yeerongpilly;
vi)Containing an area of:	27,920 square metres;

(b) Pursuant to Section 3.5.4 of the Integrated Planning Act 1997, the proposal has been assessed against the applicable codes, Chapter 3 Section 2.5.2 Impact Assessment.

The Council –

(c) Upon consideration of the application, the relevant codes under Brisbane City Plan 2000 and those matters set forth in Section 3.5.4 (2) of the *Integrated Planning Act 1997* relevant to the application, considers that:

1) The subject site is suitable for the proposed use;
2) The proposal would not detrimentally affect the amenity of the neighbourhood;
3) The amenity of the future residents on the site can be achieved to an acceptable standard;
4) The proposal will not have a detrimental impact on the surrounding road network;

(d) Accordingly considers that were the following reasonable and relevant conditions imposed on the development, it would be appropriate that the proposed development be carried out on the subject land:

- Best practice sustainability principles to be incorporated
- Limit the GFA onsite to 36,000 m2 (1:1.3)
- A maximum height of 5 storeys above a minimum habitable floor level (podium level)
- Code assessment for a Multi Unit Dwelling (Retirement village) & ancillary uses as proposed
- Design guidelines for future building design
- Landscape plans for the interface with adjoining park
- Rehabilitation of the waterway corridor and vegetation management,
- Upgrades to Infrastructure – water and sewer
- External works to upgrade drainage, traffic movement, street tree planting

II. Whereas the Council determines as in 4. I. hereof, **THE COUNCIL APPROVES THE DEVELOPMENT APPLICATION** referred to above, subject to the conditions in the attached Development Approval Package;

(a) Notify the applicant of the decision;

(b) Notify the Dutton Park Ward Councillor of this decision;

(c) That the Department of Main Roads, as a concurrence agency, be advised of the decision at the expiration of the applicants negotiated decision period;

(d) That Energex, as an advice agency, be advised of the decision at the expiration of the applicants negotiated decision period;

(e) That the Manager of City Planning be advised of the decision; and

(f) That the submitters be advised of the decision at the expiration of the applicant's negotiated decision period.

[redacted]

Senior Urban Planner
Development Assessment Team South

[redacted]

Team Leader
Development Assessment Team South

REPORT AND RECOMMENDATION ON DEVELOPMENT APPLICATION

SUBMISSION BY DEBORAH MANGU

SITE: Address of Site: **15 Cansdale St, Yeronga Qld 4104** Real Property Description: **Lot 1 on RP150512, Parish of Y'pilly** Area of Site: **27920** Area Classification: **Light Industry Area Li** Name of Owner: **Yv Unit Trust** Name of Ward: **Dutton Park**	**APPLICATION:** Aspects of development: **Preliminary Approval to overide the Planning Scheme under S3.1.6 for a Material Change of Use for a Retirement Village including Multi Unit Dwelling, Aged Care Accommodation and ancillary Shop, Office and Restaurant** Description/Purpose of Proposal: **Retirement Village - Multi-Unit Dwelling, Aged Care Accommodation And Shop, Office And Restaurant** Applicant: **M E Harrison Investment Co Pty Ltd** **C/- Pmm Group** Application No.: **DRS/USE/H05-917956** Project No.: **DRS/PRO/P05-107231** Lodgement Date: **11 April 2005**

The Council has received a development application under the *Integrated Planning Act 1997* as detailed above.

1. BACKGROUND/HISTORY

The site is the located in the light industry area in Yeronga and contains a warehouse . The application was lodged on the 11 April 2005 after a series of prelodgement meetings. The application was changed on the 22 September 2005 where the reconfiguration component was withdrawn.

The demolition of the existing industrial buildings will not require Council planning approval.

2. THE PROPOSAL

The proposal consists of the following elements:

Tri-care residential facility - 310 units and 135 beds (135 bed nursing home, 80 serviced apartments, 230 independent living units)

- GFA - 36,000m2 (Plot Ratio 1.3)
- Parking - approx 400 vehicles
- Height - 3 to 5 storeys (above Q100 flood level)
- Staged Development – (over 5 to 7 years)

- Ancillary Uses - (dining facility, health facilities, recreational area, swimming pool, lawn bowls, café and shop with less than 250 m^2 GFA)

3. AREA CLASSIFICATION AND LAND USE IN THE LOCALITY

3.1. The site is located in Light Industry Area Classification, is currently used as a warehouse and containins buildings associated with its use

3.2. The site is bounded by Leyshon Park along the northern boundary, Fehlberg Park along the eastern boundary and Hyde Park along the Southern boundary and is surrounded by the following uses:

- to the west across Cansdale St warehousing ;
- to the south across Hyde Road a residential area of low medium density
- surrounding the parkland to the north and east a residential area of low medium density

4. THE INTEGRATED PLANNING ACT 1997

4.1. The application required 'referral coordination' under section 3.3.5 of the *Integrated Planning Act 1997* as the development was an application for preliminary approval to override the planning scheme (section 3.1.6 and section 6.1.35C of the Act)

5. PLANNING SCHEME AND PLANNING SCHEME POLICIES

6.1. The application required impact assessment, was publicly notified correctly under the *Integrated Planning Act 1997* and determined by Full Council

6.2. The subject site is within the areas designated Industry Area within the Strategic Plan. The proposed use is not consistent with this designation.

6.3. Stephens District Local Area Plan
There are no provisions in the Local Plan relating to this site except to retian its current use as Light Industry.

6. SUBMISSIONS, REPRESENTATIONS AND PUBLIC CONSULTATION

The Notice of Compliance has been submitted and twenty submissions have been received. Seven of these expressed support for the proposal. These submissions are summarised below:

Issue:	**Response:**
The site is unstable and very likely to be contaminated	The issue has been investigated and the site was removed from the contaminated land register. The current use is commercial in nature and has been for some time.

The proposed building height would detract from the views of residents in the area	It is acknowledged that the views of residents will change. However the proposed height is consistent with the height of buildings within the Light Industry Classification. Conditions regarding bulk and scale within the landscape have been imposed to ensure that the buildings make a significant contribution to the local area.
The are major flood issues associated with the proposed development	The site is subject to Brisbane River flooding and part of the site is affected by local overland flow. The development has been assessed in accordance with City Plan and the Subdivision & Development Guidelines and meets the requirements. Conditions have been imposed limiting habitable floor level to Q100 plus 500 mm and requiring upgrades to the stormwater system along the eastern, southern and north western boundaries of the site Flood prone land is that land inundated in a Probable Maximum Flood (PMF). Flood ways are land that has a one- percent chance of being inundated every year. Council adopts the 1 in 100y ARI (Annual Recurrence Interval) flood as the development standard and anticipates there is a 1 in 100 chance of it being exceeded every year. This is standard practice for floodplain management in Australia. In addition Council asks for a freeboard of 500mm above the 1 in 100y ARI flood level for habitable floor levels. This requirement results in an anticipated flood immunity that is higher than the 1 in 100y ARI.
The proposed development does not integrate into the existing urban fabric	The existing urban fabric is both residential and industrial in nature. The application has been assessed on its merit and in accordance with the City Plan and it is considered that the residential use proposed is consistent with the urban fabric in this area.
There would be increased traffic on local roads	Conditions have been imposed to mitigate traffic impacts through on site parking and external works to upgrade the intersection at Venner, Hyde and Cansdale Roads
The site is not well serviced by public transport	It is acknowledged that the site is not "well serviced" by public transport. However there are two bus services along Cansdale and Hyde Roads and relative to similar middle ring suburbs provides an adequate level of service.
The density for the site is too high	The density as represented by bulk and scale of the development is consistent with the bulk and scale of a light industrial development. Design

	Guidelines allow for generous setbacks, landscaping and articulation of building form.
The proposed buildings are too high and sit on a podium of 7.2 metres	Any redevelopment of the site is affected by the requirement to achieve a minimum habitable floor area which will increase the height of the buildings.
The development is not consistent with the area classification and surrounding land uses	It is considered that the proposed development is consistent with the surrounding residential land uses.
The development is not consistent with the Stephens District Local Plan	It is considered that the development is not inconsistent with the Local Plan.
There are no significant community benefits from the proposed development	It is not clear what significant community benefits means. The proposal seeks to provide alternative housing choice in the form of a retirement village for local residents as well as the wider community.
Development will have adverse impact on streetscape	Significant landscaping works are proposed along the boundary of the site including rehabilitation of the waterway corridor
Proposed development would conflict with existing sporting facilities in the area	Local Sports groups have indicated support for the proposal in their submissions. Subsequent development applications will impose requirements for consideration of lighting and noise impacts.
There will be insufficient parking in the area	All parking will be on site and contained beneath the building footprint.
The site was possibly illegally filled	There is no evidence of illegal fill on site.

The local Ward Councillor supports the proposed use.

7. ADVICE FROM REFERRAL AGENCIES

7.1. The application was referred to the following Concurrence Agencies:
Department of Main Roads; and
the following Advice Agencies:
Environmental Protection Agency (Contaminated Land Unit) Energex and Office of Urban management

7.2 These agencies have no requirements.

8. ISSUES RELEVANT TO THE APPLICATION

8.1. Planning Process

The level of assessment for subsequent applications for uses associated with a retirement village has been varied. Primarily these uses are defined in Section 3 of City Plan as **Multi Unit Dwelling, Retirement Village, Aged Accommodation, Shop, Office and Restaurant**. For subsequent development

applications these will be Code Assessable. A condition has been imposed referring to these uses and limiting them to "only where associated with a retirement village". Where applications do not meet this criteria the Level of Assessment defaults to the City Plan.

The primary Code – Residential Design – Medium Density Code has been varied to provide for details of setbacks, height, building design. Conditions have been imposed specifying these and referencing an approved Building Envelope Plan.

8.2. Height (bulk and scale) and Setbacks

The proposal provides acceptable visual impact on the adjoining parkland through increased setbacks to the park, a 25 metre setback to the eastern boundary to contain a rehabilitated waterway corridor, articulation of the building where adjoining the parks, retention of sightlines through the development as well as a mix of building heights between 3 and 5 stories.

8.3. Hydraulic Issues

The site is affected by flooding from an overland flow path and from Brisbane River flooding. Advice from Councils hydraulic engineers is that their assessment uses a risk management approach to the development of flood prone land. Flood prone land is that land is inundated in a Probable Maximum Flood (PMF). Flood ways are land that has a one-percent chance of being inundated every year. Council adopts the 1 in 100 year "Annual Recurrence Interval" as the development standard, and anticipates there is a 1 in 100 chance of it being exceeded every year. This is standard practice for floodplain management in Australia. In addition Council asks for a freeboard of 500mm above the 1 in 100 year "Annual Recurrence Interval" flood level for habitable floor levels. This requirement results in an anticipated flood immunity that is higher than the 1 in 100 year Annual Recurrence Interval.

Consequently the approval has been conditioned to:

- manage flood impacts by setting minimum habitable floor levels in accordance with the 1 in 100 year reccurrence; and
- upgrades to the current stormwater drainage system along the eastern and southern boundaries; and
- upgrades to the current stormwater drainage system along the western and northern boundaries; and
- provide easements for Council maintenance

8.4. Ecological Impacts

A degraded Waterway Corridor traverses the whole eastern edge of the site. Conditions imposed restrict all building works and uses from the area of the waterway corridor, require submission of a Rehabilitation Plan to rehabilitate the area and contain such works within any hydraulic works undertaken to upgrade the stormwater system.

8.5. Traffic

The impacts of increased traffic around the site have been mitigated by conditions imposed to retain all parking within the development site and upgrade the intersection of Venner, Cansdale and Hyde Roads.

8.6. Infrastructure

Conditions have been imposed to upgrade the sewerage system in accordance with Councils Water and Sewerage Reticulation standards

8.7 Sustainability

Conditions have been imposed requiring that all future development meet Councils 15 principles of Sustainability with respect to passive design, water use, materials use, energy use, site impacts, transport impacts and social and community impacts

9. CONCLUSION

The proposal was assessed against the relevant provisions of the Integrated Planning Act 1997 and the City Plan 2000, and is consistent with the Strategic Plan.

The application is recommended to be approved in accordance with the drawings and documents and subject to relevant and reasonably required conditions

10. RECOMMENDATION

After considering the proposal, the relevant provisions of the *Integrated Planning Act 1997*, the *Planning Scheme*, and the submissions received, I recommend that the application be approved subject to reasonable and relevant conditions as set out in the attached approval package.

[redacted]
Senior Urban Planner
Development Assessment Team South
Development and Regulatory Services
Customer and Community Services

Establishment and Coordination Committee Presentation

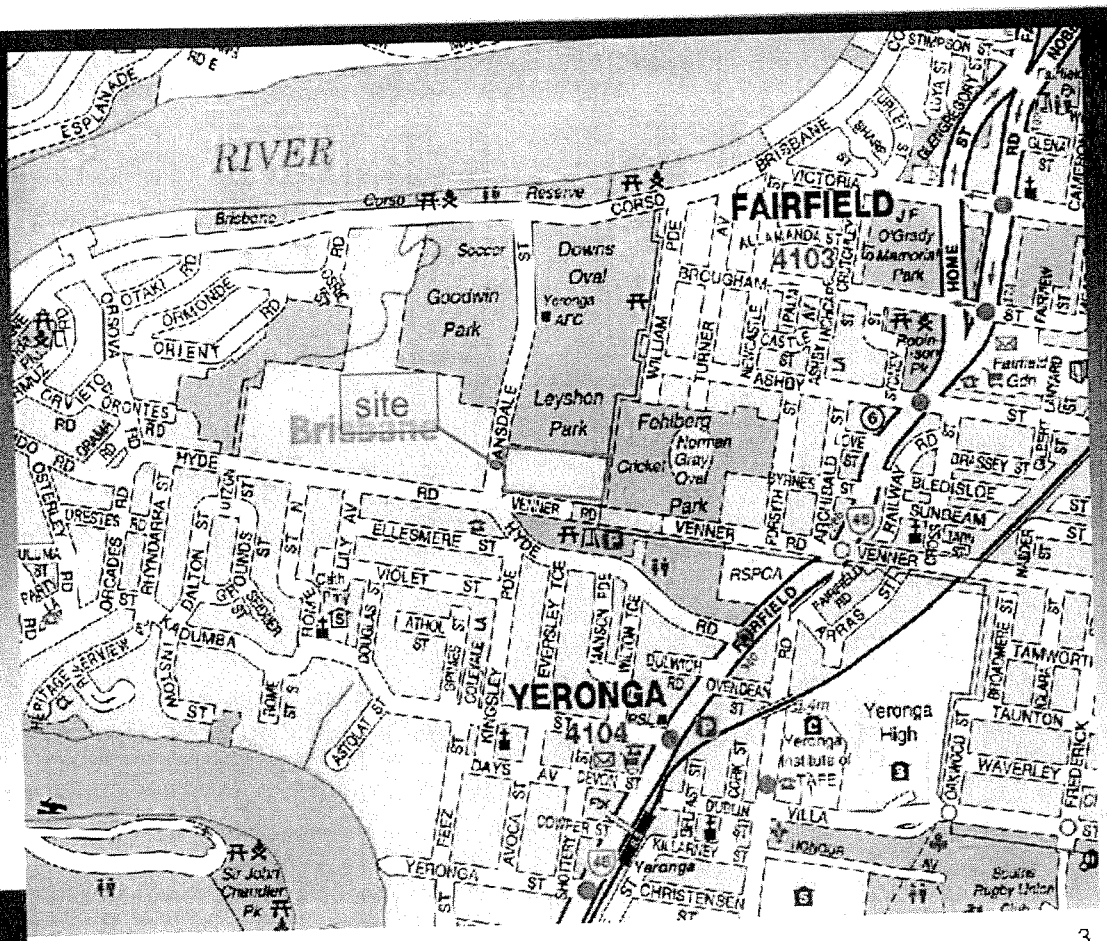
15 Cansdale St, Yeronga

BRISBANE CITY

25 September 2006

Purpose:

Seek endorsement for the approval of the development application for a Preliminary Approval Overriding the Planning Scheme for a Material Change of Use (Multi Unit Dwelling - Retirement Village) at Yeronga.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HYDE RD
ELLESMERE ST
VIOLET ST
KINGSLEY
DAYS AV
YERONGA ST
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TAMWORTH
BLEDISLOE
SUNDEAM
BRISBANE
VICTORIA
BROUGHAM
ASHBY
ORIENT
ORMONDE
OTAKI
ORONTES
KADUMBA
DALTON
ROME
ASTOLAT
FEEZ
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COWPER
DEVON
OVENDEAN
DULWICH
RSPCA
FAIRFIELD
HOME
BRISBANE CITY

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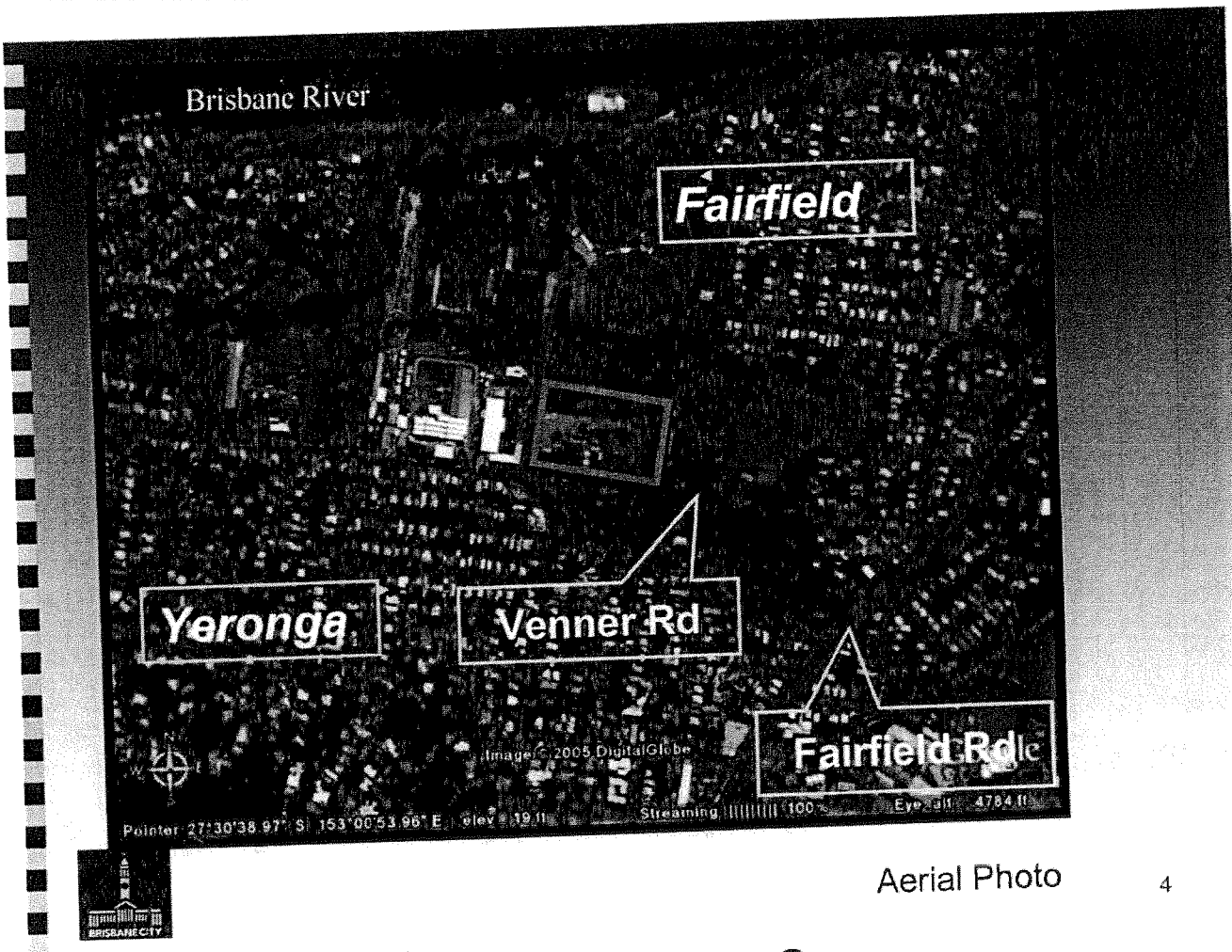

Aerial Photo

Proposal

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- Parking - approx 400 vehicles
- Height - 3 to 5 storeys (above Q100 flood level)
- Staged Development (over 5 to 7 years)
- Ancillary Uses -

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BCC.058.9108



Site Location Plan

Proposal

Preliminary Approval Overriding the Planning Scheme for a Material Change of Use (Multi Unit Dwelling - Retirement Village) at Yeronga

City Plan 2000:

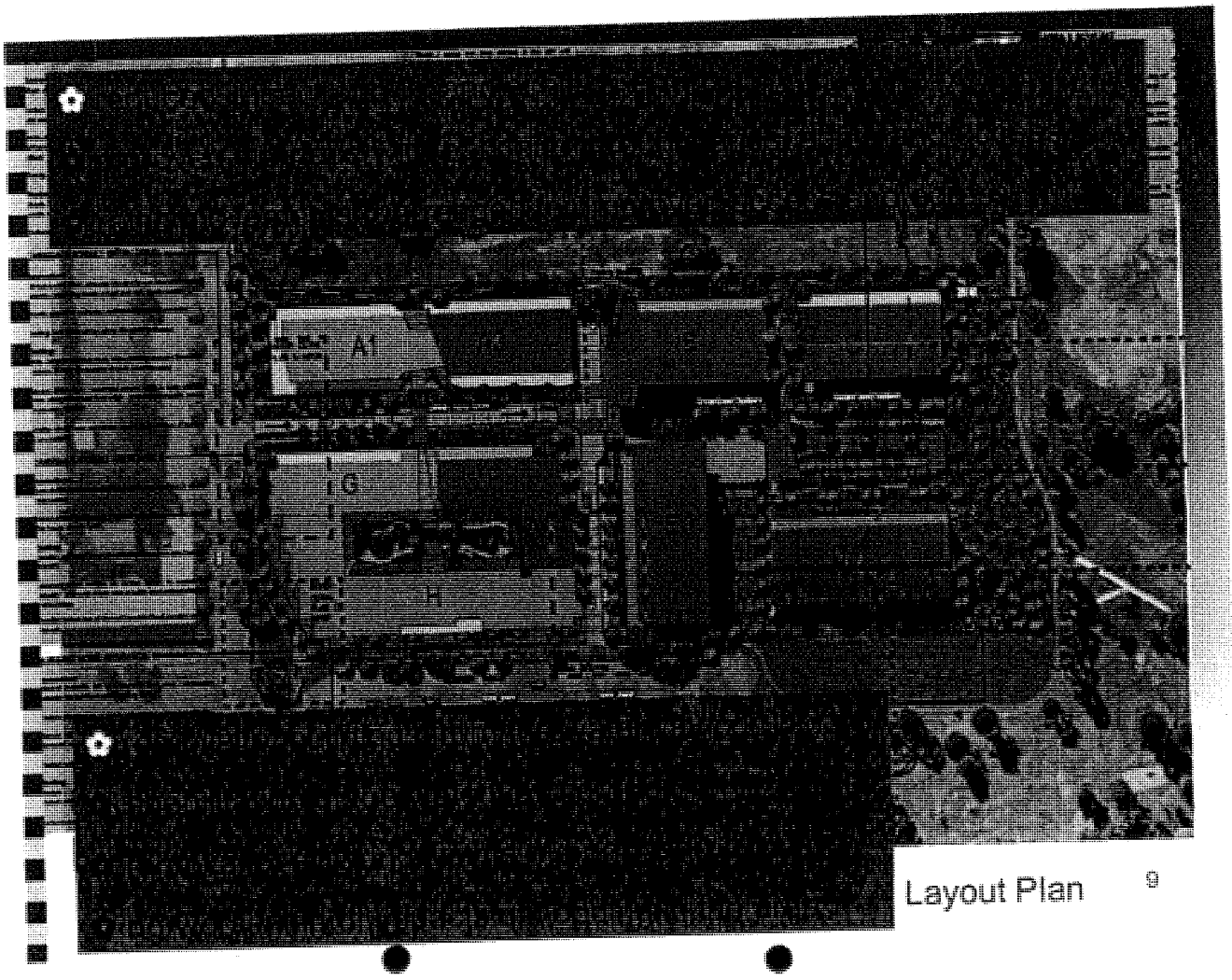
Area Designation - Light Industry
Level of Assessment - Impact
Stephens District Local Plan

Consultation:

Referral Coordination - DMR (Concurrence); Energex, OUM (Advice)
City Planning - Manager
Urban Management

8 KEY ISSUES Resolved

- **Planning Process**
  (Level of Assessment, Level of detail, precedents, staging and sequencing of development)
- **Hydraulic**
  (overland flow, flooding, lawful point of discharge,)
- **Bulk and Scale**
  (shadowing, setbacks, site layout, height, plot ratio, landscape treatment, parkland interface)
- **Environmental**
  (vegetation management, waterway corridor, contamination, stormwater quality, air quality, noise)
- **Infrastructure** ✓
  (water supply, sewerage, external works)
- **Traffic** ✓
  (access, on street parking, car park allocation, external works)
- **Consultation** ✓
  (local councillor, referral coordination, statutory)
- **Sustainable Development Principles**



Layout Plan 9

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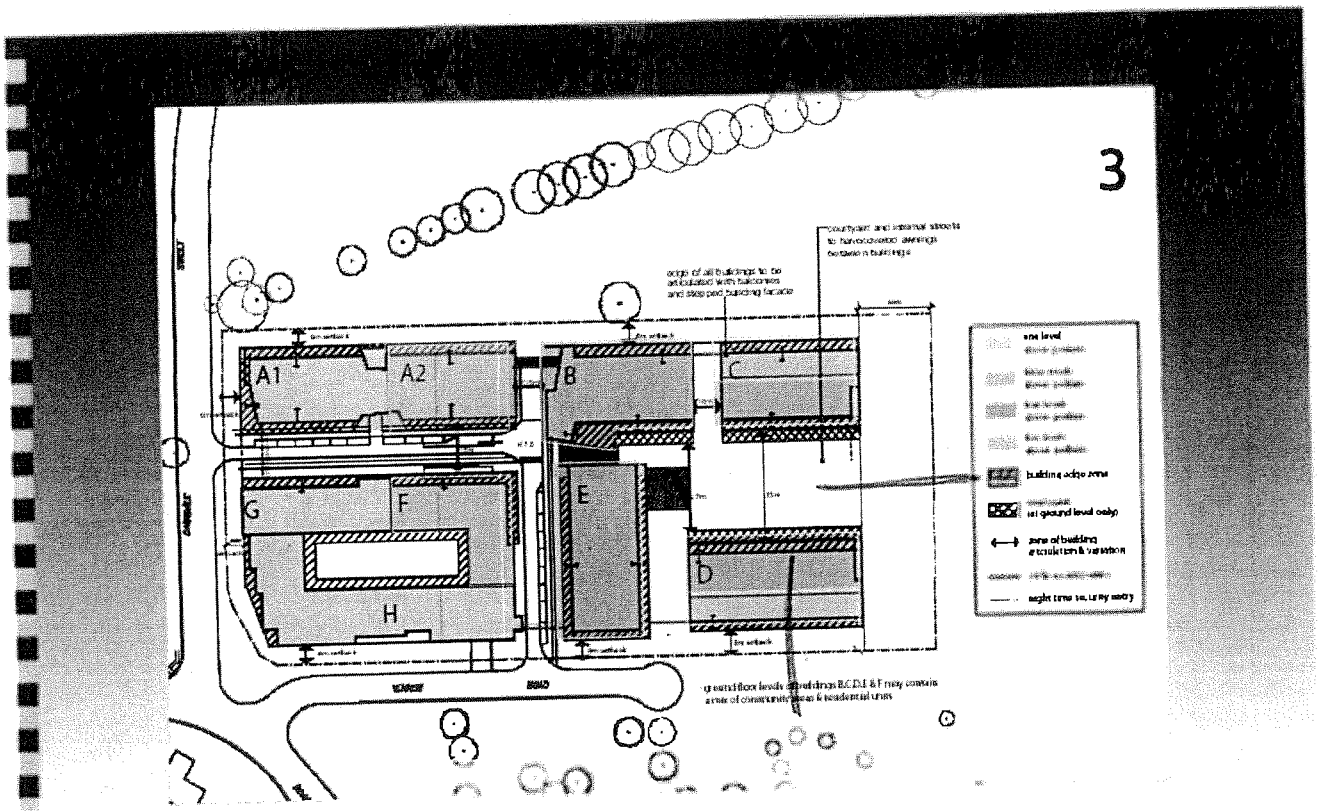
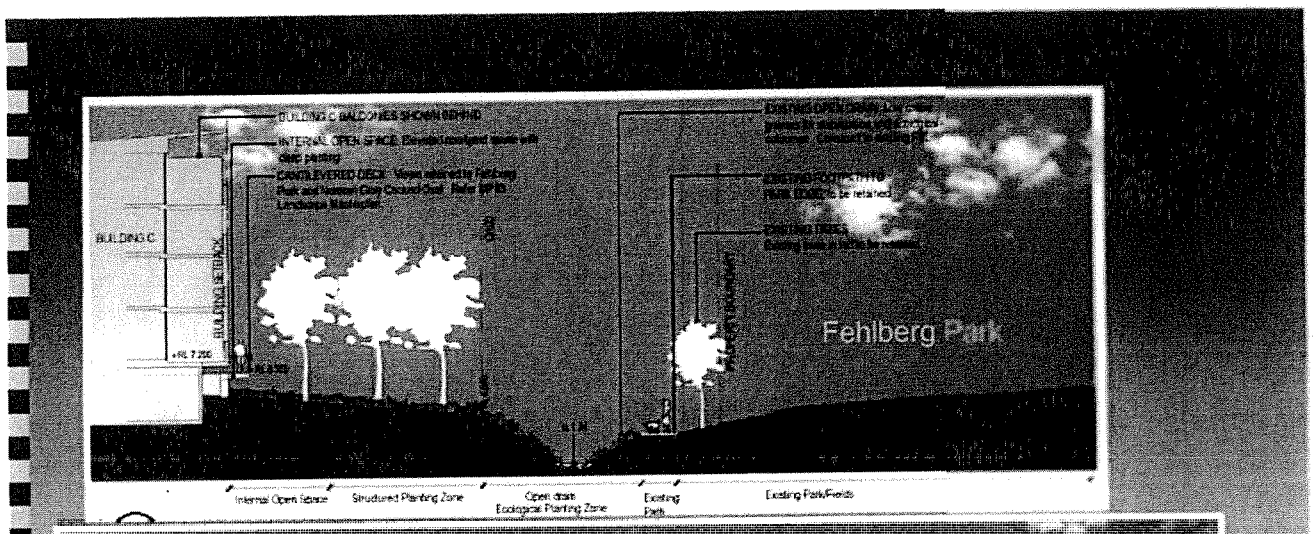
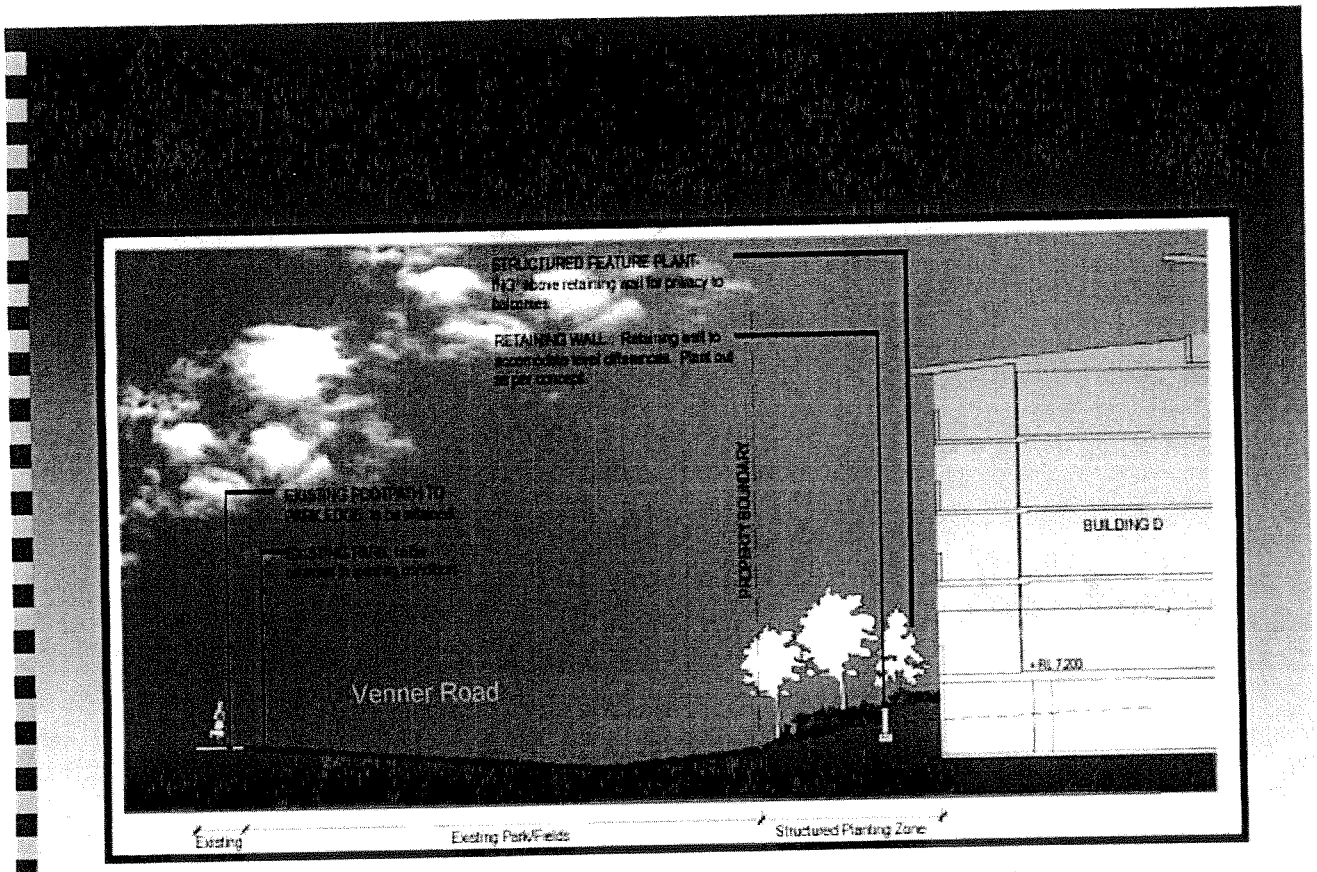


Building Envelope Plan


BUILDING C
BUILDING SETBACK
Fehlberg Park
Internal Open Space
Structured Planting Zone
Open Space
Ecological Planting Zone
Existing
Path
Existing Park/Fields


Leyshon Park

X Section


STRUCTURED FEATURE PLANT
RETAINING WALL
BUILDING D
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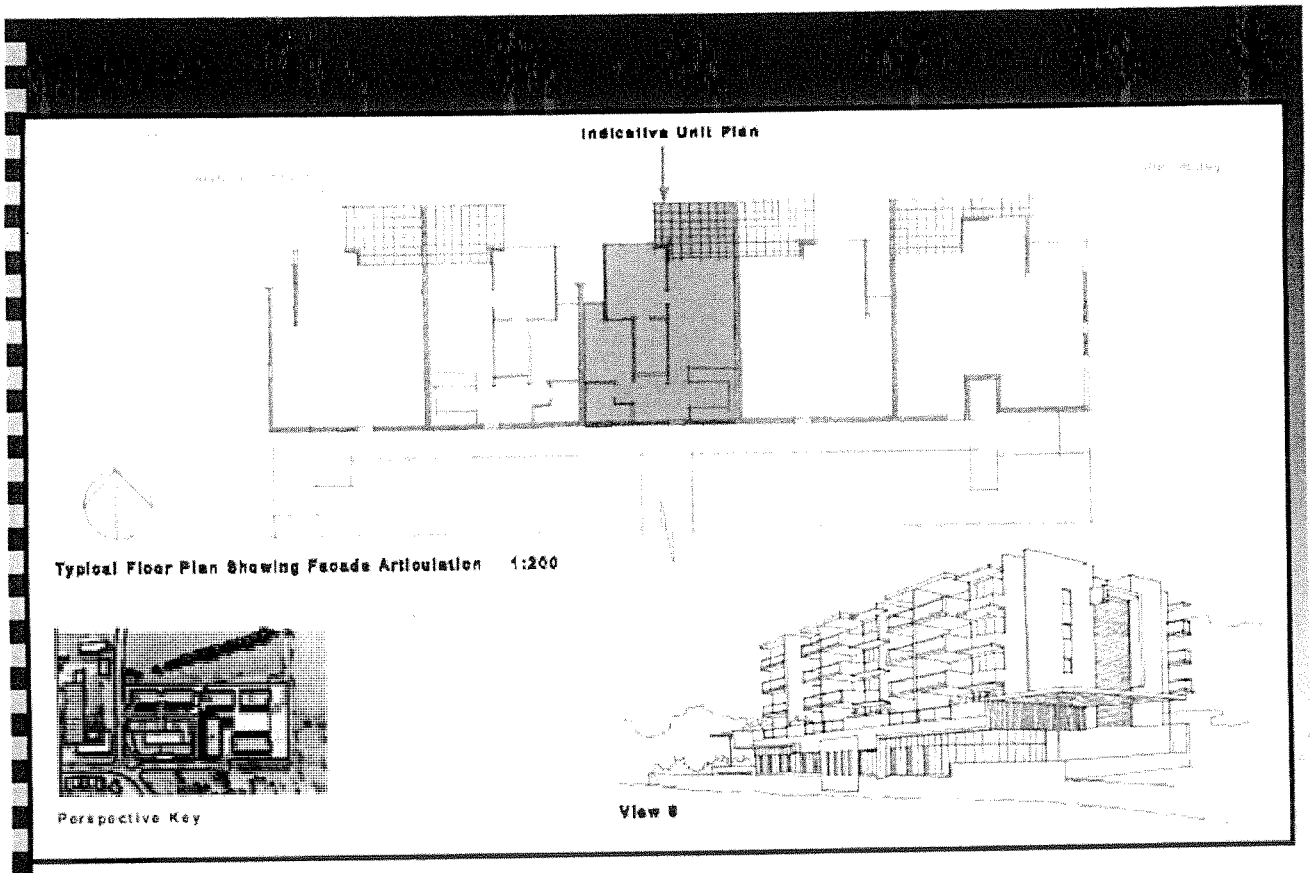
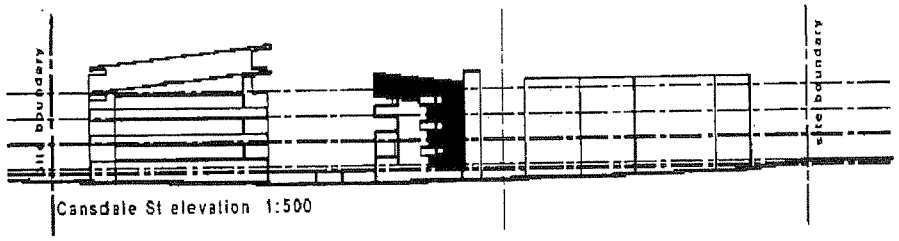
PROPERTY BOUNDARY
Venner Road
Existing
Existing Park/Fields
Structured Planting Zone

Section

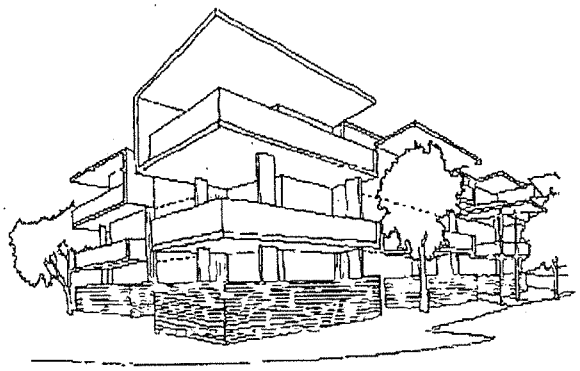
12



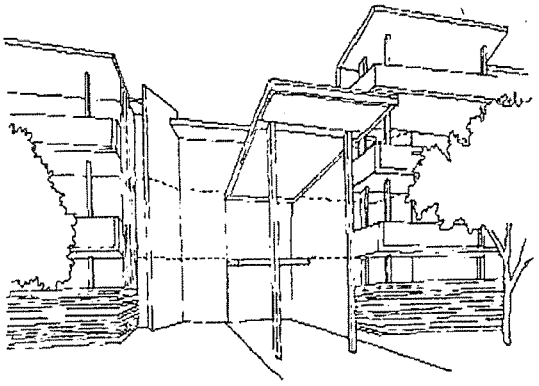
Indicative Unit layout and perspective



Cansdale St elevation 1:500



View 1



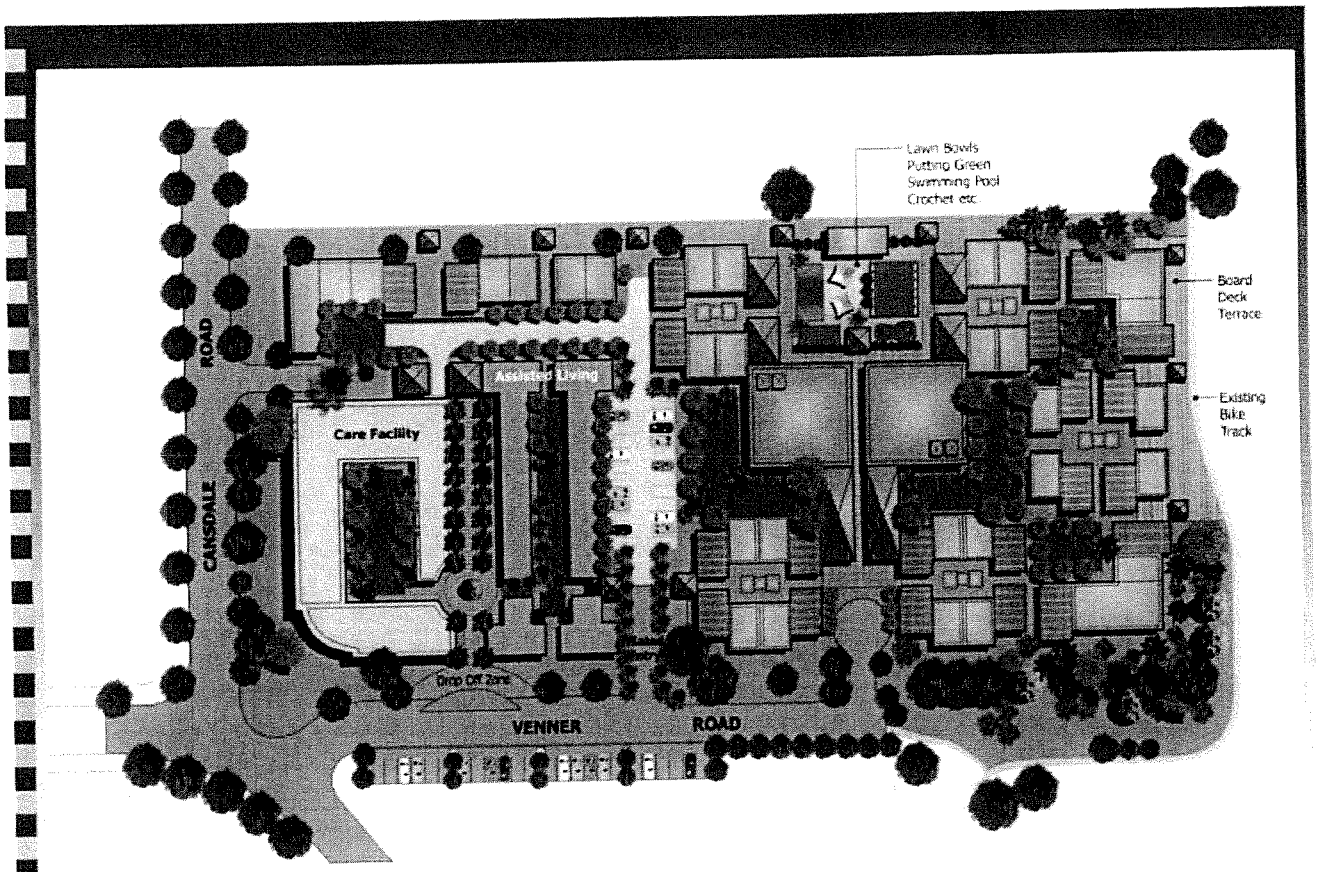
View 2

Indicative perspectives

Recommendation:

That the Committee endorse the approval for the proposed of the application for the Preliminary Approval Overriding the Planning Scheme for a Material Change of Use (Multi Unit Dwelling - Retirement Village) subject to conditions that:

- Limit the GFA onsite to 36,000 m2 (1:1.3)
- A height of 5 storeys above a minimum habitable floor level (podium level)
- Code assessment for a Multi Unit Dwelling (Retirement village) & ancillary uses as proposed
- Design guidelines for future building design
- Landscape plans for the interface with adjoining park
- Rehabilitation of the waterway corridor and vegetation management,
- Upgrades to Infrastructure - water and sewer
- External works to upgrade drainage, traffic movement, street tree planting
- Sustainable Development Principles



Original Site Layout Plan 16

NOT ON FILE

Brisbane City Council

Development & Regulatory Services
Customer & Community Services

Development Assessment Team South

Telephone (07) 3403 8888
Facsimile (07) 3407 0674

FROM [redacted]
Senior Town Planner
Development Assessment Team South

SUBJECT Development Application over land at 15 Cansdale St, Yeronga Qld 4104.

27 September 2006

Application No *DRS/USE/H05-917956*
Project No *DRS/PRO/P05-107231*

Below is the Submissions Summary for the proposed development at 15 Cansdale St, Yeronga.

Issue:	**Response:**
The site is unstable and very likely to be contaminated	The issue has been investigated and the site was removed from the contaminated land register. The current use is commercial in nature and has been for some time.
The proposed building height would detract from the views of residents in the area	It is acknowledged that the views of residents will change. However the proposed height is consistent with the height of buildings within the Light Industry Classification. Conditions regarding bulk and scale within the landscape have been imposed to ensure that the buildings make a significant contribution to the local area.
The are major flood issues associated with the proposed development	The site is subject to Brisbane River flooding and part of the site is affected by local overland flow. The development has been assessed in accordance with City Plan and the Subdivision & Development Guidelines and meets the requirements. Conditions have been imposed limiting habitable floor level to Q100 plus 500 mm and requiring upgrades to the stormwater system along the eastern, southern and north western boundaries of the site Flood prone land is that land inundated in a Probable Maximum Flood (PMF). Flood ways are land that has a one- percent chance of being inundated every year. Council adopts the 1 in 100y ARI (Annual Recurrence Interval) flood as the development standard and anticipates there is a 1 in 100 chance of it being exceeded every year. This is standard practice for floodplain management in Australia. In addition Council

NOTE TO FILE

	asks for a freeboard of 500mm above the 1 in 100y ARI flood level for habitable floor levels. This requirement results in an anticipated flood immunity that is higher than the 1 in 100y ARI.
The proposed development does not integrate into the existing urban fabric	The existing urban fabric is both residential and industrial in nature. The application has been assessed on its merit and in accordance with the City Plan and it is considered that the residential use proposed is consistent with the urban fabric in this area.
There would be increased traffic on local roads	Conditions have been imposed to mitigate traffic impacts through on site parking and external works to upgrade the intersection at Venner, Hyde and Cansdale Roads
The site is not well serviced by public transport	It is acknowledged that the site is not "well serviced" by public transport. However there are two bus services along Cansdale and Hyde Roads and relative to similar middle ring suburbs provides an adequate level of service.
The density for the site is too high	The density as represented by bulk and scale of the development is consistent with the bulk and scale of a light industrial development. Design Guidelines allow for generous setbacks, landscaping and articulation of building form.
The proposed buildings are too high and sit on a podium of 7.2 metres	Any redevelopment of the site is affected by the requirement to achieve a minimum habitable floor area which will increase the height of the buildings.
The development is not consistent with the area classification and surrounding land uses	It is considered that the proposed development is consistent with the surrounding residential land uses.
The development is not consistent with the Stephens District Local Plan	It is considered that the development is not inconsistent with the Local Plan.
There are no significant community benefits from the proposed development	It is not clear what significant community benefits means. The proposal seeks to provide alternative housing choice in the form of a retirement village for local residents as well as the wider community.
Development will have adverse impact on streetscape	Significant landscaping works are proposed along the boundary of the site including rehabilitation of the waterway corridor
Proposed development would conflict with existing sporting facilities in the area	Local Sports groups have indicated support for the proposal in their submissions. Subsequent development applications will impose requirements for consideration of lighting and noise impacts.

NOTE TO FILE

There will be insufficient parking in the area	All parking will be on site and contained beneath the building footprint.
The site was possibly illegally filled	There is no evidence of illegal fill on site.

[redacted]
Senior Town Planner
Development Assessment Team South
Development and Regulatory Services
Customer and Community Services

Sent to scrutiny 25/1/06

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Australia

Our Ref: 7203
Council Ref: DRS/USE/H05-917956
Date: 18 January 2006

Attn: [redacted]

DRS|USE|H05-917956(P1)
X.REF. NH095|15
19 JAN 2006
INFORMATION MANAGEMENT
ATTACH No. A 06 19429.

Brisbane City Council
Development Assessment Team South
Level 10, 69 Ann Street
BRISBANE QLD 4000

Via: PMM Delivery and Email

Dear [redacted]

RE: **SUBMISSIONS REVIEW AND RESPONSE**
15 CANSDALE STREET, YERONGA
LOT 1 RP150512

We write on behalf of the Applicant, our Client, M. E. Harrison Investment Co. Pty Ltd, in relation to the development application for a Preliminary Approval Overriding the Planning Scheme – Material Change of Use (Multi-Unit dwelling Retirement Village and Shop, not greater than 250m²).

This development application was lodged with Council on 11 April 2005. As noted in our letter of 9 December 2005, the Notification Stage has concluded. We are aware that you have received some twenty-three (23) submissions, comprising six (6) proponent submissions and seventeen (17) opponent submissions.

In summary, the opponents to the scheme raised objection regarding the following themes

- Density, scale, height, character and design
- Heritage protection
- Flooding and drainage
- The form of housing and housing need
- Infrastructure and servicing
- Land use conflicts
- City Plan and other planning designations
- Sustainable development
- Traffic and parking

It is noted that many opponents advised that they did not hold land use objections to the development. The various submissions on each of these themes are summarised in the following points, with a response to each point.

Directors: [redacted] B App Sc (Surv) LS MIS Aust Graham Dunlop B Surv MIS Aust [redacted] JP (C Dec) GDURP MPIA [redacted] B App Sc (Surv) GDURP MPIA [redacted] B App Sc (Surv) LS MIS Aust C Dec [redacted] BRTP MPIA
PMM Group Pty Ltd ACN 010 370 448 ABN 81 591 046 588

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Objections regarding density, scale, height, character and design

- *A number of objectors support the idea of a retirement village on the site, however consider the height and density to be excessive. They consider that the development exceeds the floor area to site ratio and building height formulae of the City Plan. Opponents believe that at five storeys the proposed development would be the highest building in the locality. Consequently, they state that development would alter the established character of locality and would fail to integrate with the existing urban fabric, having an adverse impact upon the character and streetscape of the area.*

  Response: Residential development in the local area comprises a mixture of Low Density and Low-Medium Density Residential. The proposal seeks the establishment of a residential use that is complimentary to the existing residential development in the area, in particular in relation to residential amenity.

  Given the need to lift the proposed development to achieve Q100 flood immunity, a range of design elements have been incorporated into the proposal to assist with integrating the proposal with the surrounding residential form. These elements include well articulated building forms, introduction of a collection of buildings rather than one large form, greater setbacks encompassing landscape buffers and the creation of strong visual corridors. The development's built form and landscape setting have been designed to minimise its bulk and appearance and will assist with integrating the development with the established character of the locality.

  It is noted that the proposal is located on the site that is surrounded on three sides by parkland which includes substantial existing vegetation on the southern interface of the development. The distance to the development from the existing residential development, together with the vegetation and the topography of the area assist with minimising the visual impact of the development on the surrounding residential development.

- *To some objectors, a preferable form of development would be a retirement village on the site insomuch as it is in keeping with the community-accepted standard of retirement villages as either semi detached, low density or townhouse style residences. Others consider that site could be used for a continuation of the adjacent sporting fields.*

  Response: As Australian demographics change and there are increasing numbers of retirees, additional housing options are required to respond to changing lifestyles, personal care needs and mobility. Research conducted in the Yeronga area identifies that 47% of the expected population growth between 2005 and 2010 in the 5km Yeronga catchment will be aged over 50 years with expected population growth for the period between 2015 and 2020 including 72% of the population in the Yeronga area over 50 years of age. This research demonstrates that there is a need for aged care housing in the Yeronga area that provides a variety of levels of care.

  The development seeks to respond to the housing demand by incorporating a range of aged care accommodation from independent living apartments to the full care nursing home facilities. Redevelopment of this brownfield site to maximise the efficient use of existing urban land is appropriate. Due to the imperative to ensure brownfield land is reused effectively, development of the site for residential purposes is more appropriate than an expansion of the adjacent sporting fields.

The establishment of the proposed use in the Yeronga area addresses a need for such a residential housing type and will enable the substantial aging population already living within the Yeronga area to remain in the local area and obtain the level of care and assistance required.

Objections regarding Heritage protection

- *No investigation of pre-WWII character buildings has been undertaken*

Response: The existing buildings include industrial structures of limited character. The site is not located within a Demolition Control Precinct and as such, consideration of the character of the building is not required. The proposed development seeks to establish a built form on the site that is more considerate of the existing residential built form of the locality.

Whilst there are residential buildings in the nearby area pre-dating WWII, these buildings do not form part of the development proposals.

Objections regarding flooding and drainage

- *Several submitters raised objections and concerns relating to flooding and drainage in the area, with a principal concern being that the proposal may impact upon drainage systems and alter the flooding potential. This concern relates to existing flooding issues in this area due to historic land infilling works and existing engineering and drainage systems. Issues raised suggested that the site was filled extensively in the 1980s, with consequential flooding impacts upon surrounding areas, that the scheme would detrimentally affect flooding capacity of the area and adjacent parkland. Submitters provided photographs of photos of flood events over Venner Road, and suggested that as the linkage of Venner Rd could interfere with watercourses, an Impact Study for the Fehlberg Park Catchment was required. Further concerns raised included the potential for future development of the RSPCA site and consequential flooding impacts, and that flooding mitigation proposals set out in the Information Response are inadequate and do not seek to resolve existing flooding conditions in the local area.*

Response: Cardno's analysis, report and proposals respond to the local flooding issues and the Council's Yeronga Stormwater Management Plan. The proposal incorporates a detailed stormwater solution which includes drainage enhancement works to the surrounding parklands. The report identifies that the proposed solution results in a decrease in the local flood levels throughout the modelled area for the Q10 and Q50 flood events, thereby benefiting the local community with a reduction in the level of local flood events.

Objections regarding the form of housing and housing need

- *Some submitters supported the idea of a retirement village on the site due to accessibility of the site, but considered that the form of accommodation is not suited to the housing needs of elderly residents the scheme, rather it should be low-rise due to the reduced personal mobility of future residents.*

  Response: There is general consensus that a greater variety of housing options are required to meet diverse community needs, including specialist housing for aging populations. As set out above, the provision of a range of housing opportunities for older people is important to retain choice. The proposed development will include the establishment of lifts to enable equitable access to all levels of the development.

- *There is an adequate supply of existing local accommodation suited to the housing needs of elderly persons.*

  Response: It is considered that there is a continuing need to develop new housing for older persons, due to the overall aging of the population. It is likely that some existing housing presently used by older persons is outdated and requiring upgrading or replacement. The introduction of specialist housing forms reduces pressure on existing housing stock.

  With the increasingly aging population in the locality, the establishment of the integrated retirement village in Yeronga will enable elderly residents in Yeronga to remain in their local area throughout their lives, rather than need to relocate from the area to access the necessary care and assistance.

  The integrated retirement village form enables residents to move to the village while requiring only a low level of care, and will be able to access the higher levels of care within the one development as required. The proposed development is to be established in accordance with the provisions of the *Retirement Villages Act 1999* which specifies the level of service and maintenance that is required for all retirement and aged care facilities in Queensland. In order for the proposal to be economically viable in light of the legislative requirements, the proposal must be of the scale proposed.

- *No significant community benefits of such a large scale complex have been demonstrated.*

  Response: It is considered that this proposal provides a significant community benefit through the establishment of the aged care facility in the locality. Community benefit accrues through broader housing choice and ability for the aging population to access the necessary aged care facilities within the Yeronga area. A larger complex benefits from greater economies of scale in provision, and allows for the on-site provision of some services accessible by both future occupiers and surrounding residents.

Objections regarding infrastructure and servicing

- *Cansdale Street is in poor condition and requires upgrading.*

  Response: The existing condition of Cansdale Street may be a result of what is understood to have been historic filling in the area, and thus the manner of its initial construction along with its regular use by large trucks servicing the industrial development in the area. Upgrading works to Cansdale Street along the frontage of the site will be undertaken as part of the development.

- *The scheme is overly dense: local amenities, resources and infrastructure are insufficient to cope with additional demand*

  Response: The site is located within an existing urban area with a range of facilities, services and amenities located nearby. Infrastructure requirements have been reviewed by Brisbane Water, a number of headworks contributions have been identified and should be included in any conditions packages.

Objections regarding land use conflicts

- *The development appears to impact upon the facilities constructed upon adjacent parkland and sporting fields.*

  Response: The drainage solution proposed involves the reworking of public and private land to achieve flood storage and drainages areas to reduce flooding impact. This proposal does not impact on the active space of any sporting field and provides a significant upgrade to the passive parkland elements of Fehlberg Park.

  It is noted that the previous flood mitigation works proposed by Council principally utilised private property, such a solution utilises both private and public land and results in an improvement on the flood situation currently occurring in the locality.

- *Concerns that the development would conflict with the existing established adjacent community sporting facilities, through effects upon on future residential occupiers from floodlighting, parking and traffic noise*

  Response: It is acknowledged that the design and orientation of the proposed buildings towards the parklands, along with the access and movement strategy for the development could cause some adverse impacts upon residents. However, it is considered that the separation distance from the proposed buildings to the adjacent roads is adequate to limit traffic noise. In relation to noise, the application submission includes a report by Max Winders and Associates relating to air and noise pollution, which indicates that the development will not be significantly impacted by surrounding development and as such, no specific acoustic treatments are required for the development. With the inclusion of appropriate design features, the proposed buildings will have an acceptable relationship with adjacent floodlighting.

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Objections regarding City Plan and other planning designations

- *The impact of urban infill in respect to SEQ Regional Plan.*

  The site is located within an existing urban area with access to a range of facilities, services and amenities. The proposal involves the redevelopment of a brownfield site. The current use of the site is considered to be inconsistent with the Strategic Plan designation for the site and also is increasingly in conflict with the predominant residential nature of the Yeronga locality. Redevelopment of this brownfield site for a residential purpose is therefore appropriate.

- *The proposal is contrary to the City Plan and the Stephens District Local Plan, and is inconsistent with preferred surrounding land uses. This proposal has bypassed the evolutionary town planning process in that no long term planning strategy or plan for the area has been proposed.*

  There are a number of planning classifications for the site: the site is identified within the Urban Footprint of the SEQ Regional Plan; the Brisbane City Plan's Strategic Plan includes the site within the Residential Neighbourhoods; the existing designation of Light Industry reflects the extant use; and finally, the Stephens District Local Plan does not specifically identify the site for any particular form of redevelopment. As such, the development process is well suited to the identification and assessment of proposals for the site. The Stephens District Local Plan at Section 2.5 supports the replacement of redundant sites by residential redevelopment. Further, a comprehensive community engagement and consultation program has been established to ensure the community's opinion and concerns were raised, documented and responded to.

- *Whilst the light industrial uses should be removed, approval of this scheme would provide planning grounds for medium density development on other local light industry sites which would be undesirable*

  The planning framework generally supports the gradual redevelopment of the industrial sites. The strategic plan designation for the site is for Residential Neighbourhoods. Appropriate forms of development and densities should be identified as sites are brought forward, as the planning framework includes adequate controls to safeguard character and residential amenity.

Objections regarding sustainable development

- *A response to the "15 sustainable development initiatives" has not been undertaken*

  Appendix H of the Information Request Response identifies draft sustainability initiatives that are to be identified at all stages of the development process for inclusion in the development. These initiatives have been identified at this Preliminary Approval stage to provide direction for future stages of the development.

Objections regarding traffic and parking

- *The density of development would exacerbate existing on-street parking pressures and increase traffic movements, thereby adding to traffic hazards and reducing accessibility to Fairfield Road.*

  Residential, staff and visitor car parking is provided on the site to an extent that is generally in accordance with the City Plan provisions. The existing use of the site attracts a large peak number of cars to the site on auction days. The impact of these auction days is parking and traffic problems in the immediate area. Traffic modelling indicates that redevelopment of the site would replace these peak impacts with a more moderate level of traffic generation. Parking and traffic impacts relating to use of the adjacent sporting clubs cannot be resolved through this application.

Having reviewed the submissions opposed to the development, it is clear that the submissions raise neither issues which have remained unresolved though the amendment and enhancement of the scheme during recent discussions with Council, nor issues that cannot be resolved through reasonable and relevant conditions package. Responses to the letters of support from proponents of the development follow.

- *Benefit to adjacent sporting clubs, local businesses and local residents*

  The proposal will introduce activity to the site on a permanent basis, as opposed to the present pattern of activity. New residents and their visitors will support existing local facilities and businesses.

- *Impressed by landscaping and consideration to avoid flood problem*

  The proposed hydraulic solution prepared by the consulting engineers has been developed in coordination with the project ecologist and landscape architects. The solution proposed is considered to establish improved environmental values for the waterway compared to the existing concrete channel.

- *Improvement of unattractive site*

  The current development of the site comprises a group of buildings that are used as an auction site, which do not contribute positively to the appearance of the area. The proposed use has been designed to complement the local area by providing a more attractive built form.

- *Indicate that they are completely supportive of the proposal and describe it as being a big benefit to the local residents and the community by providing housing choice to older residents*

  There is general consensus that a greater variety of housing options are required to meet diverse community needs, including independent and specialist housing for increasing aging populations. The establishment of the proposed use on the subject site will enable existing, aging residents of the Yeronga locality to remain in the area while receiving the level of care that is required.

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- *The site has good accessibility to transport and local services.*

  The site is in a location that is accessible and provides a high quality of life and potential for interaction with other complimentary uses, such as the local sporting facilities. The site is accessible by several modes of transport. The site is located within proximity of the Yeronga and Fairfield train stations. Brisbane City Council bus services are provided along Cansdale Road and Hyde Road. The site is also accessible by private vehicle, cycle and pedestrian access.

We trust this information is sufficient for your purposes, however should you require any further details or clarification, please do not hesitate to contact the writer by telephone.

Yours faithfully
PMM GROUP PTY LTD

for [redacted]
Partner

cc [redacted] Harrison Real Estate

Dedicated to a better Brisbane

MEMORANDUM

Brisbane City Council

TECHNICAL SPECIALIST TEAM
Development Assessment
Development & Regulatory Services
Customer & Community Services

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GPO Box 1434
Brisbane Qld 4001

Phone: (07) [redacted]
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Email: [redacted]
Internet: www.brisbane.qld.gov.au

To:	DA South	Date:	8 August 2006
Attn:	Paul Hills		
CC:			
From:	Andrew Blake		
Re:	**Hydraulic Assessment** **15 Cansdale St Yeronga** **DRS/USE/H05-917956**		

(Please note that this is an internal document only and shall NOT be reproduced in any correspondence with the applicant)

1.0 INTRODUCTION

Item No	Description	Comment
1.1	Report by:	Andrew Blake (CD/W2-050216-H05-917956)
1.2	Documents Reviewed:	Hydraulic Analysis by Cardno (Qld) Pty Ltd dated 31 March 2006.
1.3	Document Summary:	The report addresses the issues raised by council and provides hydraulic analysis of the waterway through the eastern part of the property.
1.4	Objective of Review:	To ensure the proposal meets the water quantity (flooding and drainage) requirements of City Plan and the Subdivision and Development Guidelines.
1.5	Issues Identified:	**1. Nil.**
1.6	**Hydraulic Status:**	**Acceptable.**

2.0 COMMENTS

2.1 The proposed development and associated filling of the site does not extend into the Q100 inundation extents of the waterway passing through the eastern part of the property. Therefore the proposed development will not increase flood levels.

2.2 Rehabilitation of the waterway is proposed as part of the development, including removal of the concrete invert and revegetation, however the waterway will remain approximately the same so as not to affect the existing flood levels.

2.3 **Stormwater drainage works required.**
Stormwater drainage upgrades are required as stated in Section 6.3 of the Cardno report and as shown on Figure 7 (Stormwater Pipe Locations).

2.4 **Overland flow easement required.**
An overland flow easement is required incorporating the Q100 inundation extents.

2.5 **Underground drainage easements required.**
Underground drainage easements are required for the proposed stormwater pipes in the North-West and South-East corners of the site.

3.0 RECOMMENDATIONS

3.1 The Hydraulic Analysis Report is acceptable to form conditional approval.
3.2 Development conditions are required to address Comments 2.3 to 2.5.

Andrew Blake
Hydraulic Engineer
Technical Specialist Team

Copy To Scrutiny 31/05/06
Copy To Clillors Office 31/5/06

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Our Ref: 7203
Date: 25 May 2006

Attn: [redacted]

DRS/USE/HO5-917956(P2)
X.REF. NH095/15
26 MAY 2006
INF
ATTACH No. A06 /73609

Development Assessment Team South
Brisbane City Council
Level 10, Brisbane Administration Centre
69 Ann Street
BRISBANE QLD 4000

Via: PMM Delivery

To Scrutiny 31/05/06

Dear [redacted]

RE: 15 CANSDALE STREET, YERONGA
LOT 1 ON RP 150512
COUNCIL REFERENCE: DRS/ USE/ HO5-917956

Please find enclosed the final plans for Council's assessment and approval. Inclusive in this set of plans are:

- 3 x Architectural Plans
- 3 x Landscape Concept Plans
- 3 x Hydraulic Report
- 1 x CD containing PDFs of the above documents

Please note that the following changes have been made to the plans:

- Internal access from Cansdale Street is now two-way
- Street parking on Venner Road and Cansdale Street has been removed.

It is also noted that the Hydraulic report has been reviewed to ensure that it is entirely consistent with the proposed Landscaping Concepts.

We understand that council will now proceed with final assessment of the application. Should you require clarification of the above, please contact [redacted]

Yours faithfully
PMM GROUP PTY LTD

[redacted]

Town Planner

enc

cc [redacted] – Harrison's Real Estate Development

7203 240506 ltr council mc.doc

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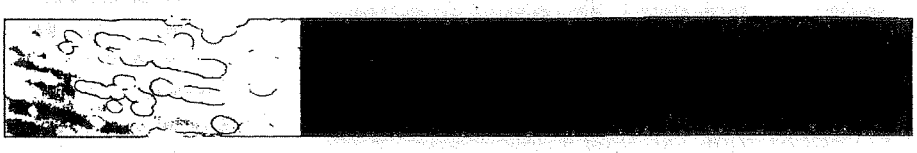

Yeronga Retirement Village

Hydraulic Analysis

23 May 2006
Job No. 3500/34

Harrisons Real Estate Development

BCC.058.9223

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[redacted]
TREVOR JOHNSON
RPEQ 4744

Document Control

Version	Date	Author		Reviewer	
		Name	Initials	Name	Initials
1	26 September 2005	[redacted]	KB	[redacted]	MG
2	29 March 2006		KB		MG
3	31 March 2006		KB		MG
4	23 May 2006		[redacted]		[redacted]

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YERONGA RETIREMENT VILLAGE
HYDRAULIC ANALYSIS

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1. INTRODUCTION

It is proposed to construct a retirement village on a site at the corner of Cansdale Road and Venner Road in Yeronga (the study site). Figure 1 shows the location of the site. The lot is described as Lot 1 on RP150512.

A preliminary investigation into the hydraulic issues associated with the development was carried out by Cardno in March 2005 as part of the initial submission to Council. The analysis identified the hydraulic constraints affecting the site and identified a potential design solution for drainage of the site. An information request was received from Council on the 21 June 2005 outlining a number of issues for which further information was required. A report was issued in September 2005 addressing these concerns. A second information request was issued by Council on the 2 February 2006 outlining some additional issues to be addressed. A meeting was held with Council to discuss these concerns and a resolution was meet on a number of the concerns raised. This report provides further information on the following concerns:

"The proposed entertainment area is to be set at RL 4.1 m AHD which does not meet the flood immunity standard of 100 year ARI Brisbane River Flood (RL 6.7 m AHD). Note 6 to Table B2.2.1 of the SDG requires a retirement village to comply with Table B2.2.2.

A creek or water requires Q100 analysis and the proposed application includes a Q50 analysis. This is in accordance with Table B2.2.1 of the Subdivision and Development Guidelines (SDG) however for development in the waterway the Q100 analysis is required.

The proposal has not addressed the trapped sag, west of the site in Cansdale Street. This area is currently drained by an overland flow path through the site. Filling the site without accounting for drainage from the west and north of the site may cause an adverse impact on adjacent properties and roads."

In response to the information request, detailed modelling of the works required to obtain a satisfactory hydraulic solution has been completed. The proposed works have been developed in consultation with ecologists and landscape architects to ensure that the outcome achieved maximises the environmental values of the waterway corridor. Modelling has considered both the need to cause no adverse impact and the desirability of including the design solution as part of an overall flood mitigation strategy for the catchment.

This report presents the results of the modelling investigations.

2. SITE DESCRIPTION

The development site covers an area of approximately 2.79 ha. Ground levels throughout the site are generally between 5 m AHD and 6 m AHD. The site is currently used for industrial purposes. The western half of the site contains sheds and parking areas while the eastern half of the site is predominately grassed with some heavier vegetation such as trees and shrubs along the eastern boundary.

The extent of this flooding assessment is not limited to the development site as described above. Drainage paths considered in this assessment are presented in Figure 2. From this figure it can be seen that the main drainage path within the catchment is located on the eastern boundary of the site. The catchment drains in a northerly direction to the Brisbane River through Leyshon Park and Downs Oval and beneath the Brisbane Corso. The drain takes the form of an excavated channel with a concrete invert.

Smaller tributary flows enter the main channel approximately 80 metres upstream of the southern boundary of the development site. At this location stormwater drainage pipes from the west and the east meet and stormwater continues down the main open channel.

Despite the fact that the channel is not a natural waterway, a Waterway Corridor has been defined that affects the site (refer Figure 2). The corridor has been defined 30 metres either side of the low flow invert of the channel. As the centreline of the waterway is about eight metres inside the eastern boundary of the site, the corridor affects about a 38 metre width of the site.

3. PREVIOUS STUDIES

A flood study of the area was conducted by Brisbane City Council in June 2003 (*Yeronga Local Stormwater Management Plan (LSMP) June 2003*). This report has been referenced as part of the current assessment. In addition, Council made available the models developed for the LSMP for the current investigation. The models provided base information for use in the detailed modelling undertaken for this investigation.

The major storm event considered for the local stormwater management plan had a recurrence interval of 50 years. This is considered appropriate given that the drain can be classified as a designed open channel, for which the major storm event for the specification of fill and floor levels is the 50 year event according to Table B2.2.1 of the *Subdivision and Development Guidelines* (2000). Consequently, the 50 year event was considered for the analysis of local catchment flooding when investigating the drainage requirements for the proposed development.

As shown in Figure 6, the flood mitigation measures proposed in the *Yeronga Local Stormwater Management Plan* include retaining the existing concrete invert of the channel and increasing the width of the grassed base of the channel by 12 metres (p30 and Appendix L) along the eastern boundary of the site and downstream (north) of the site. A Mannings n value of 0.04, which corresponds to grass, was adopted for the channel to maximise its flow carrying capacity.

The works envisaged for the area also include the excavation of channels to convey the runoff from the eastern and western portions of the catchment to the main drain on the eastern boundary of the site. The proposed base width of the eastern and western channels is 10 metres and 8 to 12 metres respectively. As for the main channel, grass lined channels with a Mannings n value of 0.04 was envisaged. Bank slopes of 1 in 4 were adopted for the channel.

Based on the dimensions indicated in the LSMP and existing ground levels in the vicinity of the drain, the main drain following the completion of channel works would have a top width of about 39 metres. The western drain would have a top width of between 36 and 40 metres and the eastern drain a top width of about 30 metres.

The channel design presented in the LSMP is preliminary. It is likely that Council will give consideration to obtaining a design more conscious of environmental and safety issues if the flood mitigation works are implemented. However, such a design would necessitate the construction of a wider channel to provide for flatter bank slopes and the reduced flow capacity associated with a level of vegetation higher than grass. If the bank slopes were to be flattened to improve safety (as proposed for the development at the request of Council), the top width of the channels could need to increase by as much as 13 metres (a top width of 52 metres) as a worst case.

Further, it is also important to note that the proposed location of the main channel and western channel in the LSMP affect private property (i.e. the proposed site) and would require the resumption of a significant area in order to be constructed. The existing drain is not contained within an easement and therefore Council has no current right to modify the drain without the consent of the owner of the property.

4. GOVERNING FLOOD LEVELS

Based on a flood report obtained from Council and the *Yeronga Local Stormwater Management Plan* (City Design June 2003), the applicable flood levels to the site are listed in Table 1. Table 1 also lists the peak flood levels calculated by the current study (refer Section 6).

Table 1 Defined Flood Levels

Event	Brisbane River Flooding (mAHD)	Local Flooding (mAHD)			
		Yeronga LSMP		Current Modelling	
		Existing	Post Mitigation	Existing	Post Mitigation
100 Year	6.7	-	-	-	-
50 Year	5.5	3.70 – 4.35	3.70 – 3.74	3.89 – 4.38	3.62 – 3.65
20 Year	3.7	-	-	-	-
10 Year	-	3.25 – 4.27	3.10 – 3.24	3.51 – 4.18	3.20 – 3.22
2 Year	-	3.00 – 4.23	2.80 – 2.97	3.03 – 3.69	2.72 – 2.74

The figures quoted in Table 1 for local flooding include the levels predicted for the site following the completion of proposed flood mitigation works. The proposed mitigation works that affect the site are shown in Figure 6 and described in Section 3.

Based on Table B2.2.1 of the *Subdivision and Development Guidelines* (2000), the design levels applicable to the development are listed in Table 2.

Table 2 Design Levels for Development

Case	Brisbane River		Local Flooding		Governing Level (mAHD)
	Design Level	Level (mAHD)	Design Level	Level (mAHD)	
Allotment fill	100y ARI + 0.3m	7.0	50y ARI + 0.3m	4.68	7.0
Habitable Floor	100y ARI + 0.5m	7.2	50y ARI + 0.5m	4.88	7.2
Non-Habitable Areas	100y ARI + 0.3m	7.0	50y ARI + 0.3m	4.68	7.0
Carparking*	20y ARI	3.7	50y ARI	4.38 existing 3.65 mitigated	4.38 existing 3.65 mitigated

Note: Basement car parks can be set below the nominated level provided that suitably waterproofed perimeter walls, air vents, and entry/exit ramps at the car park entrance are above the 100 year ARI flood levels for all sources including the Brisbane River (i.e. 6.7 m AHD).

A basement car park (floor level 4.1 m AHD) is proposed for the development. As the entry/ exit to the basement car park will be from the podium level (7.0 m AHD minimum), the Council requirements with respect to basement car park immunity will be achieved.

5. FLOOD MODELLING

5.1 Overview

The existing stormwater drainage system in the area consists of a series of overland flow paths, stormwater pipes and open channels. Given this interaction between surface and underground drainage, XP-STORM was considered the most suitable package for modelling the investigation area. Version 8.5 of XP-STORM was used for the analysis.

XP-STORM is capable of modelling hydrology and hydraulics in a single model, and includes the algorithms used in RAFTS. It was therefore possible to import the Council RAFTS model of the catchment to the XP-STORM model to derive inflow hydrographs for the hydraulic layer of the XP-STORM model that were consistent with those obtained by Council.

The following sections of the report discuss the various components of the XP-STORM model and the modelling procedures adopted for this assessment. A schematic of the XP-STORM model developed for the site is provided in Figure 3.

5.2 XP Storm Hydrology

As part of the preparation of the *Yeronga Local Stormwater Management Plan* (2003) Brisbane City Council developed a RAFTS model to represent the hydrology of the East Yeronga catchment. The data from the RAFTS model was transferred to the hydrology layer of the XP-STORM model. Table 3 summarises the parameters adopted for each sub-catchment. Sub-catchment boundaries are shown on Figure 4.

Table 3 Sub-Catchment Details

Sub-Catchment	Area (ha)	Fraction Impervious (%)	Slope (m/m)	Manning's Roughness
AB	22.30	44	0.045	0.035
CDE	10.50	65	0.048	0.025
F	3.66	81	0.040	0.025
G	13.23	36	0.020	0.033
HM	42.57	50	0.016	0.025
N	2.95	90	0.045	0.025
O	3.40	29	0.016	0.033
P	3.95	3.4	0.070	0.025
Q	9.90	47	0.012	0.025
R	8.80	33	0.010	0.040
Main1	2.20	30	0.040	0.037
Main4	1.96	20	0.020	0.040
Main7 (D2)*	2.17	20	0.020	0.040
Main12	4.22	15	0.020	0.036
Main17	3.42	23	0.010	0.039
Main22	4.33	23	0.010	0.039
Main26	1.50	20	0.010	0.037

* Node Main7 is labelled D2 in the developed case model.

XP-STORM allows the specification of configuration parameters which apply globally to the model. One of the configuration parameters that can be set is the value of the storage multiplier B_x, which is directly analogous to the B_x factor in RAFTS. In order to achieve calibration for the Yeronga LSMP, a B_x factor of 1.75 was adopted for the RAFTS model. This storage coefficient was applied as a configuration parameter (BX=1.75) to the XP-STORM model. A configuration parameter was also set to specify that runoff routing was to be completed in accordance with the algorithms used in RAFTS.

Three detention basins were included in the Council RAFTS model of the catchment and were thus duplicated in the XP-STORM model. The first basin is formed between the Gold Coast Railway line and the Yeronga TAFE (Node AB). The second basin, which is smaller than the first, is formed between Fairfield Road and the Gold Coast Railway Line (Node CDE). The third detention basin is located towards the downstream end of the main channel, and discharges just upstream of the Brisbane Corso (Node Q). This basin is formed in the residential streets to the east of the main channel. Table 4 reports the storage information, drawn from the Council model, used to model each of these detention zones. In this table the depth of storage reported is relative to the invert of the node to which the storage is assigned.

Table 4 Detention Basin Details

Basin 1 (Node AB)		**Basin 2 (Node CDE)**		**Basin 3 (Node Q)**	
Node Invert = 4.20 mAHD		Node Invert = 1.96 mAHD		Node Invert = 2.00 mAHD	
Depth* (m)	**Area (m²)**	**Depth* (m)**	**Area (m²)**	**Depth* (m)**	**Area (m²)**
0	0	0	0	0	0
1.1	5	0.5	2	1.2	61
1.8	16	1.0	2	1.3	1800
2	30	1.2	10	1.4	2010
2.2	55	1.4	20	1.5	3710
2.3	100	1.5	80	1.6	5620
2.4	170	1.6	320	1.7	8030
2.5	310	1.6	800	1.8	10200
2.6	480	1.7	1080	1.9	12400
2.7	620	1.8	1760	2	13930
2.8	770	1.9	2550	2.1	16820
3.1	1120	2.0	3250		
3.3	1440	2.2	2820		
3.5	1600	2.5	1667		
4.3	1904				
5.3	2477				
5.8	3190				
6.3	3966				

** Depth is relative to the invert of the node to which the storage is assigned.*

Rainfall losses were set to match those adopted by Council, namely 15 mm of initial loss followed by a continuing loss rate of 2.5 mm per hour.

Rainfall intensities were taken from the Brisbane Intensity Frequency Duration curve provided in the BCC Supplement to QUDM (Appendix A to Section 6 of the Brisbane City Council *Subdivision and Development Guidelines* (2000)).

To be consistent with the Yeronga LSMP, events with recurrence intervals of 2, 10, and 50 years were modelled. Storm durations ranging from 30 minutes to 2 hours were considered for the analysis. A storm with a duration of 60 minutes was found to produce peak flow rates in the vicinity of the site.

The peak flows predicted by the hydrology layer of XP-STORM are presented in Table 5. The table also reports the corresponding (Council) RAFTS discharge. It can be seen from these results that the peak flows predicted by the XP-STORM model closely agree with the discharges determined for the Yeronga LSMP. Given this close agreement, it was considered that the hydrology component of the XP-STORM model was providing satisfactory results.

Table 5 XP-STORM Hydrology Results - 60 Minute Duration Storm

Sub-Catchment	2 year ARI Discharge (m^3/s)		10 year ARI Discharge (m^3/s)		50 year ARI Discharge (m^3/s)	
	STORM	RAFTS	STORM	RAFTS	STORM	RAFTS
AB	4.97	4.79	8.79	8.55	12.06	12.01
CDE	3.43	3.35	5.33	5.24	6.96	6.95
F	1.30	1.29	1.98	1.95	2.55	2.55
G	2.47	2.72	4.14	3.95	5.94	5.81
HM	7.63	7.37	13.47	13.00	19.29	19.08
N	1.07	1.06	1.61	1.59	2.07	2.06
O	0.64	0.61	1.12	1.09	1.61	1.58
P	1.16	1.14	1.83	1.79	2.40	2.39
Q	1.98	1.91	3.48	3.31	4.98	4.88
R	1.10	1.05	2.04	1.93	3.05	2.94

Note: STORM refers to results from XP-STORM, RAFTS to results from Council model

5.3 XP Storm Hydraulics

5.3.1 Overview of Hydraulic Model

Detailed survey was collected for the region downstream (north) of approximately Hyde Road to the Brisbane River. The survey, completed by PMM Group (Drawing 7203-2a) included spot levels and cross sections through the existing drain. This information was augmented by design data for pipes and culverts in the vicinity of the study area.

Based on discussions with Council [redacted] it is understood that the survey upon which the Council hydraulic model is based was taken from aerial (helicopter) survey and that the levels obtained from the aerial photogrammetry are quite variable in the channel.

Therefore, in addition to potential variations associated with the different models used for the Yeronga LSMP (MIKE-11 and HEC-RAS) and the current investigation (XP-STORM), the fact that detailed survey was used for the current investigation will produce calculated flood levels which differ from those obtained by Council. As the model is based on detailed survey rather than aerial photogrammetry, it is considered that the results obtained from the new modelling will be more reliable than those presented in the Yeronga LSMP.

5.3.2 Cross Section Information

As noted in Section 5.3.1, cross sectional information was obtained from the detailed survey of the site. A total of 28 cross sections were used to define the water courses within the model area in the developed case (one additional cross section was included in the existing case model). The location of each of these cross sections is shown in Figure 5.

Manning's n roughness coefficients were applied to the centre, left and right banks of each cross section. The value of the Manning's coefficients adopted for the model varied from 0.03 to 0.08, similar to the values adopted for the Yeronga LSMP. Downstream of the development site the channel is well maintained with mowed grassed slopes and a concrete invert. Therefore the roughness along this section of the model was generally set at 0.03 for the entire width of the cross section.

Roughness values were increased within the western and eastern overland flow paths due to the presence of more significant vegetation along these watercourses. These roughness estimations were based on aerial photography and site inspection.

5.3.3 Structures

The detailed survey indicated stormwater pipes under the western and eastern overland flow paths. These pipes convey runoff from catchments upstream of the site and discharge it to the main channel approximately 40 metres north of Venner Road. The details of these pipes are presented in Table 6.

Table 6 Stormwater Pipe Dimensions (Existing)

Line	Dimensions	Number of pipes	Total Length (m)
Fairfield Rd to Main Drain	1200 dia RCPC	2	137
Fairfield Rd to Main Drain	1200H x 1800W Oval	2	277
Hyde Rd to Main Drain	1650 dia RCPC	1	170

Brisbane Corso crosses the main channel at the downstream end of the model, just upstream of the Brisbane River. A bank of culverts allows runoff to pass under the road. The details of these culverts are presented in Table 7. Invert levels at the inlet of the culvert indicate that there is a significant drop in bed level from the main channel to the culvert invert.

Table 7 Brisbane Corso Culvert Details

XP-STORM Link Location	Geometry	No. of culverts	Length (m)	Upstream Invert (mAHD)	Downstream Invert (mAHD)
Main23-24	1650& RCPC	4	27.3	-0.45	-0.80

5.3.4 Boundary Conditions and Simulation Details

Previous modelling for the Yeronga LSMP (Brisbane City Council June 2003) was based upon a constant tailwater level of 1.2 m AHD in the Brisbane River, which is equivalent to the Mean High Water Springs tide level. The same boundary condition was adopted for the current modelling at the downstream end of the model (node Main26) with the model reverting to normal depth if required.

The XP-STORM model was run for a period of 24 hours at 5 second time steps.

5.4 Proposed Mitigation Option

5.4.1 Overview of Proposed Council Mitigation Scheme

As part of the Brisbane City Council Yeronga LSMP, mitigation options were investigated to relieve some of the flooding pressures already experienced by residents within the catchment. The final proposed relief configuration included the following components (from the *Yeronga Local Stormwater Management Plan* (June 2003)):

- Widening of the western overland flow path from Hyde Road, through Venner Road to the confluence with the main drain. In the existing case this flow path is poorly defined. Under the proposed relief conditions the base of this channel would be increased to between 8 metres and 12 metres.
- Widening of the eastern overland flow path from Fairfield Road, through Fehlberg Park to the confluence with the main drain. As with the western flow path, this channel is poorly defined under existing conditions. The proposed mitigation solution indicates a widening of the base of this channel to approximately 10 metres with 1v:4h batter slopes.
- Widening of the main channel downstream of the confluence with the eastern and western overland flow paths. The proposed mitigation option indicates that the concrete lined channel invert should be maintained with the channel widened by 12 metres. This widening may occur as 6 metres either side of the concrete invert or 12 metres to one side depending on the location of other elements within the floodplain such as houses. In the vicinity of the site, this would produce a channel with a top width of about 39 metres assuming 1 in 4 bank slopes.
- Diversion of part of the piped stormwater from sub-catchment G to the piped system of sub-catchment O. Under existing conditions, the pipe infrastructure at the outlet of sub-catchment G is not sufficient to convey the 2 year ARI discharge. Sub-catchment runoff in addition to the capacity of the pipe in the 2 year event will be diverted to sub-catchment O.

A number of other mitigation measures were recommended involving upgrading and replacing pipe drainage infrastructure throughout the catchment. The measures relevant to the currently proposed development only have been mentioned here. Figure 6 presents the proposed mitigation solution diagrammatically and is drawn from Appendix L of the LSMP.

5.4.2 Proposed Mitigation Solution

The extent to which the site is flooded for the 50 year local flooding event (Figure 2) is limited to within about 15 to 20 metres of the boundary of the site. Based purely on hydraulic grounds, the development could proceed to the limit of inundation (i.e. to within 15 to 20 metres of the eastern boundary of the site) without impacting on existing flooding.

However, the situation is complicated by the following factors:

- **Waterway corridor**

  A waterway corridor has been defined based on a nominal 30 metre offset from the centre of the drain (refer Figure 2). A width of between 38 metres and 57 metres on the eastern boundary of the site is within the defined waterway corridor.

  Performance Criteria P3 of the Filling and Excavation Code of City Plan requires that filling or excavation must not cause any increase in flooding or drainage problems. Acceptable Solution 3.1 to the performance criteria is to ensure that no filling or excavation is located within a waterway corridor. Compliance to the acceptable solution would quarantine a significant area without providing any hydraulic benefit. As an alternate solution, as noted above the site could be filled to the existing flood line (i.e. 15 to 20 metres from the property boundary) without adversely impacting on flood levels.

  Council has agreed to development up to a 25 metre setback from the property boundary on the eastern side, within the waterway corridor.

- **Flood Mitigation Works**

  The Yeronga LSMP (refer Section 3 and Section 5.4.1) notes the need for flood mitigation works to occur to reduce the incidence of flooding in areas upstream of the site.

  With reference to Figure 6, the mitigation solution recommended in the Yeronga LSMP significantly encroaches on the proposed development site. As no easement exists on the site for drainage, Council would either need to obtain permission from the land owner for works to be completed on the land or purchase the land for drainage purposes.

  Further, the proposed works will affect land that is presently free from inundation rather than being sited within the parkland to the east that is subject to inundation.

  Given the above, the logical location for the mitigation works is within the Council controlled open area to the east of the site rather than within the site.

Based on discussions with Council mitigation works within the open channel along the eastern boundary of the site will be limited to those proposed by Council. Some beautification of the channel will be carried out through landscaping (refer to Appendix C for landscape concept plans) however the essential properties of the channel will be preserved. The landscaping concept is consistent with the hydraulic modelling assumptions.

It can be noted that the proposed diversion of flow from subcatchment G (refer Section 5.4.1) was not included in the modelled mitigation measures. This will conservatively increase the modelled flow in the eastern tributary of the drain.

6. MODELLING RESULTS

6.1 General

As mentioned in the previous section, Council has agreed to a 25 metre setback from the property boundary on the eastern side at the limit of development within the site. The open drain will be retained essentially in its existing conditions and beautification landscaping conducted as per the concept design presented in Appendix C. The proposed landscaping works are consistent with the hydraulic parameters (such as Manning's n roughness coefficients) adopted in the XP-STORM modelling. Considering these points, only the existing case was modelled for this study.

As noted in Section 5.3.1, the flood levels predicted by the XP-STORM modelling of the catchment differ from those calculated using MIKE-11 and HEC-RAS for the Yeronga LSMP. This can be attributed to the use of different hydraulic models for the two studies and, more significantly, the use of cross sections based on detailed survey for the current investigation.

When quantifying the performance of the proposed works, comparisons were made between the flood level estimates obtained from the current modelling and those presented in the Yeronga LSMP.

Peak flow rates and velocities calculated for the existing case scenario are provided in Appendix B.

6.2 Existing Situation

The peak flood levels calculated for the existing situation are presented in Table 8 also presents the peak flood levels reported in the Yeronga LSMP at cross sections in close proximity to nodes in the XP-STORM model.

In the western tributary upstream of the site, the flood level predicted by the XP-STORM model is less than that presented in the Yeronga LSMP by between 570 mm and 140 mm for the 2 and 50 year events respectively. In the eastern tributary upstream of the site, the flood levels predicted by the XP-STORM model are generally less than those presented in the Yeronga LSMP by up to 130 mm. The Council model predicts a level up to 100 mm lower than that obtained from the current model immediately upstream of the site.

Within the main channel in the vicinity of the site, the XP-STORM model predicted levels up to 200 mm higher than those presented in the Yeronga LSMP. In the vicinity of the Brisbane Corso the difference in flood level is greater, with the XP-STORM model predicting that the Corso will control levels upstream to a greater extent than calculated in the Yeronga LSMP modelling.

From the results presented above it was concluded that the current modelling provided a satisfactory prediction of flood levels within the catchment despite not exactly matching the results previously reported. However, this is to be expected given the differences in modelling and base data for the XP-STORM and Yeronga LSMP models (refer Section 6.1).

Table 8 Existing Case Results

		2 year Event Peak Levels			10 year Event Peak Levels		
Council Cross Section	XP-Storm Node	LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
Western Tributary							
	HM	-	4.46	-	-	4.59	-
	Trib A	-	4.05	-	-	4.16	-
Y2020	Trib B	4.27	3.64	-0.63	4.39	4.16	-0.23
	Trib B.1	-	3.62	-	-	4.16	-
Y2010	TribC	4.23	3.62	-0.61	4.27	4.16	-0.11
Eastern Tributary							
	AB	-	4.67	-	-	4.90	-
	CDE	-	3.80	-	-	3.96	-
	FRd	-	3.80	-	-	3.96	-
	F	-	3.73	-	-	3.91	-
	G	-	3.61	-	-	3.79	-
Y140	Main1	3.85	3.73	-0.12	4.03	3.91	-0.12
Y130	Main2	3.78	3.69	-0.09	3.95	3.88	-0.07
Y120	Main3	3.71	3.64	-0.07	3.86	3.82	-0.04
Y110	Main4	3.68	3.61	-0.07	3.83	3.79	-0.04
Y100	Main5	3.65	3.57	-0.08	3.79	3.75	-0.04
Y79	Main6	3.39	3.51	0.12	3.61	3.70	0.09
Main Channel							
	Main 7	-	3.18	-	-	3.59	-
	Main 8	-	3.12	-	-	3.57	-
	Main 9	-	3.10	-	-	3.56	-
Y75	Main 10	2.98	3.06	0.08	3.24	3.54	0.30
	Main 11	-	3.04	-	-	3.53	-
Y70	Main 12	3.05	3.03	-0.02	3.34	3.52	0.18
	Main 13	-	3.02	-	-	3.52	-
	Main 14	-	3.00	-	-	3.52	-
Y60	Main 15	2.95	2.98	0.03	3.23	3.51	0.28
	Main 16	-	2.96	-	-	3.50	-
Y50	Main 17	2.87	2.93	0.06	3.12	3.48	0.36
	Main 18	-	2.92	-	-	3.48	-
Y40	Main 19	2.59	2.90	0.31	2.79	3.47	0.68
	Main 20	-	2.88	-	-	3.46	-
	Main 21	-	2.85	-	-	3.45	-
Y30	Main22	2.03	2.84	0.81	2.48	3.44	0.96
u/s Corso	Main23	1.75	2.82	1.07	2.5	3.44	0.94
d/s Corso	Main24	1.4	2.65	1.25	1.63	3.10	1.47

		2 year Event Peak Levels			10 year Event Peak Levels		
Council Cross Section	XP-Storm Node	LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
	Main 25	-	2.64	-	-	3.09	-
	Main 26	-	2.48	-	-	2.93	-
Nodes off Main Channel							
	O	-	3.03	-	-	3.52	-
	P	-	2.93	-	-	3.48	-
	Q	-	2.84	-	-	3.44	-
	R	-	6.09	-	-	6.13	-
	N	-	3.03	-	-	3.52	-

		50 year Event Peak Levels			100 year Event Peak Levels		
Council Cross Section	XP-Storm Node	LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
Western Tributary							
	HM	-	4.67	-	-	4.72	-
	Trib A	-	4.36	-	-	4.45	-
Y2020	Trib B	4.52	4.36	-0.16	-	4.45	-
	Trib B.1	-	4.36	-	-	4.45	-
Y2010	TribC	4.35	4.36	0.01	-	4.45	-
Eastern Tributary							
	AB	-	5.16	-	-	5.40	-
	CDE	-	4.09	-	-	4.18	-
	FRd	-	4.09	-	-	4.18	-
	F	-	4.05	-	-	4.13	-
	G	-	3.94	-	-	4.09	-
Y140	Main1	4.17	4.05	-0.12	-	4.13	-
Y130	Main2	4.11	4.01	-0.09	-	4.10	-
Y120	Main3	4.07	3.96	-0.11	-	4.09	-
Y110	Main4	4.05	3.94	-0.11	-	4.09	-
Y100	Main5	4.02	3.94	-0.08	-	4.08	-
Y79	Main6	3.96	3.93	-0.03	-	4.08	-
Main Channel							
	Main 7	-	3.92	-	-	4.08	-
	Main 8	-	3.92	-	-	4.07	-
	Main 9	-	3.91	-	-	4.06	-
Y75	Main 10	3.69	3.90	0.21	-	4.05	-
	Main 11	-	3.89	-	-	4.04	-
Y70	Main 12	3.79	3.89	0.10	-	4.04	-
	Main 13	-	3.89	-	-	4.04	-

		50 year Event Peak Levels			100 year Event Peak Levels		
Council Cross Section	XP-Storm Node	LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
	Main 14	-	3.89	-	-	4.04	-
Y60	Main 15	3.72	3.88	0.16	-	4.04	-
	Main 16	-	3.87	-	-	4.03	-
Y50	Main 17	3.67	3.86	0.19	-	4.02	-
	Main 18	-	3.86	-	-	4.02	-
Y40	Main 19	3.56	3.85	0.29	-	4.02	-
	Main 20	-	3.85	-	-	4.01	-
	Main 21	-	3.84	-	-	4.00	-
Y30	Main22	3.5	3.84	0.34	-	4.00	-
u/s Corso	Main23	3.52	3.83	0.31	-	4.00	-
d/s Corso	Main24	1.9	3.31	1.41	-	3.38	-
	Main 25	-	3.31	-	-	3.38	-
	Main 26	-	3.14	-	-	3.21	-
Nodes off Main Channel							
	O	-	3.89	-	-	4.04	-
	P	-	3.86	-	-	4.02	-
	Q	-	3.84	-	-	4.00	-
	R	-	6.16	-	-	6.18	-
	N	-	3.89	-	-	4.04	-

Note *Nodes on eastern boundary of site shaded*
Refer to Figure 3 and Figure 5 for node locations
Council cross sections column specifies section at or near XP-Storm node location

6.3 Stormwater Drainage Network Upgrades

Detailed survey of the site indicates two stormwater pipes that traverse the site as shown on Figure 7. The development proposed for the site makes it necessary to realign these pipes.

- ***Cansdale Street***

Existing stormwater infrastructure includes a sag on Cansdale Street approximately 77 metres north of the intersection of Venner Road and Cansdale Street. A total catchment of 3.6 ha drains to this point and is then conveyed to the open channel via a 900 mm diameter stormwater pipe. A field inlet is located approximately 89 metres north east of the sag.

The proposed development for the site includes the construction of a basement car park in the north western corner of the site making it is necessary to realign this pipe as shown in Figure 7. As part of the conditions required by Council, it was also necessary to upgrade this pipe to entirely convey the 100 year discharge.

It was decided to alter the pipe alignment to pass around the basement car park and connect to the existing field inlet. In order to design the upgraded pipe line such that no adverse impacts were experienced at Cansdale Street a hydraulic grade line analysis was carried out. The full results of these calculations are reported in Appendix C. Key outcomes from this assessment are summarised in Table 9. The total length of pipe has increased from 263 metres to 280 metres. The results of this assessment will be finalised during detailed design.

Table 9 Cansdale Street Pipe Upgrade Results

Pipe Section	A	B	C
Contributing Catchment Area (ha)	3.15	0.47	0.98
Total Flow Q100 (m^3/s)	1.90	2.17	2.72
Pipe Section Length (m)	40.3	66.4	172.9
Pipe Diameter (mm)	900	1050	1200
Upstream invert level (m AHD)	5.00	4.00	2.50
Downstream Invert Level (m AHD)	4.50	2.50	1.35
Upstream Head (m AHD)	4.31	3.41	2.19
Downstream Head (m AHD)	3.86	2.99	1.35

- ***South East Corner***

As shown on Figure 7, a single 1650 mm diameter stormwater pipe crosses the south eastern corner of the development site. This pipe conveys stormwater runoff from catchments upstream and discharges it into the upstream end of the open drain, at the point where piped runoff from the west also enters the drain. Again, due to the proposed development it was necessary to realign this pipe to pass around the boundary of the site rather than through it. The proposed pipe alignment is shown on Figure 7.

Analysis of the effect of this realignment was carried out using the XP-STORM model developed for the flood assessment. The addition of a man hole and extra pipe length to this section of the stormwater drainage system means that additional losses are incurred. In order to ensure no worsening of flood levels in the vicinity of the pipe, it was necessary to upgrade the pipe by adding a second 1650 diameter pipe. Current invert levels were maintained. Based on the alignment shown in Figure 7 it is clear that an extra section of pipe has been added. The total length of pipe has increased from 77 metres to 96 metres. The results of this analysis are summarised in Table 10. The results of this assessment will be finalised during detailed design.

Table 10 South East Corner Pipe Upgrade Results

	100 year ARI			50 year ARI		
Node	Existing WSL (mAHD)	Developed WSL (mAHD)	Mitigated WSL (mAHD)	Existing WSL (mAHD)	Developed WSL (mAHD)	Mitigated WSL (mAHD)
Trib B	4.45	4.46	4.37	4.36	4.38	4.26
Trib B.1	4.45	4.46	4.37	4.36	4.38	4.26
Trib C	4.45	4.46	4.37	4.36	4.38	4.26
	10 year ARI			2 year ARI		
Node	Existing WSL (mAHD)	Developed WSL (mAHD)	Mitigated WSL (mAHD)	Existing WSL (mAHD)	Developed WSL (mAHD)	Mitigated WSL (mAHD)
Trib B	4.16	4.19	3.98	3.64	3.77	3.58
Trib B.1	4.16	4.19	3.98	3.62	3.76	3.49
Trib C	4.16	41.9	3.98	3.62	3.76	3.46

7. CONCLUSION

It is proposed to construct a retirement village on a site at the corner of Cansdale Road and Venner Road in Yeronga (the study site). Figure 1 shows the location of the site.

Development of the site is constrained by the presence of a waterway corridor that affects the eastern part of the site (refer Figure 2) and flood mitigation measures proposed in the *Yeronga Local Stormwater Management Plan* (June 2003) (refer Figure 6). The waterway corridor boundary is approximately 38 metres from the eastern boundary of the site, thus limiting development within this area. However, Council has agreed to a 25 metre set back from the eastern boundary. The open drain will remain unchanged under developed conditions thus no impact on flood levels is expected.

Some stormwater drainage infrastructure has been upgraded to accommodate for the aspects of the proposed development such as basement car parks. The Cansdale Street sag has been redesigned and the pipe realigned to convey the 100 year ARI discharge to the open channel, around the edge of the development. Similarly, the pipes traversing the south eastern corner of the development have also been upgraded and realigned.

FIGURES

Figure 1 Locality Plan

Figure 2 Drainage Paths

Figure 3 XP-STORM Model Layout

Figure 4 Catchment Boundaries

Figure 5 Cross Section Locations

Figure 6 Previous Proposed Mitigation Option

Figure 7 Stormwater Pipe Locations

Figure 8 Headwall Configuration

APPENDIX A

Peak Flows and Velocities

	Existing Case Peak Velocities (m/s)		
Node	Q50	Q10	Q2
G-Main4	0.60	0.29	0.17
O-Main12	0.25	0.65	0.22
P-Main17	0.25	0.25	0.24
F-Main1	0.29	0.31	0.25
R-Main22	0.15	0.12	0.09
N-Main12	0.20	0.20	0.19
Main22-23	1.61	1.61	1.52
Main24-25	-0.38	-0.36	-0.29
Main25-26	0.74	0.74	0.73
Main17-18	0.99	1.00	1.01
Main18-19	0.87	0.86	0.81
Main19-20	-0.84	-0.85	-0.85
Main20-21	1.05	1.03	1.03
Main21-22	1.00	0.99	1.01
Main12-13	0.90	0.88	0.85
Main13-14	1.09	1.08	1.04
Main14-15	1.20	1.19	1.15
Main15-16	0.99	0.99	0.95
Main16-17	-0.91	-0.89	-0.88
Drain4	-	-	-
Main10-11	1.00	0.99	1.01
Main11-12	0.71	0.68	0.64
Drain3	-	-	-
Drain1	-	-	-
Drain2	-	-	-
AB-CDE	0.82	0.77	0.70
CDE-FRd	0.39	0.34	0.30
Q-Main22	0.65	0.56	0.40
244.1	1.00	0.83	0.66
PipesL21	1.14	1.15	1.20
CorsoPipes	2.33	1.86	1.33
PipesD5	-	-	-
OverlandC	0.34	0.29	0.23
PipesC	1.10	1.06	0.99
OverlandD	0.45	0.38	0.47
PipesD	0.93	0.89	0.87
OverlandE	-0.33	-0.27	-0.17
PipesE	0.97	0.99	0.91
OverlandA	0.39	0.34	0.23
PipesA	1.33	1.31	1.21

	Existing Case Peak Velocities (m/s)		
OverL47	0.64	0.54	0.41
PipesL47	2.09	2.07	2.08
OverL48	0.57	0.47	0.27
PipesL48	2.35	2.32	2.25
OverM5D2	-	-	-
PipesM5D2	-	-	-
Weir	0.00	0.00	0.00
FREE	1.00	1.00	1.00

	Existing Case Peak Discharges (m^3/s)		
Node	Q50	Q10	Q2
G-Main4	8.45	4.03	2.27
O-Main12	2.24	5.87	2.00
P-Main17	3.44	3.55	3.40
F-Main1	3.89	3.41	3.12
R-Main22	3.04	2.03	1.10
N-Main12	2.38	2.46	2.24
Main22-23	20.31	16.12	11.42
Main24-25	-17.07	-13.28	-8.79
Main25-26	20.13	15.99	11.39
Main17-18	20.03	15.25	10.28
Main18-19	19.11	14.99	10.18
Main19-20	-16.87	-12.09	-7.86
Main20-21	18.50	14.61	10.07
Main21-22	18.21	14.45	10.05
Main12-13	22.83	16.66	10.46
Main13-14	21.61	15.85	10.22
Main14-15	21.00	15.54	10.16
Main15-16	20.25	15.27	10.08
Main16-17	-17.61	-12.21	-7.82
Drain4	-	-	-
Main10-11	23.35	16.53	10.16
Main11-12	21.97	16.12	10.03
Drain3	-	-	-
Drain1	-	-	-
Drain2	-	-	-
AB-CDE	11.12	8.02	6.61
CDE-FRd	14.88	10.04	5.36
Q-Main22	4.88	3.48	1.98
244.1	14.61	9.23	4.36
PipesL21	1.08	1.09	1.14
CorsoPipes	5.04	4.00	2.85
PipesD5	-	-	-
OverlandC	10.51	6.67	3.15
PipesC	1.09	0.99	0.94
OverlandD	10.04	6.33	2.89
PipesD	0.84	0.84	0.82
OverlandE	-8.01	-4.50	-1.31
PipesE	0.92	0.93	0.86
OverlandA	11.39	7.47	3.00
PipesA	1.51	1.48	1.37

	Existing Case Peak Discharges (m^3/s)		
OverL47	14.95	9.23	3.53
PipesL47	4.56	4.52	4.48
OverL48	17.23	10.10	2.70
PipesL48	5.13	5.08	4.92
OverM5D2	-	-	-
PipesM5D2	-	-	-
Weir	0.00	0.00	0.00

APPENDIX B

Hydraulic Grade Line Calculations – Cansdale Street

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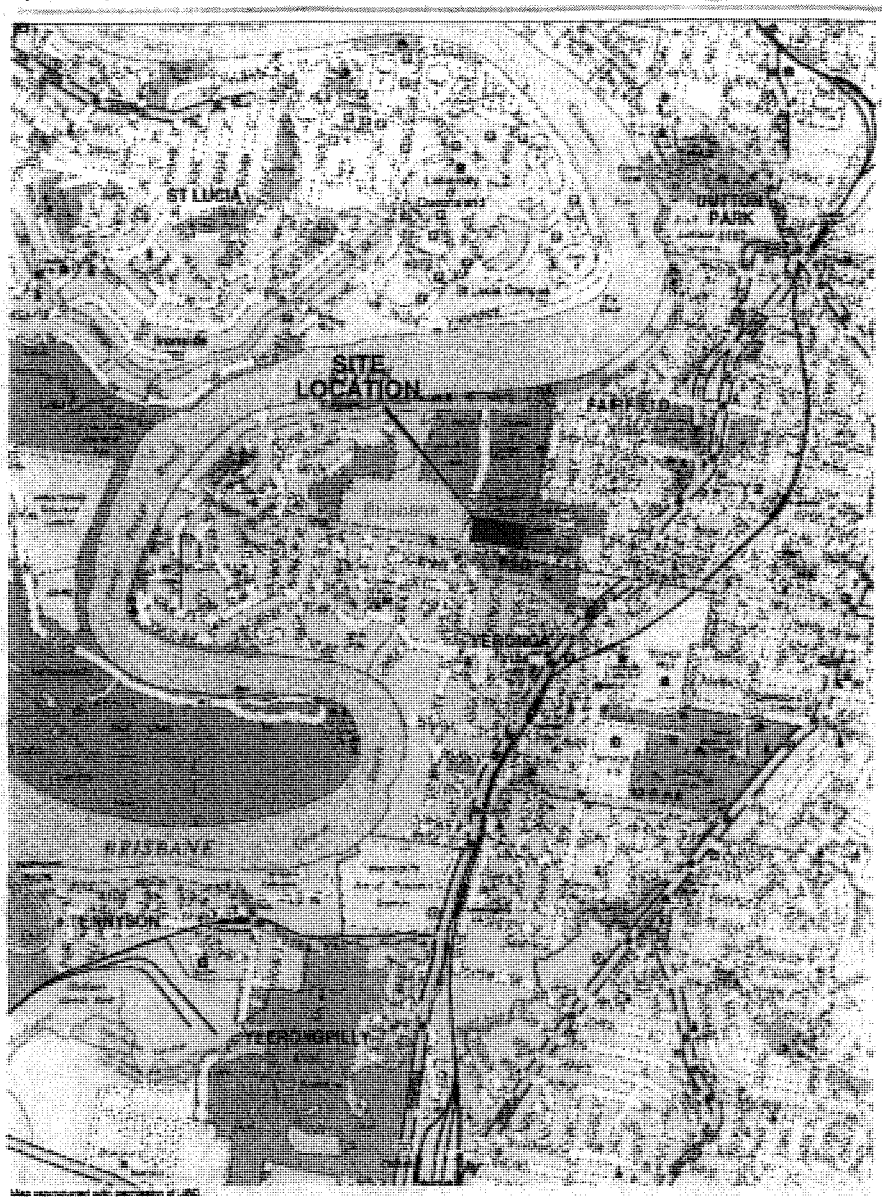

N.T.S.

FIGURE 1
SITE LOCALITY PLAN

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Harrisons Real Estate Development

Yeronga Retirement Village
Hydraulic Analysis

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LEGEND

SITE BOUNDARY
DRAINAGE PATH
WATERWAY CORRIDORS
Q50 Existing Inundation (Yeronga LSMP)

Scale 1:4000 (A3)

FIGURE 2
DRAINAGE PATHS

Project No.: [illegible]

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Hydraulic Analysis

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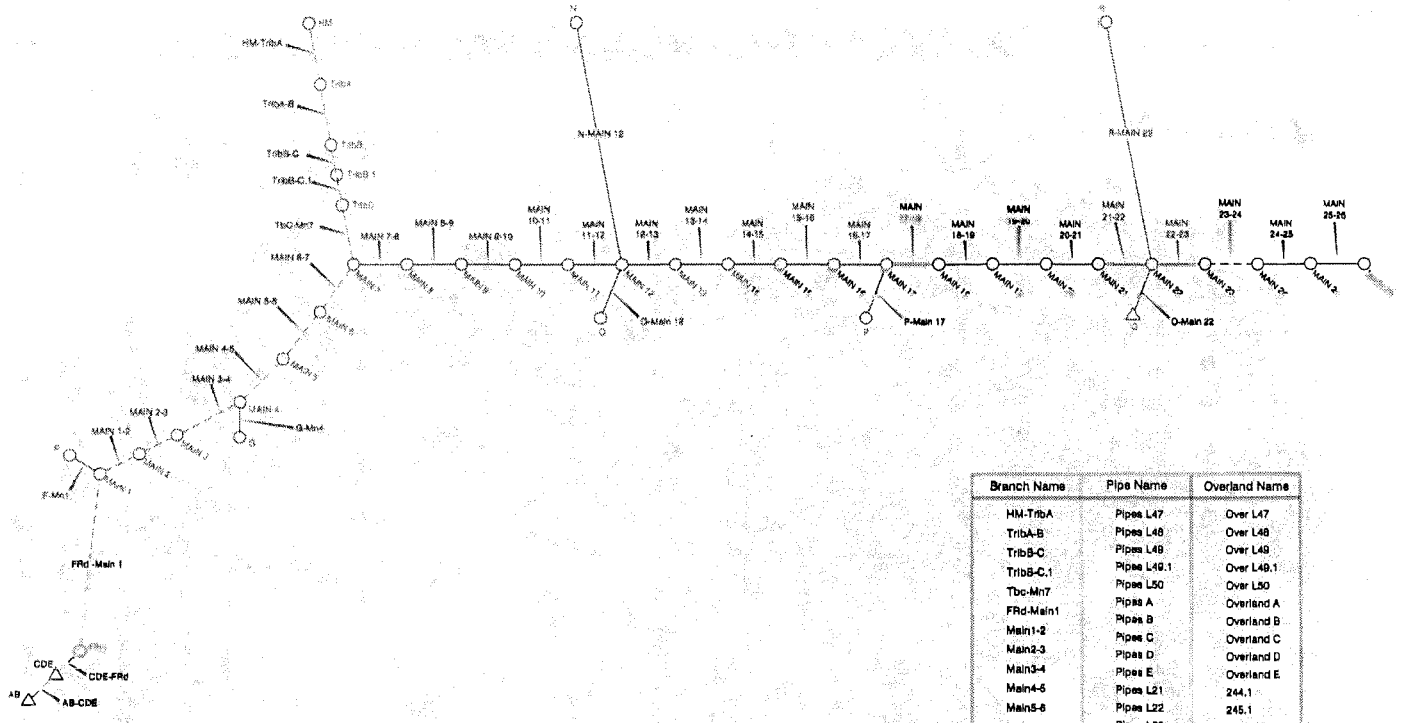

Branch Name	Pipe Name	Overland Name
HM-TribA	Pipes L47	Over L47
TribA-B	Pipes L48	Over L48
TribB-C	Pipes L49	Over L49
TribB-C.1	Pipes L49.1	Over L49.1
Tbc-Mn7	Pipes L50	Over L50
FRd-Main1	Pipes A	Overland A
Main1-2	Pipes B	Overland B
Main2-3	Pipes C	Overland C
Main3-4	Pipes D	Overland D
Main4-5	Pipes E	Overland E
Main5-6	Pipes L21	244.1
Main6-7	Pipes L22	245.1
Main23-24	Pipes L23	248.1
Drain 5	Corso Pipes	Weir
	Pipes D5	-

LEGEND

- - - - MULTI LINKS

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FIGURE 3

XP-STORM MODEL LAYOUT

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Hydraulic Analysis

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Scale 1:7000 (A3)

FIGURE 4

CATCHMENT BOUNDARIES

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FIGURE 5
CROSS SECTION LOCATIONS

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Scale 1:4000 (A3)

FIGURE 6

PREVIOUS PROPOSED MITIGATION OPTIONS

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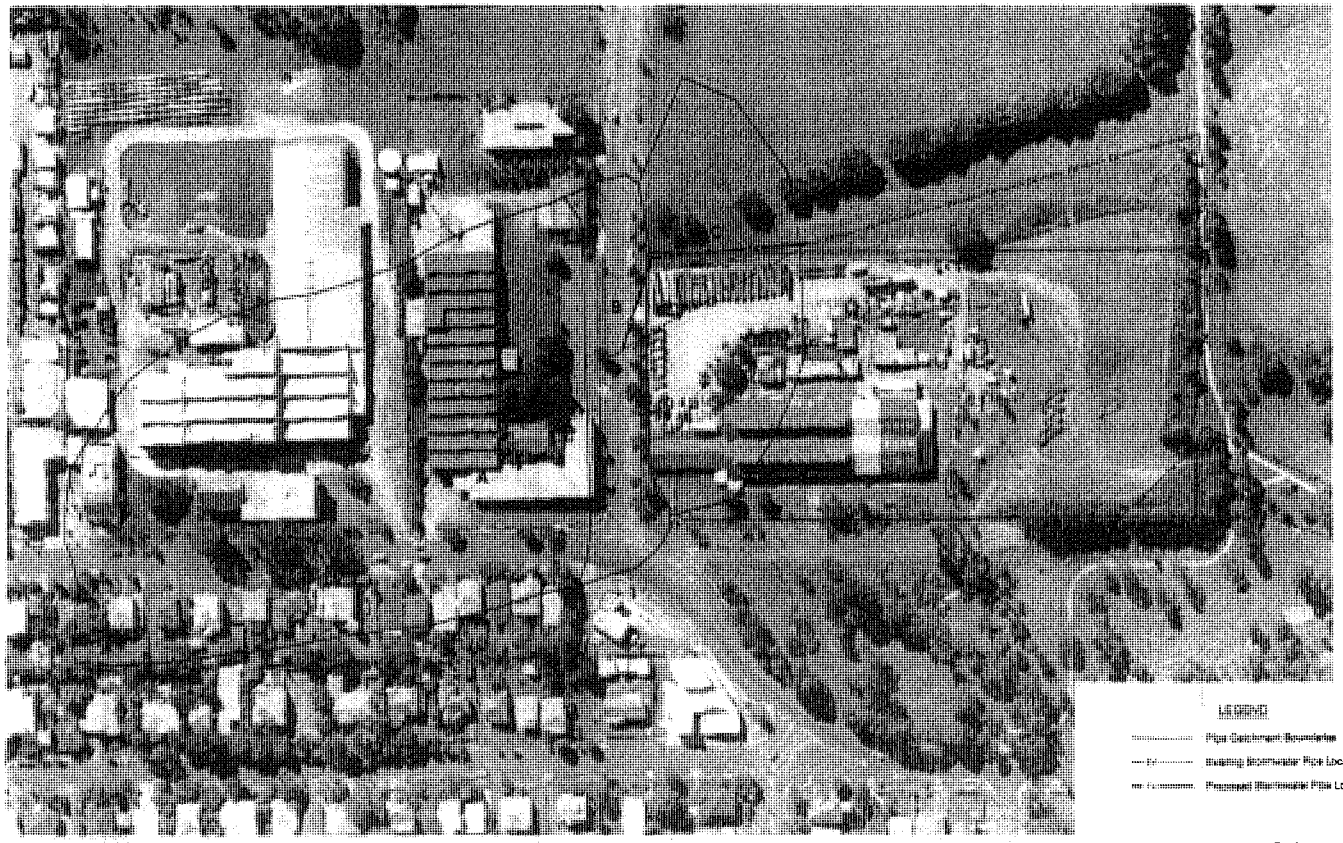
Hydraulic Analysis



LEGEND

Pipe Catchment Boundaries

Existing Stormwater Pipe Locations

Proposed Stormwater Pipe Locations

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Scale 1:1500 (A3)

FIGURE 7
STORMWATER PIPE LOCATIONS

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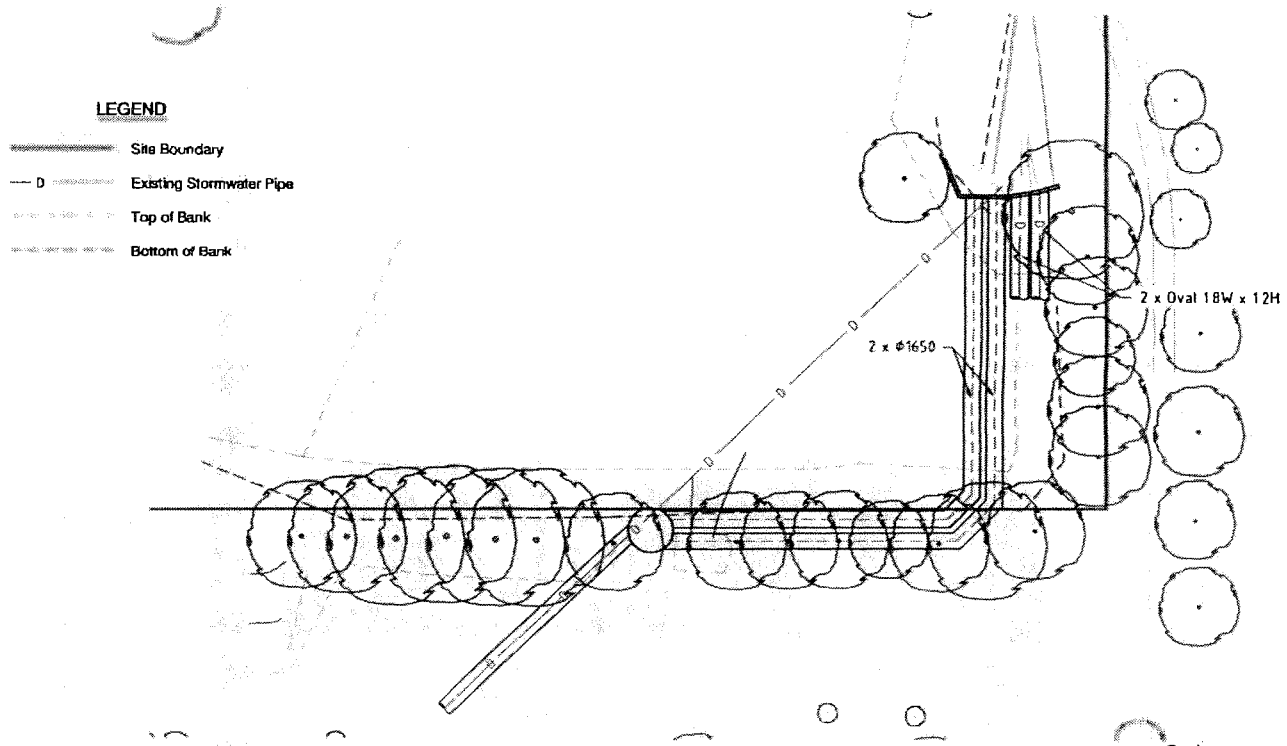
Yeronga Retirement Village
Hydraulic Analysis



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Scale 1:500 (A4)

FIGURE 8
HEADWALL CONFIGURATION

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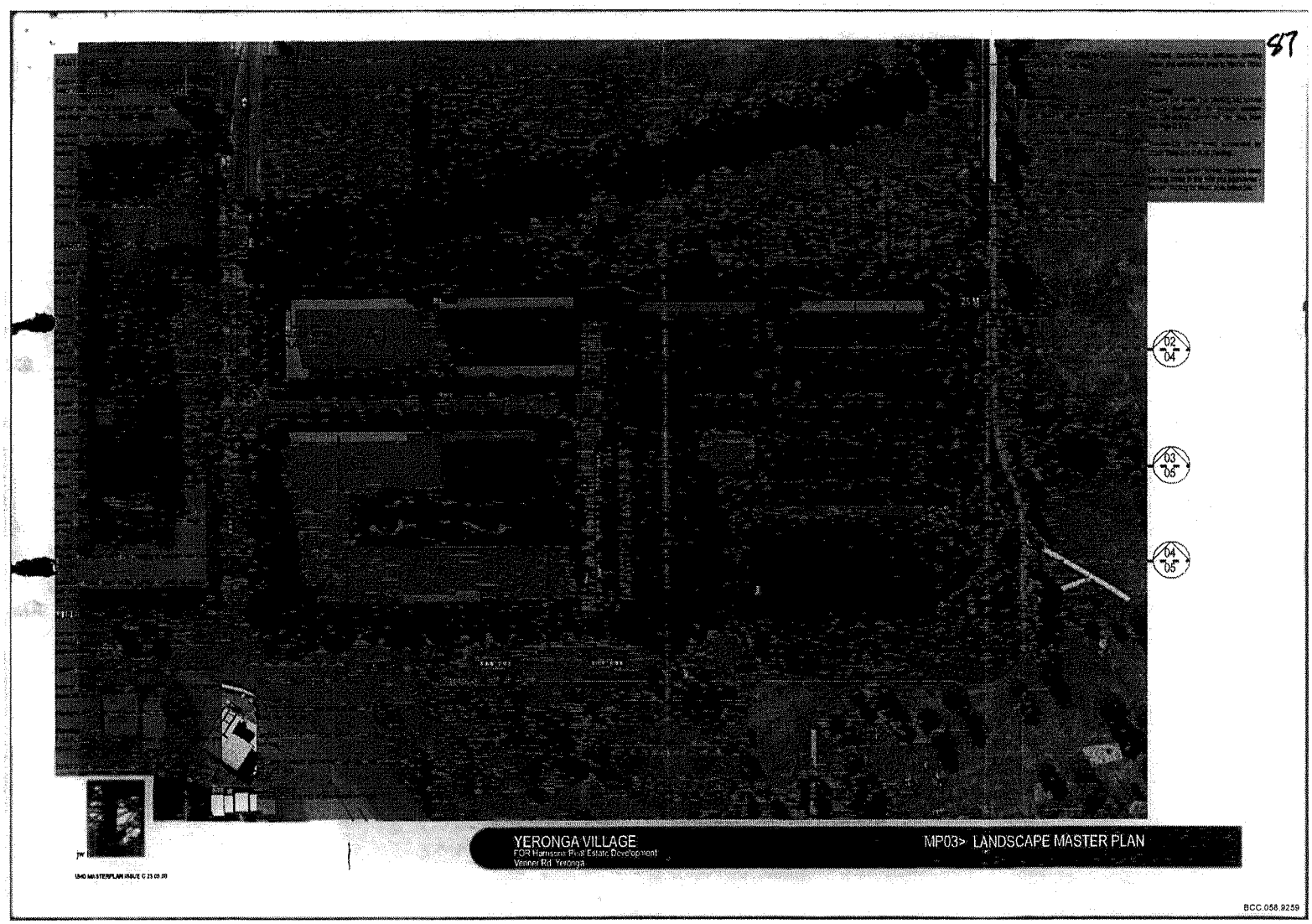
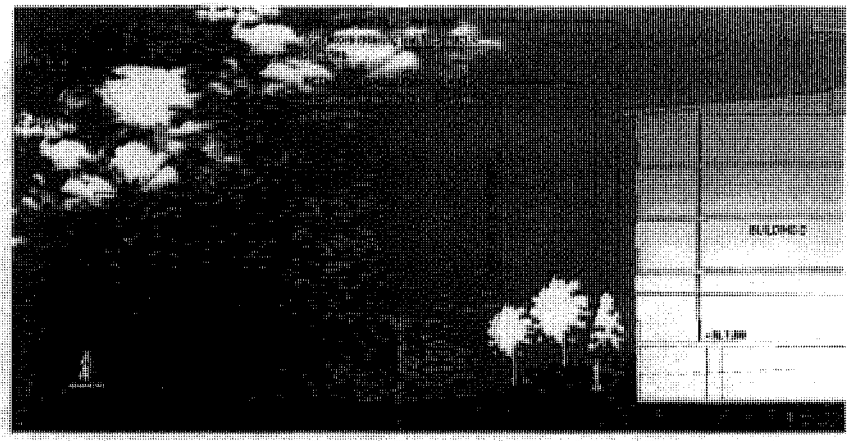

02
04
03
05
04
05
YERONGA VILLAGE
FOR Harrisons Real Estate Development
Vennel Rd Yeronga
MP03> LANDSCAPE MASTER PLAN



05
MP11
LANDSCAPE SECTION
Scale 1:200



YERONGA VILLAGE
FCR Harrisons Real Estate Development
Yeronga Rd Yeronga

MP11> Landscape Sections - Sheet 3

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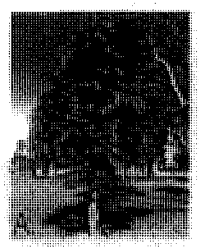
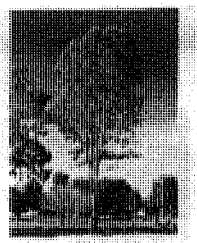






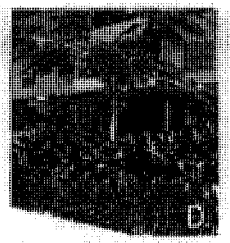










IMAGE KEY

A. Brachychiton acerifolius
Feature tree.

B. Syzygium sp./ Ficus sp. Park
shade tree.

C. Eucalyptus lesselaris
Park buffer tree.

D. Peltophorum pterocarpum
Avenue tree.

E. Xanthostamon chrysanthus
Courtyard feature tree.

F. Doryanthes excelsa
Feature plant

G. Zamia furfuracea
Feature pots.

H. Cycas revolutum
Feature plant.

I. Cordyline fruticosum sp.
Feature plant against walls.

J. Alpinea purpurea
Screening plant.

K. Variegated Heliconia
Screening plant.

L. Philodendron Xanadu
Dense groundcover.

M. Anigozanthus sp.
Colourful groundcover.











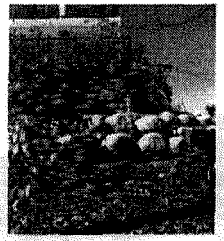


YERONGA VILLAGE
FOR Hamsons Real Estate Development
Vennel Rd Yeronga

MP10> landscape planting palette

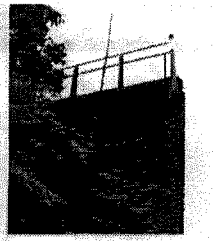
BCC.056.9261

A.



B.





C.



D.





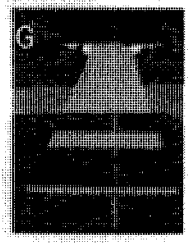
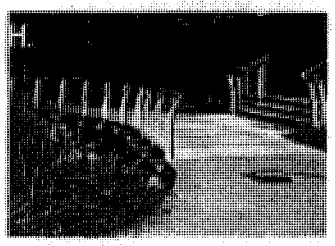


IMAGE KEY

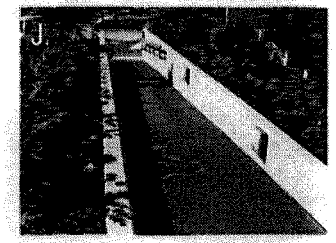
A. Rockwork to stabilise batters on densely planted bunds
B. Raised timber platforms over rockwork.
C. Large rocks and timber decking over drainage line.
D. Boardwalk style connections from communal area to park
E. Outdoor furniture and seating opportunities under shade
F. Pool area solar access - selective tree placement.
G. Private courtyard paths extend into communal areas
H. High quality paving and balustrade finishes at park edge.
I. Detailed paving finishes in high use common areas.
J. Ramping, handrails & tactiles to meet disability mobility A.S.
K. Deep planting areas adjacent to outdoor areas.
L. Possible water feature - ambient noise.
M. Possible permeable paving finish for passive irrigation.



M.







K.





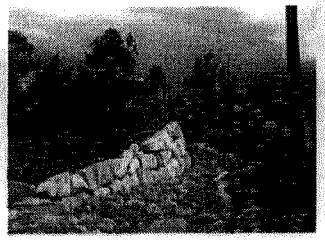
YERONGA VILLAGE
FOR Hansons Real Estate Development
Vonner Rd Yeronga

MP09> landscape finishes palette

BCC.058.9262



A.



B.



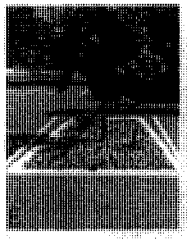
C.

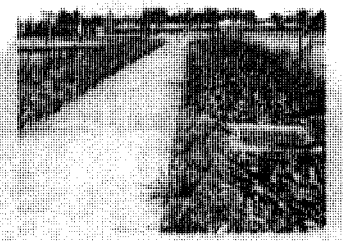
IMAGE KEY

A. Boulder edging / low walls to provide bank stability and
B. deep planting areas alongside constructed swales.
C. Use of graded rock sizes, curving alignments and pool
D. and riffle sections to reflect natural channel conditions.
E. Possible flush kerbs and gravel mulch for harvesting of
F. rainwater adjacent to hard-stand areas.
G. Above-ground overland flows incorporated into landscaping.
H. Bollards to prevent vehicle access at flush kerbs.
I. Riverine planting into benched areas above inverts for water
J. quality and amenity.
K. Jutematting in steep areas for bank stabilisation and weed control.
L. Boardwalk crossings at key points for park permeability.

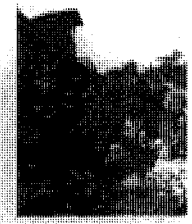


D.





F.

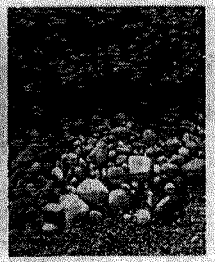


G.



H.









L



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YERONGA VILLAGE
FOR Harrisons Real Estate Development
Yeronga Rd, Yeronga

MP08> ecological sustainability initatives

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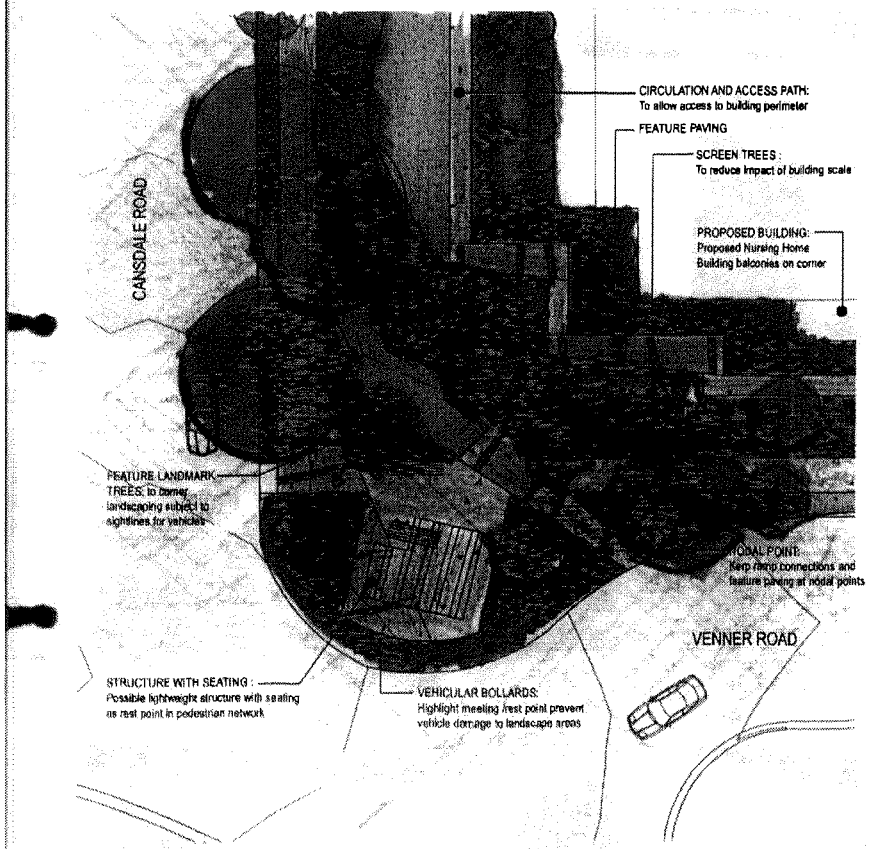

C
MP07

VENNER ROAD/ CANSDALE STREET CORNER - DETAIL PLAN

Scale 1:200 @ A3

YERONGA VILLAGE
FOR Hipsleys Real Estate Development
Yeronga Rd, Yeronga

MP07> Landscape Details - Sheet 2

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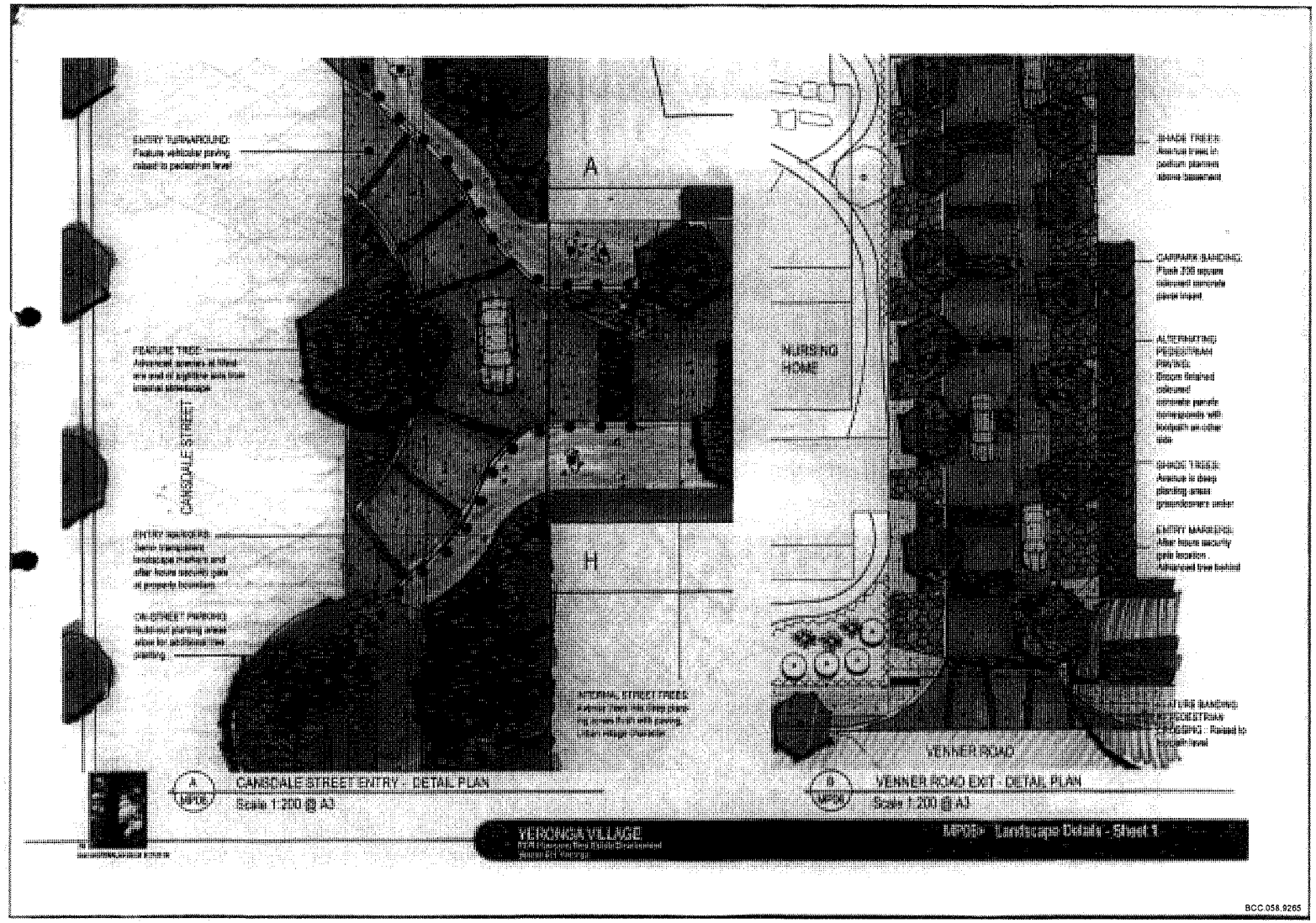
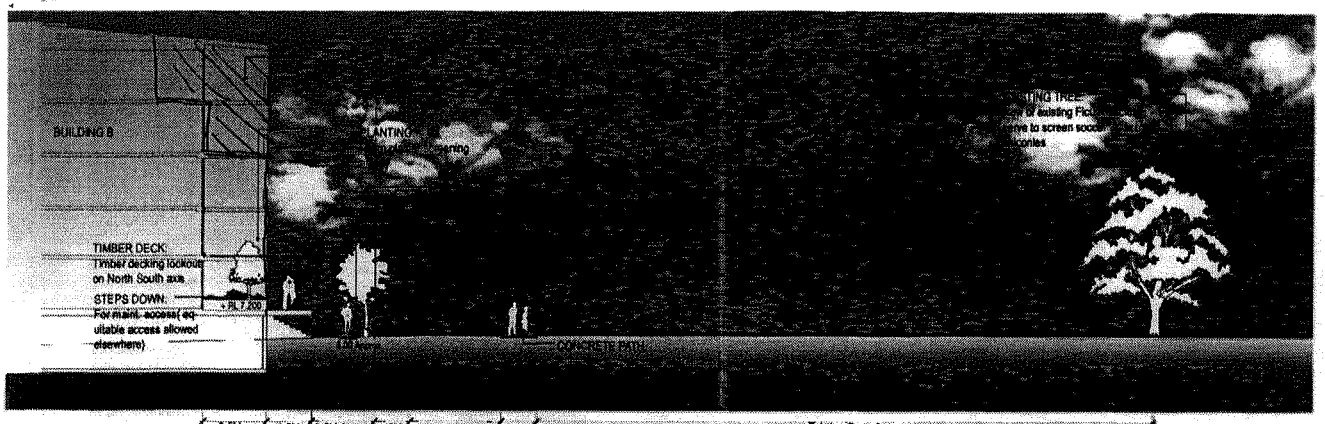

ENTRY TURNAROUND:
Feature vehicular paving raised to pedestrian level
FEATURE TREE:
ENTRY MARKERS:
ON-STREET PARKING:
CARSDALE STREET
A
H
NURSING HOME
SHADE TREES:
CARPARK BANDING:
ALTERNATING PEDESTRIAN PAVING:
SHADE TREES:
ENTRY MARKERS:
VENNER ROAD
A
MP06
CARSDALE STREET ENTRY - DETAIL PLAN
Scale 1:200 @ A3
B
MP06
VENNER ROAD EXIT - DETAIL PLAN
Scale 1:200 @ A3
VERONICA VILLAGE
MP06 - Landscape Details - Sheet 1



01 MP04 LANDSCAPE SECTION
Scale 1:200



02 MP04 LANDSCAPE SECTION
Scale 1:200

YERONGA VILLAGE
FCR Harrisons Real Estate Development
Vernon Rd, Yeronga

MP04> Landscape Sections - Sheet 1

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03 MP05 LANDSCAPE SECTION
Scale 1:200



04 MP05 LANDSCAPE SECTION
Scale 1:200



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YERONGA VILLAGE
FOR Harrisons Real Estate Developmen
Vennor Rd, Yeronga

MP05> Landscape Sections - Sheet 2

BCC.058.9267

TRANSMITTAL

pmm BRISBANE

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Date:	3 April 2006	Reference:	7203
To:	[redacted]		
Company:	Brisbane City Council - DA Team South		
Address:	Level 10 Brisbane Administration Centre		
	69 Ann Street		
	BRISBANE QLD 4000		
SUBJECT:	Yeronga Retirement Village - Revised Hydraulic report		

DRS USE HOS-917956(Pi)
X.REF NH095/15 NH330/329
04 APR 2006
INFORMATION MANAGEMENT
ATTACH No. A06 46205

[redacted]

Please find enclosed a copy of the updated Hydraulic Report that was sent to Andrew Blake of Council on Friday, for your reference.

We trust this information is sufficient for your purposes, however should you require any further details or clarification, please do not hesitate to contact the writer by telephone.

Kind regards

[redacted]

Needs another copy for scrutiny file. Phoned Melissa 4/4.

Purpose:

Transmittal: ☐ Courier ☐ Mail ☒ Delivered ☐ Collected

CC:

743 Ann Street, PO Box 1559, Fortitude Valley QLD 4006 Phone 07 3237 8899 Facsimile 07 3237 8833

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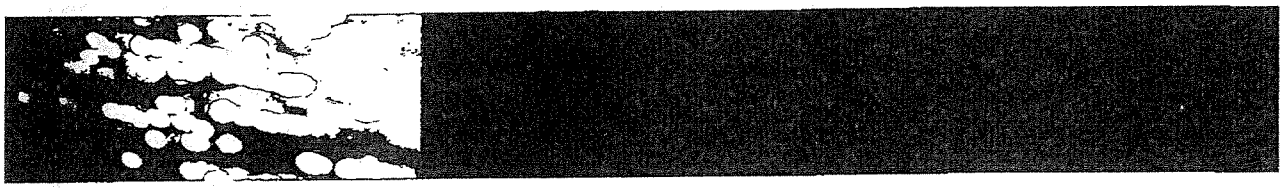
Cardno
Engineering the Future



Yeronga Retirement Village

Hydraulic Analysis

31 March 2006
Job No. 3500/34

Harrisons Real Estate Development

BCC.058.8126

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Document Control

Version	Date	Author		Reviewer	
		Name	Initials	Name	Initials
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2	29 March 2006				
3	31 March 2006		[redacted]		[redacted]

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YERONGA RETIREMENT VILLAGE
HYDRAULIC ANALYSIS

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APPENDIX B Hydraulic Grade Line Calculations – Cansdale Street

1. INTRODUCTION

It is proposed to construct a retirement village on a site at the corner of Cansdale Road and Venner Road in Yeronga (the study site). Figure 1 shows the location of the site. The lot is described as Lot 1 on RP150512.

A preliminary investigation into the hydraulic issues associated with the development was carried out by Cardno in March 2005 as part of the initial submission to Council. The analysis identified the hydraulic constraints affecting the site and identified a potential design solution for drainage of the site. An information request was received from Council on the 21 June 2005 outlining a number of issues for which further information was required. A report was issued in September 2005 addressing these concerns. A second information request was issued by Council on the 2 February 2006 outlining some additional issues to be addressed. A meeting was held with Council to discuss these concerns and a resolution was meet on a number of the concerns raised. This report provides further information on the following concerns:

"The proposed entertainment area is to be set at RL 4.1 m AHD which does not meet the flood immunity standard of 100 year ARI Brisbane River Flood (RL 6.7 m AHD). Note 6 to Table B2.2.1 of the SDG requires a retirement village to comply with Table B2.2.2.

A creek or water requires Q100 analysis and the proposed application includes a Q50 analysis. This is in accordance with Table B2.2.1 of the Subdivision and Development Guidelines (SDG) however for development in the waterway the Q100 analysis is required.

The proposal has not addressed the trapped sag, west of the site in Cansdale Street. This area is currently drained by an overland flow path through the site. Filling the site without accounting for drainage from the west and north of the site may cause an adverse impact on adjacent properties and roads."

In response to the information request, detailed modelling of the works required to obtain a satisfactory hydraulic solution has been completed. The proposed works have been developed in consultation with ecologists and landscape architects to ensure that the outcome achieved maximises the environmental values of the waterway corridor. Modelling has considered both the need to cause no adverse impact and the desirability of including the design solution as part of an overall flood mitigation strategy for the catchment.

This report presents the results of the modelling investigations.

2. SITE DESCRIPTION

The development site covers an area of approximately 2.79 ha. Ground levels throughout the site are generally between 5 m AHD and 6 m AHD. The site is currently used for industrial purposes. The western half of the site contains sheds and parking areas while the eastern half of the site is predominately grassed with some heavier vegetation such as trees and shrubs along the eastern boundary.

The extent of this flooding assessment is not limited to the development site as described above. Drainage paths considered in this assessment are presented in Figure 2. From this figure it can be seen that the main drainage path within the catchment is located on the eastern boundary of the site. The catchment drains in a northerly direction to the Brisbane River through Leyshon Park and Downs Oval and beneath the Brisbane Corso. The drain takes the form of an excavated channel with a concrete invert.

Smaller tributary flows enter the main channel approximately 80 metres upstream of the southern boundary of the development site. At this location stormwater drainage pipes from the west and the east meet and stormwater continues down the main open channel.

Despite the fact that the channel is not a natural waterway, a Waterway Corridor has been defined that affects the site (refer Figure 2). The corridor has been defined 30 metres either side of the low flow invert of the channel. As the centreline of the waterway is about eight metres inside the eastern boundary of the site, the corridor affects about a 38 metre width of the site.

3. PREVIOUS STUDIES

A flood study of the area was conducted by Brisbane City Council in June 2003 (*Yeronga Local Stormwater Management Plan (LSMP) June 2003*). This report has been referenced as part of the current assessment. In addition, Council made available the models developed for the LSMP for the current investigation. The models provided base information for use in the detailed modelling undertaken for this investigation.

The major storm event considered for the local stormwater management plan had a recurrence interval of 50 years. This is considered appropriate given that the drain can be classified as a designed open channel, for which the major storm event for the specification of fill and floor levels is the 50 year event according to Table B2.2.1 of the *Subdivision and Development Guidelines* (2000). Consequently, the 50 year event was considered for the analysis of local catchment flooding when investigating the drainage requirements for the proposed development.

As shown in Figure 6, the flood mitigation measures proposed in the *Yeronga Local Stormwater Management Plan* include retaining the existing concrete invert of the channel and increasing the width of the grassed base of the channel by 12 metres (p30 and Appendix L) along the eastern boundary of the site and downstream (north) of the site. A Mannings n value of 0.04, which corresponds to grass, was adopted for the channel to maximise its flow carrying capacity.

The works envisaged for the area also include the excavation of channels to convey the runoff from the eastern and western portions of the catchment to the main drain on the eastern boundary of the site. The proposed base width of the eastern and western channels is 10 metres and 8 to 12 metres respectively. As for the main channel, grass lined channels with a Mannings n value of 0.04 was envisaged. Bank slopes of 1 in 4 were adopted for the channel.

Based on the dimensions indicated in the LSMP and existing ground levels in the vicinity of the drain, the main drain following the completion of channel works would have a top width of about 39 metres. The western drain would have a top width of between 36 and 40 metres and the eastern drain a top width of about 30 metres.

The channel design presented in the LSMP is preliminary. It is likely that Council will give consideration to obtaining a design more conscious of environmental and safety issues if the flood mitigation works are implemented. However, such a design would necessitate the construction of a wider channel to provide for flatter bank slopes and the reduced flow capacity associated with a level of vegetation higher than grass. If the bank slopes were to be flattened to improve safety (as proposed for the development at the request of Council), the top width of the channels could need to increase by as much as 13 metres (a top width of 52 metres) as a worst case.

Further, it is also important to note that the proposed location of the main channel and western channel in the LSMP affect private property (i.e. the proposed site) and would require the resumption of a significant area in order to be constructed. The existing drain is not contained within an easement and therefore Council has no current right to modify the drain without the consent of the owner of the property.

4. GOVERNING FLOOD LEVELS

Based on a flood report obtained from Council and the *Yeronga Local Stormwater Management Plan* (City Design June 2003), the applicable flood levels to the site are listed in Table 1. Table 1 also lists the peak flood levels calculated by the current study (refer Section 6).

Table 1 Defined Flood Levels

Event	Brisbane River Flooding (mAHD)	Local Flooding (mAHD)			
		Yeronga LSMP		Current Modelling	
		Existing	Post Mitigation	Existing	Post Mitigation
100 Year	6.7	-	-	-	-
50 Year	5.5	3.70 – 4.35	3.70 – 3.74	3.89 – 4.38	3.62 – 3.65
20 Year	3.7	-	-	-	-
10 Year	-	3.25 – 4.27	3.10 – 3.24	3.51 – 4.18	3.20 – 3.22
2 Year	-	3.00 – 4.23	2.80 – 2.97	3.03 – 3.69	2.72 – 2.74

The figures quoted in Table 1 for local flooding include the levels predicted for the site following the completion of proposed flood mitigation works. The proposed mitigation works that affect the site are shown in Figure 6 and described in Section 3.

Based on Table B2.2.1 of the *Subdivision and Development Guidelines* (2000), the design levels applicable to the development are listed in Table 2.

Table 2 Design Levels for Development

Case	Brisbane River		Local Flooding		Governing Level (mAHD)
	Design Level	Level (mAHD)	Design Level	Level (mAHD)	
Allotment fill	100y ARI + 0.3m	7.0	50y ARI + 0.3m	4.68	7.0
Habitable Floor	100y ARI + 0.5m	7.2	50y ARI + 0.5m	4.88	7.2
Non-Habitable Areas	100y ARI + 0.3m	7.0	50y ARI + 0.3m	4.68	7.0
Carparking*	20y ARI	3.7	50y ARI	4.38 existing 3.65 mitigated	**4.38 existing 3.65 mitigated**

Note: Basement car parks can be set below the nominated level provided that suitably waterproofed perimeter walls, air vents, and entry/exit ramps at the car park entrance are above the 100 year ARI flood levels for all sources including the Brisbane River (i.e. 6.7 m AHD).

A basement car park (floor level 4.1 m AHD) is proposed for the development. As the entry/ exit to the basement car park will be from the podium level (7.0 m AHD minimum), the Council requirements with respect to basement car park immunity will be achieved.

5. FLOOD MODELLING

5.1 Overview

The existing stormwater drainage system in the area consists of a series of overland flow paths, stormwater pipes and open channels. Given this interaction between surface and underground drainage, XP-STORM was considered the most suitable package for modelling the investigation area. Version 8.5 of XP-STORM was used for the analysis.

XP-STORM is capable of modelling hydrology and hydraulics in a single model, and includes the algorithms used in RAFTS. It was therefore possible to import the Council RAFTS model of the catchment to the XP-STORM model to derive inflow hydrographs for the hydraulic layer of the XP-STORM model that were consistent with those obtained by Council.

The following sections of the report discuss the various components of the XP-STORM model and the modelling procedures adopted for this assessment. A schematic of the XP-STORM model developed for the site is provided in Figure 3.

5.2 XP Storm Hydrology

As part of the preparation of the *Yeronga Local Stormwater Management Plan* (2003) Brisbane City Council developed a RAFTS model to represent the hydrology of the East Yeronga catchment. The data from the RAFTS model was transferred to the hydrology layer of the XP-STORM model. Table 3 summarises the parameters adopted for each sub-catchment. Sub-catchment boundaries are shown on Figure 4.

Table 3 Sub-Catchment Details

Sub-Catchment	Area (ha)	Fraction Impervious (%)	Slope (m/m)	Manning's Roughness
AB	22.30	44	0.045	0.035
CDE	10.50	65	0.048	0.025
F	3.66	81	0.040	0.025
G	13.23	36	0.020	0.033
HM	42.57	50	0.016	0.025
N	2.95	90	0.045	0.025
O	3.40	29	0.016	0.033
P	3.95	3.4	0.070	0.025
Q	9.90	47	0.012	0.025
R	8.80	33	0.010	0.040
Main1	2.20	30	0.040	0.037
Main4	1.96	20	0.020	0.040
Main7 (D2)*	2.17	20	0.020	0.040
Main12	4.22	15	0.020	0.036
Main17	3.42	23	0.010	0.039
Main22	4.33	23	0.010	0.039
Main26	1.50	20	0.010	0.037

* Node Main7 is labelled D2 in the developed case model.

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XP-STORM allows the specification of configuration parameters which apply globally to the model. One of the configuration parameters that can be set is the value of the storage multiplier B_x, which is directly analogous to the B_x factor in RAFTS. In order to achieve calibration for the Yeronga LSMP, a B_x factor of 1.75 was adopted for the RAFTS model. This storage coefficient was applied as a configuration parameter (BX=1.75) to the XP-STORM model. A configuration parameter was also set to specify that runoff routing was to be completed in accordance with the algorithms used in RAFTS.

Three detention basins were included in the Council RAFTS model of the catchment and were thus duplicated in the XP-STORM model. The first basin is formed between the Gold Coast Railway line and the Yeronga TAFE (Node AB). The second basin, which is smaller than the first, is formed between Fairfield Road and the Gold Coast Railway Line (Node CDE). The third detention basin is located towards the downstream end of the main channel, and discharges just upstream of the Brisbane Corso (Node Q). This basin is formed in the residential streets to the east of the main channel. Table 4 reports the storage information, drawn from the Council model, used to model each of these detention zones. In this table the depth of storage reported is relative to the invert of the node to which the storage is assigned.

Table 4 Detention Basin Details

Basin 1 (Node AB)		**Basin 2 (Node CDE)**		**Basin 3 (Node Q)**	
Node Invert = 4.20 mAHD		Node Invert = 1.96 mAHD		Node Invert = 2.00 mAHD	
Depth* (m)	**Area (m²)**	**Depth* (m)**	**Area (m²)**	**Depth* (m)**	**Area (m²)**
0	0	0	0	0	0
1.1	5	0.5	2	1.2	61
1.8	16	1.0	2	1.3	1800
2	30	1.2	10	1.4	2010
2.2	55	1.4	20	1.5	3710
2.3	100	1.5	80	1.6	5620
2.4	170	1.6	320	1.7	8030
2.5	310	1.6	800	1.8	10200
2.6	480	1.7	1080	1.9	12400
2.7	620	1.8	1760	2	13930
2.8	770	1.9	2550	2.1	16820
3.1	1120	2.0	3250		
3.3	1440	2.2	2820		
3.5	1600	2.5	1667		
4.3	1904				
5.3	2477				
5.8	3190				
6.3	3966				

** Depth is relative to the invert of the node to which the storage is assigned.*

Rainfall losses were set to match those adopted by Council, namely 15 mm of initial loss followed by a continuing loss rate of 2.5 mm per hour.

Rainfall intensities were taken from the Brisbane Intensity Frequency Duration curve provided in the BCC Supplement to QUDM (Appendix A to Section 6 of the Brisbane City Council *Subdivision and Development Guidelines* (2000)).

To be consistent with the Yeronga LSMP, events with recurrence intervals of 2, 10, and 50 years were modelled. Storm durations ranging from 30 minutes to 2 hours were considered for the analysis. A storm with a duration of 60 minutes was found to produce peak flow rates in the vicinity of the site.

The peak flows predicted by the hydrology layer of XP-STORM are presented in Table 5. The table also reports the corresponding (Council) RAFTS discharge. It can be seen from these results that the peak flows predicted by the XP-STORM model closely agree with the discharges determined for the Yeronga LSMP. Given this close agreement, it was considered that the hydrology component of the XP-STORM model was providing satisfactory results.

Table 5 XP-STORM Hydrology Results - 60 Minute Duration Storm

Sub-Catchment	2 year ARI Discharge (m^3/s)		10 year ARI Discharge (m^3/s)		50 year ARI Discharge (m^3/s)	
	STORM	RAFTS	STORM	RAFTS	STORM	RAFTS
AB	4.97	4.79	8.79	8.55	12.06	12.01
CDE	3.43	3.35	5.33	5.24	6.96	6.95
F	1.30	1.29	1.98	1.95	2.55	2.55
G	2.47	2.72	4.14	3.95	5.94	5.81
HM	7.63	7.37	13.47	13.00	19.29	19.08
N	1.07	1.06	1.61	1.59	2.07	2.06
O	0.64	0.61	1.12	1.09	1.61	1.58
P	1.16	1.14	1.83	1.79	2.40	2.39
Q	1.98	1.91	3.48	3.31	4.98	4.88
R	1.10	1.05	2.04	1.93	3.05	2.94

Note: STORM refers to results from XP-STORM, RAFTS to results from Council model

5.3 XP Storm Hydraulics

5.3.1 Overview of Hydraulic Model

Detailed survey was collected for the region downstream (north) of approximately Hyde Road to the Brisbane River. The survey, completed by PMM Group (Drawing 7203-2a) included spot levels and cross sections through the existing drain. This information was augmented by design data for pipes and culverts in the vicinity of the study area.

Based on discussions with Council (Mr Neville Gibson) it is understood that the survey upon which the Council hydraulic model is based was taken from aerial (helicopter) survey and that the levels obtained from the aerial photogrammetry are quite variable in the channel.

Therefore, in addition to potential variations associated with the different models used for the Yeronga LSMP (MIKE-11 and HEC-RAS) and the current investigation (XP-STORM), the fact that detailed survey was used for the current investigation will produce calculated flood levels which differ from those obtained by Council. As the model is based on detailed survey rather than aerial photogrammetry, it is considered that the results obtained from the new modelling will be more reliable than those presented in the Yeronga LSMP.

5.3.2 Cross Section Information

As noted in Section 5.3.1, cross sectional information was obtained from the detailed survey of the site. A total of 28 cross sections were used to define the water courses within the model area in the developed case (one additional cross section was included in the existing case model). The location of each of these cross sections is shown in Figure 5.

Manning's n roughness coefficients were applied to the centre, left and right banks of each cross section. The value of the Manning's coefficients adopted for the model varied from 0.03 to 0.08, similar to the values adopted for the Yeronga LSMP. Downstream of the development site the channel is well maintained with mowed grassed slopes and a concrete invert. Therefore the roughness along this section of the model was generally set at 0.03 for the entire width of the cross section.

Roughness values were increased within the western and eastern overland flow paths due to the presence of more significant vegetation along these watercourses. These roughness estimations were based on aerial photography and site inspection.

5.3.3 Structures

The detailed survey indicated stormwater pipes under the western and eastern overland flow paths. These pipes convey runoff from catchments upstream of the site and discharge it to the main channel approximately 40 metres north of Venner Road. The details of these pipes are presented in Table 6.

Table 6 Stormwater Pipe Dimensions (Existing)

Line	Dimensions	Number of pipes	Total Length (m)
Fairfield Rd to Main Drain	1200 dia RCPC	2	137
Fairfield Rd to Main Drain	1200H x 1800W Oval	2	277
Hyde Rd to Main Drain	1650 dia RCPC	1	170

Brisbane Corso crosses the main channel at the downstream end of the model, just upstream of the Brisbane River. A bank of culverts allows runoff to pass under the road. The details of these culverts are presented in Table 7. Invert levels at the inlet of the culvert indicate that there is a significant drop in bed level from the main channel to the culvert invert.

Table 7 Brisbane Corso Culvert Details

XP-STORM Link Location	Geometry	No. of culverts	Length (m)	Upstream Invert (mAHD)	Downstream Invert (mAHD)
Main23-24	1650& RCPC	4	27.3	-0.45	-0.80

5.3.4 Boundary Conditions and Simulation Details

Previous modelling for the Yeronga LSMP (Brisbane City Council June 2003) was based upon a constant tailwater level of 1.2 m AHD in the Brisbane River, which is equivalent to the Mean High Water Springs tide level. The same boundary condition was adopted for the current modelling at the downstream end of the model (node Main26) with the model reverting to normal depth if required.

The XP-STORM model was run for a period of 24 hours at 5 second time steps.

5.4 Proposed Mitigation Option

5.4.1 Overview of Proposed Council Mitigation Scheme

As part of the Brisbane City Council Yeronga LSMP, mitigation options were investigated to relieve some of the flooding pressures already experienced by residents within the catchment. The final proposed relief configuration included the following components (from the *Yeronga Local Stormwater Management Plan* (June 2003)):

- Widening of the western overland flow path from Hyde Road, through Venner Road to the confluence with the main drain. In the existing case this flow path is poorly defined. Under the proposed relief conditions the base of this channel would be increased to between 8 metres and 12 metres.
- Widening of the eastern overland flow path from Fairfield Road, through Fehlberg Park to the confluence with the main drain. As with the western flow path, this channel is poorly defined under existing conditions. The proposed mitigation solution indicates a widening of the base of this channel to approximately 10 metres with 1v:4h batter slopes.
- Widening of the main channel downstream of the confluence with the eastern and western overland flow paths. The proposed mitigation option indicates that the concrete lined channel invert should be maintained with the channel widened by 12 metres. This widening may occur as 6 metres either side of the concrete invert or 12 metres to one side depending on the location of other elements within the floodplain such as houses. In the vicinity of the site, this would produce a channel with a top width of about 39 metres assuming 1 in 4 bank slopes.
- Diversion of part of the piped stormwater from sub-catchment G to the piped system of sub-catchment O. Under existing conditions, the pipe infrastructure at the outlet of sub-catchment G is not sufficient to convey the 2 year ARI discharge. Sub-catchment runoff in addition to the capacity of the pipe in the 2 year event will be diverted to sub-catchment O.

A number of other mitigation measures were recommended involving upgrading and replacing pipe drainage infrastructure throughout the catchment. The measures relevant to the currently proposed development only have been mentioned here. Figure 6 presents the proposed mitigation solution diagrammatically and is drawn from Appendix L of the LSMP.

5.4.2 Proposed Mitigation Solution

The extent to which the site is flooded for the 50 year local flooding event (Figure 2) is limited to within about 15 to 20 metres of the boundary of the site. Based purely on hydraulic grounds, the development could proceed to the limit of inundation (i.e. to within 15 to 20 metres of the eastern boundary of the site) without impacting on existing flooding.

However, the situation is complicated by the following factors:

- **Waterway corridor**

  A waterway corridor has been defined based on a nominal 30 metre offset from the centre of the drain (refer Figure 2). A width of between 38 metres and 57 metres on the eastern boundary of the site is within the defined waterway corridor.

  Performance Criteria P3 of the Filling and Excavation Code of City Plan requires that filling or excavation must not cause any increase in flooding or drainage problems. Acceptable Solution 3.1 to the performance criteria is to ensure that no filling or excavation is located within a waterway corridor. Compliance to the acceptable solution would quarantine a significant area without providing any hydraulic benefit. As an alternate solution, as noted above the site could be filled to the existing flood line (i.e. 15 to 20 metres from the property boundary) without adversely impacting on flood levels.

  Council has agreed to development up to a 25 metre setback from the property boundary on the eastern side, within the waterway corridor.

- **Flood Mitigation Works**

  The Yeronga LSMP (refer Section 3 and Section 5.4.1) notes the need for flood mitigation works to occur to reduce the incidence of flooding in areas upstream of the site.

  With reference to Figure 6, the mitigation solution recommended in the Yeronga LSMP significantly encroaches on the proposed development site. As no easement exists on the site for drainage, Council would either need to obtain permission from the land owner for works to be completed on the land or purchase the land for drainage purposes.

  Further, the proposed works will affect land that is presently free from inundation rather than being sited within the parkland to the east that is subject to inundation.

  Given the above, the logical location for the mitigation works is within the Council controlled open area to the east of the site rather than within the site.

Based on discussions with Council mitigation works within the open channel along the eastern boundary of the site will be limited to those proposed by Council. Some beautification of the channel will be carried out through landscaping however the essential properties of the channel will be preserved.

It can be noted that the proposed diversion of flow from subcatchment G (refer Section 5.4.1) was not included in the modelled mitigation measures. This will conservatively increase the modelled flow in the eastern tributary of the drain.

6. MODELLING RESULTS

6.1 General

As mentioned in the previous section, Council has agreed to a 25 metre setback from the property boundary on the eastern side at the limit of development within the site. The open drain will be retained in its existing conditions and beautification landscaping conducted above the 100 year flood line (3.95 m AHD) in order to ensure flood levels are not impacted by the proposed development. Considering these points, only the existing case was modelled for this study.

As noted in Section 5.3.1, the flood levels predicted by the XP-STORM modelling of the catchment differ from those calculated using MIKE-11 and HEC-RAS for the Yeronga LSMP. This can be attributed to the use of different hydraulic models for the two studies and, more significantly, the use of cross sections based on detailed survey for the current investigation.

When quantifying the performance of the proposed works, comparisons were made between the flood level estimates obtained from the current modelling and those presented in the Yeronga LSMP.

Peak flow rates and velocities calculated for the existing case scenario are provided in Appendix B.

6.2 Existing Situation

The peak flood levels calculated for the existing situation are presented in Table 8 also presents the peak flood levels reported in the Yeronga LSMP at cross sections in close proximity to nodes in the XP-STORM model.

In the western tributary upstream of the site, the flood level predicted by the XP-STORM model is less than that presented in the Yeronga LSMP by between 570 mm and 140 mm for the 2 and 50 year events respectively. In the eastern tributary upstream of the site, the flood levels predicted by the XP-STORM model are generally less than those presented in the Yeronga LSMP by up to 130 mm. The Council model predicts a level up to 100 mm lower than that obtained from the current model immediately upstream of the site.

Within the main channel in the vicinity of the site, the XP-STORM model predicted levels up to 200 mm higher than those presented in the Yeronga LSMP. In the vicinity of the Brisbane Corso the difference in flood level is greater, with the XP-STORM model predicting that the Corso will control levels upstream to a greater extent than calculated in the Yeronga LSMP modelling.

From the results presented above it was concluded that the current modelling provided a satisfactory prediction of flood levels within the catchment despite not exactly matching the results previously reported. However, this is to be expected given the differences in modelling and base data for the XP-STORM and Yeronga LSMP models (refer Section 6.1).

Table 8 Existing Case Results

		2 year Event Peak Levels			10 year Event Peak Levels		
Council Cross Section	XP-Storm Node	LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
Western Tributary							
	HM	-	4.46	-	-	4.59	-
	Trib A	-	4.05	-	-	4.16	-
Y2020	Trib B	4.27	3.64	-0.63	4.39	4.16	-0.23
	Trib B.1	-	3.62	-	-	4.16	-
Y2010	TribC	4.23	3.62	-0.61	4.27	4.16	-0.11
Eastern Tributary							
	AB	-	4.67	-	-	4.90	-
	CDE	-	3.80	-	-	3.96	-
	FRd	-	3.80	-	-	3.96	-
	F	-	3.73	-	-	3.91	-
	G	-	3.61	-	-	3.79	-
Y140	Main1	3.85	3.73	-0.12	4.03	3.91	-0.12
Y130	Main2	3.78	3.69	-0.09	3.95	3.88	-0.07
Y120	Main3	3.71	3.64	-0.07	3.86	3.82	-0.04
Y110	Main4	3.68	3.61	-0.07	3.83	3.79	-0.04
Y100	Main5	3.65	3.57	-0.08	3.79	3.75	-0.04
Y79	Main6	3.39	3.51	0.12	3.61	3.70	0.09
Main Channel							
	Main 7	-	3.18	-	-	3.59	-
	Main 8	-	3.12	-	-	3.57	-
	Main 9	-	3.10	-	-	3.56	-
Y75	Main 10	2.98	3.06	0.08	3.24	3.54	0.30
	Main 11	-	3.04	-	-	3.53	-
Y70	Main 12	3.05	3.03	-0.02	3.34	3.52	0.18
	Main 13	-	3.02	-	-	3.52	-
	Main 14	-	3.00	-	-	3.52	-
Y60	Main 15	2.95	2.98	0.03	3.23	3.51	0.28
	Main 16	-	2.96	-	-	3.50	-
Y50	Main 17	2.87	2.93	0.06	3.12	3.48	0.36
	Main 18	-	2.92	-	-	3.48	-
Y40	Main 19	2.59	2.90	0.31	2.79	3.47	0.68
	Main 20	-	2.88	-	-	3.46	-
	Main 21	-	2.85	-	-	3.45	-
Y30	Main22	2.03	2.84	0.81	2.48	3.44	0.96
u/s Corso	Main23	1.75	2.82	1.07	2.5	3.44	0.94
d/s Corso	Main24	1.4	2.65	1.25	1.63	3.10	1.47

		2 year Event Peak Levels			10 year Event Peak Levels		
Council Cross Section	XP-Storm Node	LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
	Main 25	-	2.64	-	-	3.09	-
	Main 26	-	2.48	-	-	2.93	-
Nodes off Main Channel							
	O	-	3.03	-	-	3.52	-
	P	-	2.93	-	-	3.48	-
	Q	-	2.84	-	-	3.44	-
	R	-	6.09	-	-	6.13	-
	N	-	3.03	-	-	3.52	-

		50 year Event Peak Levels			100 year Event Peak Levels		
Council Cross Section	XP-Storm Node	LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
Western Tributary							
	HM	-	4.67	-	-	4.72	-
	Trib A	-	4.36	-	-	4.45	-
Y2020	Trib B	4.52	4.36	-0.16	-	4.45	-
	Trib B.1	-	4.36	-	-	4.45	-
Y2010	TribC	4.35	4.36	0.01	-	4.45	-
Eastern Tributary							
	AB	-	5.16	-	-	5.40	-
	CDE	-	4.09	-	-	4.18	-
	FRd	-	4.09	-	-	4.18	-
	F	-	4.05	-	-	4.13	-
	G	-	3.94	-	-	4.09	-
Y140	Main1	4.17	4.05	-0.12	-	4.13	-
Y130	Main2	4.11	4.01	-0.09	-	4.10	-
Y120	Main3	4.07	3.96	-0.11	-	4.09	-
Y110	Main4	4.05	3.94	-0.11	-	4.09	-
Y100	Main5	4.02	3.94	-0.08	-	4.08	-
Y79	Main6	3.96	3.93	-0.03	-	4.08	-
Main Channel							
	Main 7	-	3.92	-	-	4.08	-
	Main 8	-	3.92	-	-	4.07	-
	Main 9	-	3.91	-	-	4.06	-
Y75	Main 10	3.69	3.90	0.21	-	4.05	-
	Main 11	-	3.89	-	-	4.04	-
Y70	Main 12	3.79	3.89	0.10	-	4.04	-
	Main 13	-	3.89	-	-	4.04	-

		50 year Event Peak Levels			100 year Event Peak Levels		
Council Cross Section	XP-Storm Node	LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
	Main 14	-	3.89	-	-	4.04	-
Y60	Main 15	3.72	3.88	0.16	-	4.04	-
	Main 16	-	3.87	-	-	4.03	-
Y50	Main 17	3.67	3.86	0.19	-	4.02	-
	Main 18	-	3.86	-	-	4.02	-
Y40	Main 19	3.56	3.85	0.29	-	4.02	-
	Main 20	-	3.85	-	-	4.01	-
	Main 21	-	3.84	-	-	4.00	-
Y30	Main22	3.5	3.84	0.34	-	4.00	-
u/s Corso	Main23	3.52	3.83	0.31	-	4.00	-
d/s Corso	Main24	1.9	3.31	1.41	-	3.38	-
	Main 25	-	3.31	-	-	3.38	-
	Main 26	-	3.14	-	-	3.21	-
Nodes off Main Channel							
	O	-	3.89	-	-	4.04	-
	P	-	3.86	-	-	4.02	-
	Q	-	3.84	-	-	4.00	-
	R	-	6.16	-	-	6.18	-
	N	-	3.89	-	-	4.04	-

Note *Nodes on eastern boundary of site shaded*
Refer to Figure 3 and Figure 5 for node locations
Council cross sections column specifies section at or near XP-Storm node location

6.3 Stormwater Drainage Network Upgrades

Detailed survey of the site indicates two stormwater pipes that traverse the site as shown on Figure 7. The development proposed for the site makes it necessary to realign these pipes.

- ***Cansdale Street***

Existing stormwater infrastructure includes a sag on Cansdale Street approximately 77 metres north of the intersection of Venner Road and Cansdale Street. A total catchment of 3.6 ha drains to this point and is then conveyed to the open channel via a 900 mm diameter stormwater pipe. A field inlet is located approximately 89 metres north east of the sag.

The proposed development for the site includes the construction of a basement car park in the north western corner of the site making it is necessary to realign this pipe as shown in Figure 7. As part of the conditions required by Council, it was also necessary to upgrade this pipe to entirely convey the 100 year discharge.

It was decided to alter the pipe alignment to pass around the basement car park and connect to the existing field inlet. In order to design the upgraded pipe line such that no adverse impacts were experienced at Cansdale Street a hydraulic grade line analysis was carried out. The full results of these calculations are reported in Appendix C. Key outcomes from this assessment are summarised in Table 9. The total length of pipe has increased from 263 metres to 280 metres. The results of this assessment will be finalised during detailed design.

Table 9 Cansdale Street Pipe Upgrade Results

Pipe Section	A	B	C
Contributing Catchment Area (ha)	3.15	0.47	0.98
Total Flow Q100 (m^3/s)	1.90	2.17	2.72
Pipe Section Length (m)	40.3	66.4	172.9
Pipe Diameter (mm)	900	1050	1200
Upstream invert level (m AHD)	5.00	4.00	2.50
Downstream Invert Level (m AHD)	4.50	2.50	1.35
Upstream Head (m AHD)	4.31	3.41	2.19
Downstream Head (m AHD)	3.86	2.99	1.35

- ***South East Corner***

As shown on Figure 7, a single 1650 mm diameter stormwater pipe crosses the south eastern corner of the development site. This pipe conveys stormwater runoff from catchments upstream and discharges it into the upstream end of the open drain, at the point where piped runoff from the west also enters the drain. Again, due to the proposed development it was necessary to realign this pipe to pass around the boundary of the site rather than through it. The proposed pipe alignment is shown on Figure 7.

Analysis of the effect of this realignment was carried out using the XP-STORM model developed for the flood assessment. The addition of a man hole and extra pipe length to this section of the stormwater drainage system means that additional losses are incurred. In order to ensure no worsening of flood levels in the vicinity of the pipe, it was necessary to upgrade the pipe by adding a second 1650 diameter pipe. Current invert levels were maintained. Based on the alignment shown in Figure 7 it is clear that an extra section of pipe has been added. The total length of pipe has increased from 77 metres to 96 metres. The results of this analysis are summarised in Table 10. The results of this assessment will be finalised during detailed design.

Table 10 South East Corner Pipe Upgrade Results

	100 year ARI			50 year ARI		
Node	Existing WSL (mAHD)	Developed WSL (mAHD)	Mitigated WSL (mAHD)	Existing WSL (mAHD)	Developed WSL (mAHD)	Mitigated WSL (mAHD)
Trib B	4.45	4.46	4.37	4.36	4.38	4.26
Trib B.1	4.45	4.46	4.37	4.36	4.38	4.26
Trib C	4.45	4.46	4.37	4.36	4.38	4.26
	10 year ARI			2 year ARI		
Node	Existing WSL (mAHD)	Developed WSL (mAHD)	Mitigated WSL (mAHD)	Existing WSL (mAHD)	Developed WSL (mAHD)	Mitigated WSL (mAHD)
Trib B	4.16	4.19	3.98	3.64	3.77	3.58
Trib B.1	4.16	4.19	3.98	3.62	3.76	3.49
Trib C	4.16	41.9	3.98	3.62	3.76	3.46

7. CONCLUSION

It is proposed to construct a retirement village on a site at the corner of Cansdale Road and Venner Road in Yeronga (the study site). Figure 1 shows the location of the site.

Development of the site is constrained by the presence of a waterway corridor that affects the eastern part of the site (refer Figure 2) and flood mitigation measures proposed in the *Yeronga Local Stormwater Management Plan* (June 2003) (refer Figure 6). The waterway corridor boundary is approximately 38 metres from the eastern boundary of the site, thus limiting development within this area. However, Council has agreed to a 25 metre set back from the eastern boundary. The open drain will remain unchanged under developed conditions thus no impact on flood levels is expected.

Some stormwater drainage infrastructure has been upgraded to accommodate for the aspects of the proposed development such as basement car parks. The Cansdale Street sag has been redesigned and the pipe realigned to convey the 100 year ARI discharge to the open channel, around the edge of the development. Similarly, the pipes traversing the south eastern corner of the development have also been upgraded and realigned.

FIGURES

Figure 1 Locality Plan

Figure 2 Drainage Paths

Figure 3 XP-STORM Model Layout

Figure 4 Catchment Boundaries

Figure 5 Cross Section Locations

Figure 6 Previous Proposed Mitigation Option

Figure 7 Stormwater Pipe Locations

APPENDIX A

Peak Flows and Velocities

	Existing Case Peak Velocities (m/s)		
Node	Q50	Q10	Q2
G-Main4	0.60	0.29	0.17
O-Main12	0.25	0.65	0.22
P-Main17	0.25	0.25	0.24
F-Main1	0.29	0.31	0.25
R-Main22	0.15	0.12	0.09
N-Main12	0.20	0.20	0.19
Main22-23	1.61	1.61	1.52
Main24-25	-0.38	-0.36	-0.29
Main25-26	0.74	0.74	0.73
Main17-18	0.99	1.00	1.01
Main18-19	0.87	0.86	0.81
Main19-20	-0.84	-0.85	-0.85
Main20-21	1.05	1.03	1.03
Main21-22	1.00	0.99	1.01
Main12-13	0.90	0.88	0.85
Main13-14	1.09	1.08	1.04
Main14-15	1.20	1.19	1.15
Main15-16	0.99	0.99	0.95
Main16-17	-0.91	-0.89	-0.88
Drain4	-	-	-
Main10-11	1.00	0.99	1.01
Main11-12	0.71	0.68	0.64
Drain3	-	-	-
Drain1	-	-	-
Drain2	-	-	-
AB-CDE	0.82	0.77	0.70
CDE-FRd	0.39	0.34	0.30
Q-Main22	0.65	0.56	0.40
244.1	1.00	0.83	0.66
PipesL21	1.14	1.15	1.20
CorsoPipes	2.33	1.86	1.33
PipesD5	-	-	-
OverlandC	0.34	0.29	0.23
PipesC	1.10	1.06	0.99
OverlandD	0.45	0.38	0.47
PipesD	0.93	0.89	0.87
OverlandE	-0.33	-0.27	-0.17
PipesE	0.97	0.99	0.91
OverlandA	0.39	0.34	0.23
PipesA	1.33	1.31	1.21

	Existing Case Peak Velocities (m/s)		
OverL47	0.64	0.54	0.41
PipesL47	2.09	2.07	2.08
OverL48	0.57	0.47	0.27
PipesL48	2.35	2.32	2.25
OverM5D2	-	-	-
PipesM5D2	-	-	-
Weir	0.00	0.00	0.00
FREE	1.00	1.00	1.00

	Existing Case Peak Discharges (m^3/s)		
Node	Q50	Q10	Q2
G-Main4	8.45	4.03	2.27
O-Main12	2.24	5.87	2.00
P-Main17	3.44	3.55	3.40
F-Main1	3.89	3.41	3.12
R-Main22	3.04	2.03	1.10
N-Main12	2.38	2.46	2.24
Main22-23	20.31	16.12	11.42
Main24-25	-17.07	-13.28	-8.79
Main25-26	20.13	15.99	11.39
Main17-18	20.03	15.25	10.28
Main18-19	19.11	14.99	10.18
Main19-20	-16.87	-12.09	-7.86
Main20-21	18.50	14.61	10.07
Main21-22	18.21	14.45	10.05
Main12-13	22.83	16.66	10.46
Main13-14	21.61	15.85	10.22
Main14-15	21.00	15.54	10.16
Main15-16	20.25	15.27	10.08
Main16-17	-17.61	-12.21	-7.82
Drain4	-	-	-
Main10-11	23.35	16.53	10.16
Main11-12	21.97	16.12	10.03
Drain3	-	-	-
Drain1	-	-	-
Drain2	-	-	-
AB-CDE	11.12	8.02	6.61
CDE-FRd	14.88	10.04	5.36
Q-Main22	4.88	3.48	1.98
244.1	14.61	9.23	4.36
PipesL21	1.08	1.09	1.14
CorsoPipes	5.04	4.00	2.85
PipesD5	-	-	-
OverlandC	10.51	6.67	3.15
PipesC	1.09	0.99	0.94
OverlandD	10.04	6.33	2.89
PipesD	0.84	0.84	0.82
OverlandE	-8.01	-4.50	-1.31
PipesE	0.92	0.93	0.86
OverlandA	11.39	7.47	3.00
PipesA	1.51	1.48	1.37

	Existing Case Peak Discharges (m^3/s)		
OverL47	14.95	9.23	3.53
PipesL47	4.56	4.52	4.48
OverL48	17.23	10.10	2.70
PipesL48	5.13	5.08	4.92
OverM5D2	-	-	-
PipesM5D2	-	-	-
Weir	0.00	0.00	0.00

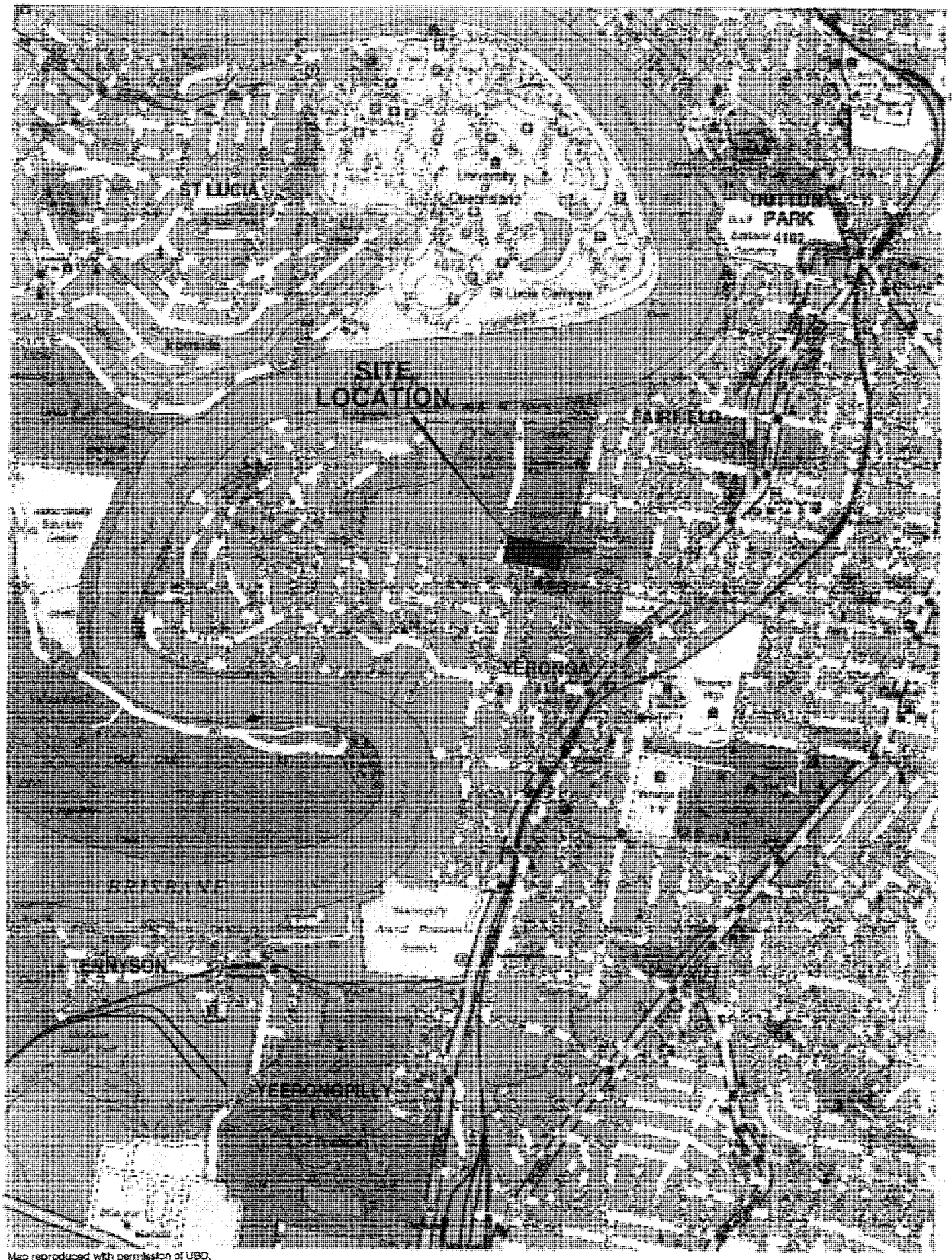
APPENDIX B

Hydraulic Grade Line Calculations – Cansdale Street

Hydraulic Grade Line Calculations for Carsdale Street Seg
Major Event Q100

	Catchment Calcs							Pipe Calcs																						
Section	Sub Catchr Area		Sub Cat	Intensity	fi	C100	CA	Runoff	tc	Intensity	Total CA	Total Flow	Diameter	Velocity	u/s IL	d/s IL	Length	A	R	flow time in pipe	Head loss 0.013			MH Loss	MH Loss		Actual head	
	Contributir	Contribu	tc																			Qu/Do	Qp/Qo	coeff			mAHD	mAHD
	m²		min	mm/hr			ha	m³/s	min	mm/hr	ha	m³/s	m	m/s	mAHD	mAHD	m	m²	m	min	m				m		u/s	d/s
A		31511.7	15	217	0.7	1.000	3.15	1.899	15.00	217.0	3.15	1.899	0.900	2.988	5.00	4.50	40.3	0.64	0.23	0.22	0.443		0.003	1.0	0.454		4.305	3.862
B		4661.3	5	324	0.7	1.000	0.47	0.420	15.22	215.7	3.62	2.167	1.050	2.502	4.00	2.50	66.4	0.87	0.26	0.44	0.418	0.857	0.116	2.5	0.798		3.498	2.890
C		9808.8	5	324	0.7	1.000	0.99	0.883	15.67	213.0	4.60	2.721	1.200	2.406	2.50	1.35	172.9	1.13	0.30	1.20	0.842	0.875	0.324	2.5	0.737		2.102	1.350

Cardno



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N.T.S.

FIGURE 1
SITE LOCALITY PLAN

Rev: Orig. Date: September 2005

Project No.: 3500/34

Harrisons Real Estate Development

CAD FILE: J:\3500-34\Acad\Flood Study\Figure 1 - Site Location Plan.dwg
XREFs

PRINT DATE: 23 March, 2006 - 8:50am

Cardno





LEGEND

- SITE BOUNDARY
- DRAINAGE PATH
- WATERWAY CORRIDORS
- Q50 Existing Inundation (Yeronga LSMP)

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50 0 50 100 150 200 250m
1:5000

Scale 1:5000 (A3)

Rev: Orig. Date: September 2005

Harrisons Real Estate Development

FIGURE 2
DRAINAGE PATHS

Project No.: 3500/34

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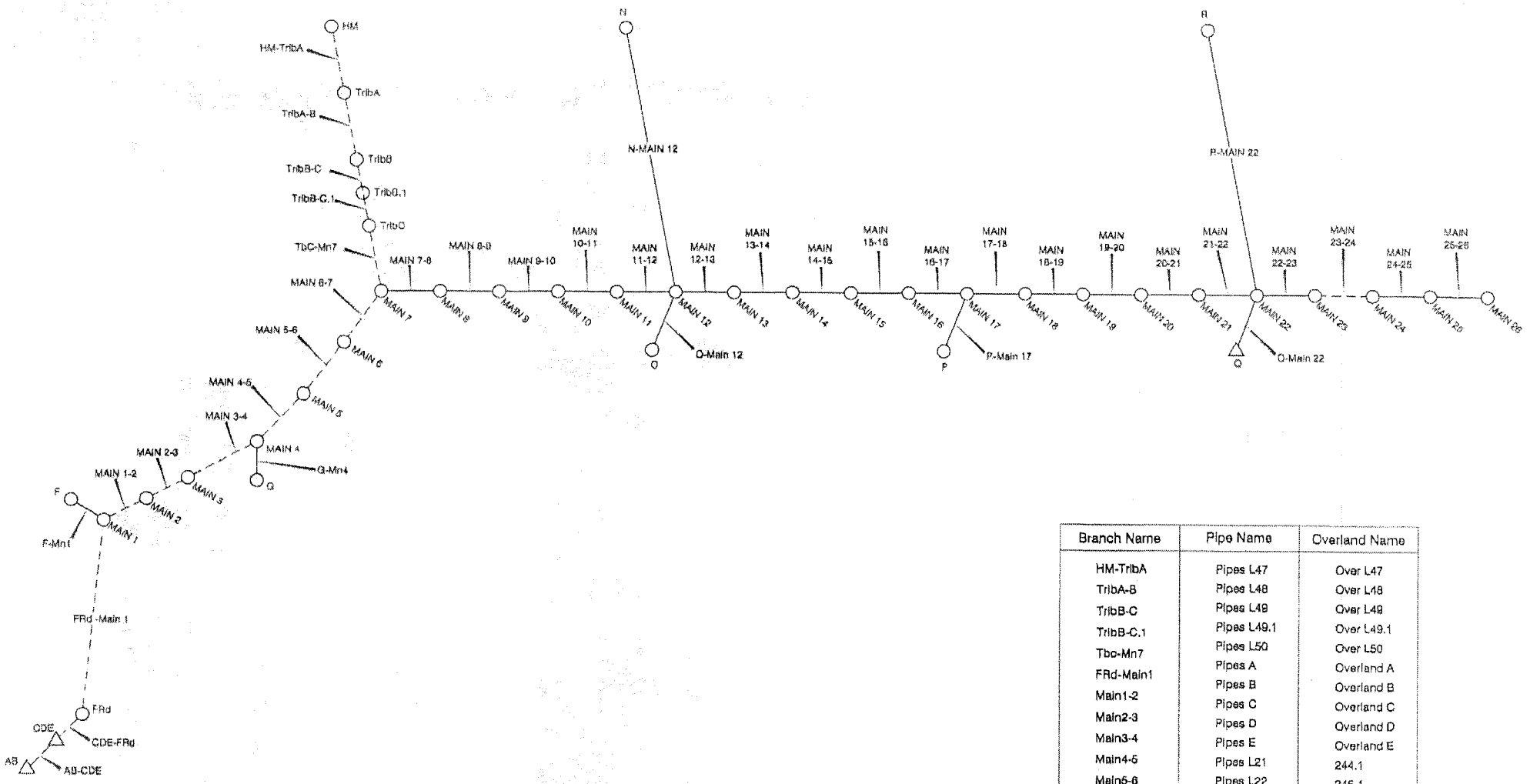

Branch Name	Pipe Name	Overland Name
HM-TribA	Pipes L47	Over L47
TribA-B	Pipes L48	Over L48
TribB-C	Pipes L49	Over L49
TribB-C.1	Pipes L49.1	Over L49.1
Tbc-Mn7	Pipes L50	Over L50
FRd-Main1	Pipes A	Overland A
Main1-2	Pipes B	Overland B
Main2-3	Pipes C	Overland C
Main3-4	Pipes D	Overland D
Main4-5	Pipes E	Overland E
Main5-6	Pipes L21	244.1
Main6-7	Pipes L22	245.1
Main23-24	Pipes L23	246.1
Drain 5	Corso Pipes	Weir
	Pipes D5	.

LEGEND

- - - - MULITI LINKS

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FIGURE 3
XP-STORM MODEL LAYOUT

Rev: 1 Date: 27 March 2006

Project No.: 3500/34

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BCC.058.8157

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A1
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A41

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Scale 1:7500 (A3)

FIGURE 5

CROSS SECTION LOCATIONS

Rev: Orig. Date: September 2005

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40 0 40 80 120 160 200m 1:4000

Scale 1:4000 (A3)

FIGURE 6

PREVIOUS PROPOSED MITIGATION OPTIONS

Project No.: 3500734

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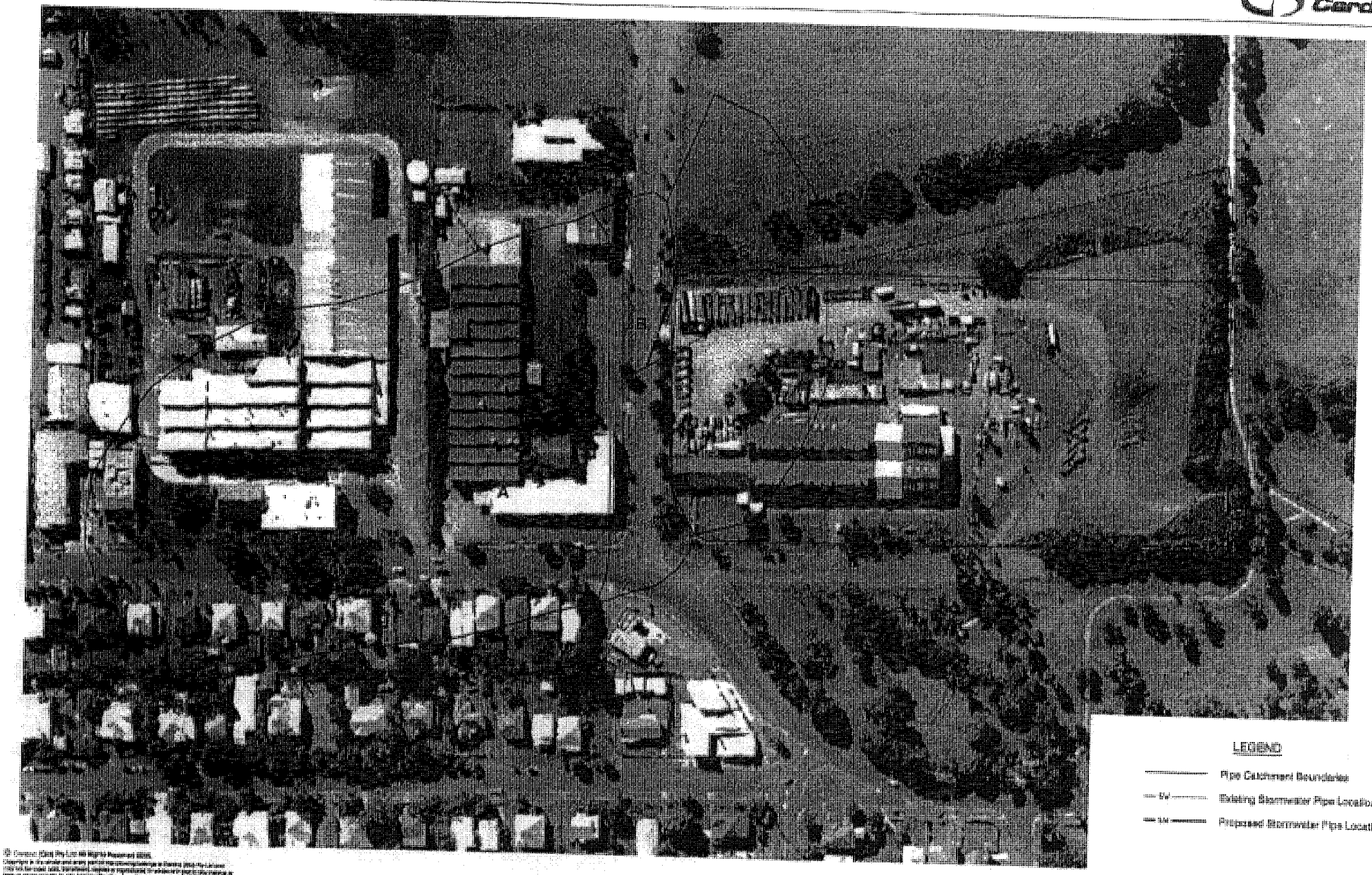

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Scale 1:1500 (A3)

FIGURE 7

STORMWATER PIPE LOCATIONS

Project No.: 3500/34

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72

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[redacted]

PO Box 1559
Fortitude Valley Q 4006
743 Ann Street
Fortitude Valley Q 4006
Australia

Our Ref: 7203
Date: 28 March 2006

Attn: [redacted] – Assessment Manager

Development Assessment Team South
BRISBANE CITY COUNCIL
Brisbane Administration Centre
69 Ann Street
BRISBANE QLD 4000

Via: Mail

Dear Sir / Madam

RE: RESPONSE TO FURTHER ISSUES REQUEST
15 CANSDALE STREET, YERONGA
LOT 1 ON RP 150512
COUNCIL REFERENCE: DRS/ USE/ H05-917956

We write on behalf of our client, ME Harrison Investment Co Pty Ltd in providing this response to the correspondence received from Council on 2 February 2006 and recent meetings/ discussions relating to outstanding issues on the above project.

In summary, these discussions have resulted in an agreed building setback line along the eastern property boundary of 25 metres and a removal of any proposed parkland improvement works. These changes are presented in the attached Architectural and Landscape Concept Plan sets from Arkhefield and JW Concepts respectfully.

DRAFT

The amendment to the proposal includes slight changes to buildings on the site to achieve the 25m setback. The updated plans prepared by Arkhefield demonstrate the changes which include the double stacking of building E and the increase of the height of building B from a 4/5 storey building to a 5 storey building. In establishing the 25m setback, the building (formerly known as Building D on superseded plans) which was located running parallel to the eastern property boundary has been removed. The changes proposed result in an outcome that is understood to satisfy Council's requirements relating to the impact on the adjoining waterway and parkland, along with achieving the same density of development originally applied for over the subject site. It is considered that the proposed amendment results in a positive overall outcome for the development site.

Appendix C of the Response includes a report prepared by Cardno which addresses any remaining hydraulic issues, in particular the trapped sag along Cansdale Street and the reworked drainage channel along the eastern property boundary, in response to Council's Further Information Request.

Appendix D has been prepared by JW Concepts. *Appendix D* illustrates the proposed landscaping solution for the site, which includes the revegetation of the 25m setback along the eastern site boundary.

It is noted that as this modification is in response to an Information Request, there is no impact on the Integrated Development Assessment System (IDAS) timeframes.

Directors: Jim McKnoulty B App Sc (Surv) LS MIS Aust Graham Dunlop B Surv MIS Aust JP (C Dec) GDURP MPIA Jeffrey Evans B App Sc (Surv) GDURP MPIA
Gregg Purcell B App Sc (Surv) LS MIS Aust C Dec Peter Egerton BRTP MPIA
PMM Group Pty Ltd ACN 010 370 448 ABN 81 591 046 588

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The items raised by Council in the 2 February 2006 letter are listed and discussed below.

1. *The proposal to alter the overland flow drainage by diverting the proposed channel into the parkland to the south of the development is not acceptable. The Local Plan and the Yeronga LSMP show a waterway corridor and drainage improvement works respectively on the subject site. Moving these issues into the adjoining parkland is not supported.*

The previously advised hydraulic solution incorporating extensive parkland improvement works has been modified though discussions with Council Officers and as a result no works are proposed within the parkland. Further detailed analysis of the local hydraulic regime clearly identifies that this development can establish on the subject land without being impacted by the local Q100 flood events or impacting on the levels of flood events in the catchment. Accordingly, the principle of the Yeronga LSMP and the local plan are achieved by the revised proposal.

2. *The proposed entertainment area is to be set at RL 4.1 m AHD which does not meet the flood immunity standard of 100 year ARI Brisbane River flood (RL 6.7 m AHD). Note 6 to Table B2.2.1 of the SDG requires a retirement village to comply with Table B2.2.1.*

DRAFT

The proposed entertainment area has now been relocated to the central courtyard area of the development and will not be affected by local flooding events.

3. *A creek or waterway requires Q100 analysis and the proposed application includes a Q50 analysis. This is in accordance with Table B2.2.1 of the Subdivision and Development Guidelines (SDG) however for development in the waterway the Q100 analysis is required.*

Please refer to the report prepared by Cardno which addresses the hydraulic component of the proposal included in Appendix C.

4. *It is proposed to pipe the waterway at the north-eastern part of the site by constructing 3/3300 x 2100 RCBC's 52 m long. This proposal is not supported on hydraulic, safety, maintenance and environmental grounds, as follows:*

   a. *Hydraulic:*
      i. *No blockage factor has been allowed.*
      ii. *The culverts have only been modelled for a 50 year ARI event. They will increase flood levels for larger events.*
   b. *Safety:*
      i. *The culverts will be unsafe with or without a safety screen.*
   c. *Maintenance:*
      i. *The culverts may require periodic desilting and removal of debris.*
   d. *Ecological:*
      i. *This is a waterway corridor and piping is not an option.*

The revised hydraulic proposal for the eastern boundary removes the need for culverts to be utilised and hence they have been removed from the proposal.

5. *The proposal has not addressed the trapped sag, west of the site in Cansdale Street. This area is currently drained by an overland flow path through the site. Filling the site without accounting for*

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drainage from the west and north of the site may cause an adverse impact on adjacent properties and roads.

A detailed analysis of the hydraulic requirements in this section of the site has been undertaken by Cardno. The analysis conducted identifies that the stormwater infrastructure located along Cansdale Street will need to be realigned and upgraded to accommodate a Q100 year flow. The upgrade will include an increase from the 900mm diameter stormwater pipe to accommodate the Q100 flow. The pipe will be realigned to pass around the basement car park and connect to the existing field inlet, as per Figure 7 of the report prepared by Cardno.

6. *The existing channel is in a waterway corridor on the applicant's property in this area. The proposed channel will need to be constructed on the applicant's property and will require an amended layout plan.*

The revised waterway corridor improvement works incorporates the channel on our clients land as well as extensive naturalisation and rehabilitation works.

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7. *Council has a responsibility to ensure that the community has an adequate level of service provision for community infrastructure including parks. The Stephens District Local Plan states that "any future works in these parks should provide further opportunities for passive recreation for local communities". The proposal does not demonstrate any benefit for the local community within the park.*

The revised proposal removes the proposed parkland improvement works and focuses attention on works within the waterway corridor on private land to improve the ecological function of the corridor. This is considered to be a premature step to improving the public amenity and benefit within this section of parkland in Yeronga.

8. *The proposal does not recognise the existing waterway corridor in the vicinity. The waterway corridors are not only for flooding purposes but also for environmental and recreational reasons.*

9. *The Waterway and the Biodiversity Codes have not been addressed. Demonstrate compliance with the relevant Performance Criteria of the Waterway Code and the Biodiversity Code and provide an amended plan of development that demonstrates no intensification of use within the mapped waterway corridor.*

Please find attached completed waterway and biodiversity codes for Council's consideration.

The above issues have essentially been addressed by the following:

- Removal of all proposed hydraulic and parkland improvement works;
- Establishment of a 25 metre building line from the eastern property boundary; and
- The proposed revegetation of the waterway corridor area along the eastern boundary.

Further to the above items discussed, below is a response to the relevant items that were discussed during the meeting with Council on 14 March 2006.

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1. *Hydrology*
    a. *Pipe work details required across south east corner – report to be provided re the above and trapped sag in Cansdale Street.*
    b. *Applicants hydraulics engineer to liaise with Andrew Blake 3403 7279 – Waterway revegetation to be incorporated into the Report*
    c. *No worsening of flooding in parkland to be demonstrated*

In accordance with the meeting minutes provided by Council, details relating to the trapped sag in Cansdale Street is included in the information provided by Cardno.

The proposed hydraulic solution is discussed in the report prepared by Cardno.

2. *Bikeways on site*
    a. *Implications for maintenance and use. Options are to:*
        1. *dedicated land to council (bikeway only, drainage)*
        2. *provide easement*
        3. *indemnify owner for public liability – Suzie Thomson to investigate*

        (Applicant's preferred option is to indemnify)

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As discussed during the meeting, the preferred option to address this issue is for Council to indemnify the applicant for public liability. It is noted that this has been done in previous approvals, and on request the applicant would be pleased to provide wording for a condition that is considered reasonable and relevant in this regard.

It is noted that the applicant's preference is to maintain ownership with Council providing indemnification for this section of bikeway.

3. *Works in park*
    a. *Remove Torrellianas in along southern and eastern boundary extend of planting and works in park to be reviewed. Suzie Thomson to provide feedback.*

As discussed during the meeting with Council, it is understood that the Torrellianas are to be removed and the area is to be revegetated as part of the landscaping component of the development proposal. This ahs been detailed on the attached Landscape Concept Plans.

4. *BBQ Area encroaches into the 25m setback. Ecologist to review and provide feedback*

Following further information provided by Council after the meeting, it is understood that Council will not accept the encroachment of the BBQ area into the 25m setback area. Accordingly, plans have been modified to reflect this direction.

Refer *Appendix B* prepared by Arkhefield and Appendix D Landscape Concept Plans.

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5. *Potential to provide public artwork at Venner Road/ Cansdale Street intersection on site. Applicant to investigate*

The applicant is happy to include some public artwork on the corner to provide an attractive feature for the site. Investigations will be conducted during the subsequent Development Permit application stage for suitable local artists to be engaged for the work. A reasonable and relevant condition in this regard would be considered an appropriate outcome.

6. *To increase deep planting options along boundaries with park a loss of car parking numbers may be required.*

Given the form of development, the loss of some car parking in the basement could be supported to achieve further deep parking zones. It is however, identified that significant setback areas exist around the entire development and provide excellent opportunities for deep parking.

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7. *Wording of Preliminary Approval re Gross Floor Area, Building height and number of storeys and location of building footprint.*

We will forward shortly under a separate cover, details relating to the Preliminary Approval structure being sought.

In light of the above responses and the detail included relating to the amended plans, we believe that this response fully addresses Council's request for further information.

Based on the information provided to date, along with the ongoing discussions with Council, we believe that this proposal results in a quality development outcome for the subject site and therefore should be approved, subject to reasonable and relevant conditions. We look forward to meeting with Council at their earliest convenience to discuss the structure of the Preliminary Approval document.

We trust this information is sufficient for your purposes, however should you require any further details or clarification, please do not hesitate to contact the writer by telephone.

Yours faithfully
PMM GROUP PTY LTD

[redacted]
Partner

cc [redacted]

APPENDIX A

Brisbane City Plan Codes

DRAFT

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
General				
P1 Ecological features and processes on or adjacent to the site, including those identified in the **Natural Assets Planning Scheme Policy,** must be protected, managed and restored, where necessary, to ensure their long term viability *Note:* ***Brisbane City Council Ecological Assessment Guidelines** provides guidance on demonstrating compliance with this part of the Code*	A1.1 Ecological features and processes likely to be affected by the proposal are identified, evaluated and protected. Local knowledge is accessed where available	✓	The proposed development has assessed and evaluated ecological featuring and provided a detailed report.	
	A1.2 Potential impacts, including edge effects, on ecological features and processes are identified, assessed and protected	✓	The existing waterway corridor is to be protected and enhanced though native re-vegetation and channel naturalisation works.	
	A1.3 Development layout and planning retains, protects and manages the ecological features and processes identified on or adjacent to the site, such as fauna and flora habitat areas, ecological corridors, habitat trees, waterways (in-stream habitats) riparian zones and wetlands	✓	The existing waterway corridor is to be protected and enhanced though native re-vegetation and channel naturalisation works.	
	A1.4 Disturbed significant habitat areas are rehabilitated through revegetation and restoration that **assists in maintaining and improving biodiversity values.** A rehabilitation plan is prepared and implemented generally consistent with the format and principles contained in the **Brisbane City Council Ecological Assessment Guidelines**	N/A	The subject site does not contain any habitat areas. The rehabilitation of the waterway corridor will assist in providing habitat in this area.	

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1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	A1.5 The proposal meet the management intent for any Significant Flora Species, Significant Fauna Species or Significant Vegetation Communities, as defined in the **Natural Assets Planning Scheme Policy,** or in any existing Council Conservation Action Statements, Natural Area Management Plans or other relevant conservation or management plans	N/A		
P2 Ecological corridors within or adjacent to the site must be identified and retained to create, maintain and/or improve connectivity between habitat areas and to allow wildlife movement between habitat areas	**A2** The design and management of ecological corridors is consistent with the principles contained in the **Brisbane City Council Ecological Assessment Guidelines**	✓	The waterway corridor area, as agreed with Council, is to be rehabilitated and the channel naturalised to achieve a greater ecological outcome for the corridor.	
P3 The management of fire must maintain and/or enhance biodiversity	**A3.1** Clearing for fire management does not occur outside Building Location Plans, accessways and areas required for essential infrastructure and services OR	N/A	No clearing for fire management is proposed.	
	A3.2 Where clearing is proposed outside of areas described in A3.1, a Fire Management Plan demonstrating the protection of biodiversity is provided. The Plan is consistent with the principles contained in the **Brisbane City Council Fire Management Guidelines** and **Ecological Assessment Guidelines**	N/A	No clearing for fire management is proposed.	

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1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
P4 The design management of the proposal must ensure that significant biodiversity areas will be provided with ongoing protection	**A4.1** Areas supporting significant ecological features and/or processes are transferred to community ownership or control, e.g. Council, community group trusteeship, or community title OR	N/A	No part of the site supports significant ecological features and therefore no transfer to public ownership is proposed.	
	A4.2 Areas supporting significant ecological features and/or processes are included in the Conservation Area or included under a protective covenant	N/A	There are no areas supporting significant ecological features on the subject site.	
Waterways and Wetlands				
P5 Ecological features and processes associated with waterways and wetlands must not be significantly and adversely impacted by changes in hydrological regimes, including wet/dry regimes	**A5** Impacts on the surface and ground water flow patterns of the subject waterway or wetland are minimized *Note:* *Information used to demonstrate the above is collected and presented in accordance with the principles and procedures of the* ***Stormwater Management Code****, and the* ***Environmental Impact Assessment Planning Scheme Policy***	✓	The proposed development and associated minor works in the adjoining waterway will not change water flow patterns and will enhance the ecological function of the relevant section of the waterway.	
Information				
P6 Ecological assessment information accompanying applications must be comprehensive, competent and adequate	**A6** Ecological assessment information accompanying an application is consistent with the principles and procedures contained or references in the **Brisbane City Council Ecological Assessment Guidelines, Brisbane City Council Fire Management Guidelines, Natural Assets Planning Scheme Policy, Management of Urban Stormwater Quality Planning Scheme Policy** and the **Environmental Impact Assessment**	✓	Detailed ecological documentation was provided to Council with the subject application.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	Planning Scheme Policy			

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1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
GENERAL				
P1 The natural functions of Waterways as landscape and environmental corridors must be preserved	A1 No vegetation is disturbed on land: ▪ in the Green Space Areas ▪ covered by a Vegetation Protection Order or Voluntary Conservation Agreement ▪ designated in a Local Plan as being an area subject to environmental and scenic constraint ▪ identified in the **Natural Assets Planning Scheme Policy**	✓	No vegetation will be disturbed, significant re-vegetation of the property boundaries and waterway corridor will be undertaken.	
P2 Waterfront land must be preserved for public use where relevant	A2 Land in a Waterway Corridor or Brisbane River Corridor is transferred into public ownership in accordance with the relevant Contributions Planning Scheme Policies, where that land is required for ecological, open space or recreation functions, including: ▪ public use ▪ access for maintenance ▪ linking core and remnant habitat areas ▪ protecting water quality and ecological processes ▪ other public benefit	A/S	The waterway corridor will be protected as per discussions with Council but will remain in private ownership.	

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1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
P3 The proposal must provide for ongoing maintenance of any works or planting required to ensure that impacts on the ecology of waterways or the Brisbane River, or on riparian vegetation, are minimised both during and after construction	A3.1 A maintenance program is approved by Council and implemented	✓	Maintenance will be undertaken on the riparian area by the proprietors of the Retirement Village and in agreement with Council.	
	A3.2 A performance bond and agreement is lodged with Council to ensure the approved maintenance program is implemented	N/A		
P4 Where a site includes degraded land identified for rehabilitation in a Catchment Management Plan, SMP, WMP or a rehabilitation plan approved by Council, it must be implemented and maintained at the landowner's expense	A4.1 A rehabilitation plan is approved by Council and implemented	N/A		
	A4.2 A performance bond and agreement is lodged with Council to ensure the ongoing maintenance of rehabilitation works	N/A		
WATER FLOW, WATER QUALITY, BIODIVERSITY, OPEN SPACE/RECREATION/RIPARIAN AMENITY				
P1 Where a development site has frontage to a Waterway or the Brisbane River or contains a Waterway, land required by Council for open space/recreation (community land) or public access, must focus on that Waterway or the Brisbane River where applicable *Note:* *The **Brisbane River Corridor Planning Scheme Policy** provides guidance on meeting this*	A1 No Acceptable Solution is prescribed	✓	Access and open space is maintained along the waterway frontage.	

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1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
Performance Criteria				
P2 Open space/recreation areas must contribute positively to managing flooding impacts, protecting water quality, preserving or enhancing ecological processes and maintaining/enhancing amenity	A2 No Acceptable Solution is prescribed	✓	All works proposed in the waterway area aim to mitigate flooding impacts and improve the environmental outcome.	
LOCATION AND DESIGN OF BUILDINGS, STRUCTURES AND ACTIVITIES				
P1 For sites within the Brisbane River Corridor, and fronting the Brisbane River, the attractive appearance of the Brisbane River and its banks, when viewed from the Brisbane River, from development near the Brisbane River, or from other public vantage points, must be maintained and enhanced Materials used for buildings and structures must complement surrounding buildings, the visual character of the area and the character of the precinct In Precinct 1, buildings must not locate within the corridor and must be minimised to maintain landscape values In Precincts 2, 3, 4 and 5 setbacks must be no less than the setbacks of buildings sharing a common boundary. In these circumstances buildings must be of a similar height and bulk to these adjoining buildings, substantially shielded from view of the Brisbane River by vegetation and ancillary structures between the main building and the Brisbane River must be restricted to minimise impacts on the Brisbane River's landscape values	A1.1 Buildings, parking and servicing areas, placing of materials, goods or solid waste, storage areas and filling or excavation are not located: ▪ within 30m horizontal distance of high water mark in Precinct 1 OR ▪ within 20m horizontal distance of high water mark in Precincts 2, 3, 4 or 5	N/A		

DRAFT

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
In the City Centre, setbacks must maintain the existing building line and minimise impacts on the Brisbane River's landscape values				
	A1.2 Reclamation of land does not occur in Precincts 1, 2, 3 or 4, or on residential land in Precinct 5	N/A		
P2 Land between buildings and the Brisbane River is dominated by landscaped areas which preserve the landscape characteristics of the area	**A2.1** The minimum proportion of the land between buildings and the Brisbane River that is provided as landscaped area is: ▪ 70% in Precinct 1 ▪ 50% in Precincts 2 and 4 ▪ 30% in Precincts 3 and 5 Refer to *Figure a (in Code)*	N/A		
	A2.2 The landscaped area includes: ▪ at least one tree that will grow to a height of at least 5m for every 20m² of landscaped area ▪ a minimum of 50% garden area planted with ground cover and shrubs of various growth forms ▪ a maximum of 50% grassed/lawn area	N/A		
	A2.3 Hardstand areas, minor buildings and structures are limited to the following site cover of the land between buildings and the Brisbane River:	N/A		

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1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	▪ 30% in Precinct 1 ▪ 50% in Precincts 2 and 4 ▪ 70% in Precincts 3 and 5			
P3 Ancillary buildings and structures must: ▪ enhance the character and amenity of their site and surrounding area ▪ not adversely impact upon the riparian landscape ▪ minimise their visual impact on the Brisbane River's landscape values In Precinct 1 ancillary buildings and structures, tennis courts and swimming pools must only locate in the corridor where there is no other alternative site on the lot, and where designed to be unobtrusive and take into account the surrounding landscape Tennis courts and swimming pools must minimise impacts on the character of the area and precinct and be heavily landscaped in Precincts 2, 3 and 4 Fencing materials and design must minimise: ▪ impacts on the Brisbane River's landscape values ▪ impedance to the flow of floodwaters or to fauna movement	A3.1 Ancillary buildings and structures are: ▪ not located over water ▪ located and of a size: o consistent with Table 1 in Precincts 1, 2 and 4 OR o consistent in height, scale/bulk and setbacks with ancillary buildings and structures on the site in Precincts 3 and 5 OR o for any precinct, located where they will be screened from view of the Brisbane River by vegetation subject to a Vegetation Protection Order or Voluntary Conservation Agreement or topographic features such as high banks ▪ constructed of materials that are durable, of low visual impact, visually recessive and complementary to the surrounding building	N/A		

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

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PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
▪ destruction of native vegetation for its erection River walls must minimise impacts on the character of the area and precinct and must be designed as follows: ▪ the natural form of the riverbanks in Precinct 1 must be maintained ▪ river wall design and materials in Precincts 3 and 4 must complement the intended character of the Precinct ▪ river walls are designed to manage river bank stabilization so to control erosion	Within Precincts 2, 3 and 4 minor structures within the Brisbane River Corridor do not exceed: ▪ 3m in height ▪ 40m² site cover for all roofed structures, including 20m² for unenclosed roofed structures such as pergolas *Note:* *Ancillary structures and buildings include:* ▪ *outdoor living structures such as decks (roofed or unroofed), gazebos, poolside shelters, garden pavilions, and green-houses and glass-houses* ▪ *roofed play areas for children* ▪ *buildings and other structures for activities necessarily associated with the use of the Brisbane River* ▪ *garages and carports*			
	A3.2 Tennis Courts and swimming pools located between buildings and the Brisbane River are: ▪ located and designed to minimise the need for retaining walls with the maximum height of retaining walls limited to 1m ▪ located landward of a minimum 6m landscaped strip which covers the full width of the site and includes planting as required for general landscaped areas in A2.2	N/A		

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1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	Note: *This landscaped area forms part of the required proportion of landscape area outlined in A2.1* ▪ not within 30m horizontal distance of high water mark for land in the Environmental Protection or Rural Areas OR ▪ not within 20m horizontal distance of high water mark for other land OR ▪ located where they will be screened from view of the Brisbane River by vegetation subject to a Vegetation Protection Order, Voluntary Conservation Agreement, or topographic features such as high river banks Refer to *Figure b (in Code)*			
	A3.3 Fencing erected in the Brisbane River Corridor is less than 2m in height	N/A		
	A3.4 River walls: ▪ are not constructed in Precinct 1 ▪ are designed and constructed consistent with surrounding approved river walls in Precincts 2, 3, 4 and 5 (refer to **Public Riverside**	N/A		

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1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	Facilities Design and Maintenance Manual) ▪ are no higher than the existing approved height or ground level (as defined in this plan) of the land ▪ do not involve the alteration of existing river walls			
RIPARIAN LANDSCAPE				
P1 Valued habitats, remnant riparian vegetation and mature examples of appropriate planted tree species must be conserved and protected	A1 Native vegetation within the Brisbane River or Waterway Corridor is incorporated as part of any development proposal and landscaping involves the sustainable removal of weed species *Note:* *This may be demonstrated by the submission of a landscape plan as detailed in the **Brisbane River Corridor Planning Scheme Policy***	✓	The proposed landscaping treatment will remove existing weed species and re-vegetate the waterway with existing species to achieve a re-establishment of native habitat.	
P2 Reshaping of the landform (e.g. to create terraced areas, steps and ramps) must minimise the extent of earthworks required, minimise removal/clearing of native and riparian vegetation and be consistent with the desired character of the Precinct in which the site is located	A2 Landscaping or site works proposed on land wholly or partly within the Brisbane River Corridor or a Waterway Corridor, which is intended to create terraces stepping down to the water, do not occur: ▪ within 30m horizontal distance from high water mark for land in the Environmental Protection or Rural Areas OR ▪ Within 20m horizontal distance from high water mark for other land	A/S	Some reshaping is to occur within the waterway corridor, this terracing will be re-vegetated to re-establish habitat and create a landscape buffer to the proposed development. This work is to be undertaken on private land, not within parkland.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
P3 Retaining walls are designed to minimise the extent of earthworks required and present attractively to public viewing areas such as the Brisbane River, Brisbane riverside walkways and paths, or Brisbane River bridge crossings. Retaining walls are to be designed to manage river bank stabilisation so to control erosion. Retaining walls should be permitted in Precincts 2, 3, 4 or 5 if they retain the existing approved height or ground level (as defined) in this plan of the land	A3.1 Retaining walls are: ▪ not constructed within 30m horizontal distance from high water mark for land in the Environmental Protection or Rural Areas OR ▪ not constructed within 20m horizontal distance from high water mark for other land ▪ designed and constructed to withstand flood conditions	N/A		
	A3.2 Retaining walls proposed in locations where they are visible from the Brisbane River are: ▪ limited to a height of 1m ▪ separated by at least 5m between any other retaining wall higher or lower on the slope ▪ constructed of durable materials that compliment that character and amenity of the immediate environs with respect to their texture, shape and colour (e.g. natural stone, coloured off-form concrete) ▪ landscaped to obscure at least 50% of the face of any retaining wall, including at least one tree or shrub that will grow to a minimum height of 5m for every 5m of retaining wall length Refer to *Figure c*	N/A		

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A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
P4 Steps and ramps are designed to be unobtrusive, involve the use of natural or natural toned materials and to minimise the need for cut and fill	**A4** Steps and ramps: ▪ do not require the constriction of retaining walls greater than 1m in height ▪ are designed to be obscured by landscaping, and ▪ are constructed of materials which are dark green/brown in colour	N/A		
ACCESS TO WATERWAYS AND THE BRISBANE RIVER				
P1 Public access to Waterways and the Brisbane River Corridor must be provided in appropriate locations and designed to minimise the visual impact on the Brisbane River's landscaped values	**A1.1** Where required by the *Brisbane River Walk Strategy*, proposals on land wholly or partly within the Brisbane River Corridor provide for the construction of contiguous walkways and structures, and surrender land to the Crown	N/A		
	A1.2 Public access is provided in a manner consistent with the 'Public access' Element of the **Brisbane River Corridor Planning Scheme Policy**	N/A		
	A1.3 Public riverside pedestrian/cycle pathways and boardwalks and other facilities, including those identified in the *Brisbane River Walk Strategy*, are designed, constructed and maintained in accordance with the **Public Riverside Facilities Design and Maintenance Manual**	✓		
	A1.4 Public access in Precincts 3 and 4 is located above high water mark	N/A		

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
DRY BOAT STORAGE				
P1 Facilities for the dry storage of boats must only be constructed in appropriate locations and must be designed to: ▪ be compatible with the character and amenity of the Precinct in which the site is located ▪ minimise visual intrusiveness ▪ minimise impacts on the Brisbane River's landscape values ▪ unobtrusive when viewed from the Brisbane River Any facilities for the dry storage of boats is not appropriate in Precinct 1 Dry boat storage facilities must be located on the landward side of high water mark Boat hoist or lift facilities in Precincts 2, 3 and 4 must be located on land, unobtrusive when viewed from the Brisbane River, and unroofed	A1.1 Dry boat storage facilities are located on land involving: ▪ hoists or lift facilities catering for one boat up to a maximum 4m in length ▪ all other forms of dry storage designed for one boat up to a maximum 6m in length	N/A		
	A1.2 Dry boat storage facilities designed for more than one boat, or hoists or lift facilities catering for a boat greater than 4m in length, or all other forms of dry storage designed for a boat greater than 6m in length, are only located: ▪ within the Port of Brisbane, or on a site used	N/A		

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1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	for marine industry, or within a marina OR ▪ . on a site used by a recreational or sporting club with associations with the Brisbane River			
	A1.3 Dry boat storage that comprise a shed or similar form of shelter are: ▪ located on the landward side of high water mark ▪ to comply with the Performance Criteria and Acceptable Solutions in Section 4.6 'Location and design of buildings, structures and activities' OR ▪ within the Port of Brisbane, or on a site used for marine industry, or within a marina, or ▪ on a site used by a recreational or sporting club with associations with the Brisbane River	N/A		
	A1.4 Boat hoist or lift facilities and associated dry storage facilities for a boat are: ▪ located on the landward side of high water mark ▪ to comply with the Performance Criteria and	N/A		

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A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	Acceptable Solutions in Section 4.6 'Location and design of buildings, structures and activities' OR ▪ within the Port of Brisbane, or on a site used for marine industry, or within a marina, or ▪ on a site used by recreational or sporting club with associations with the Brisbane River			

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APPENDIX B

Arkhefield Landscape Concept Plans

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1



Site Context Plan

Yeronga Village

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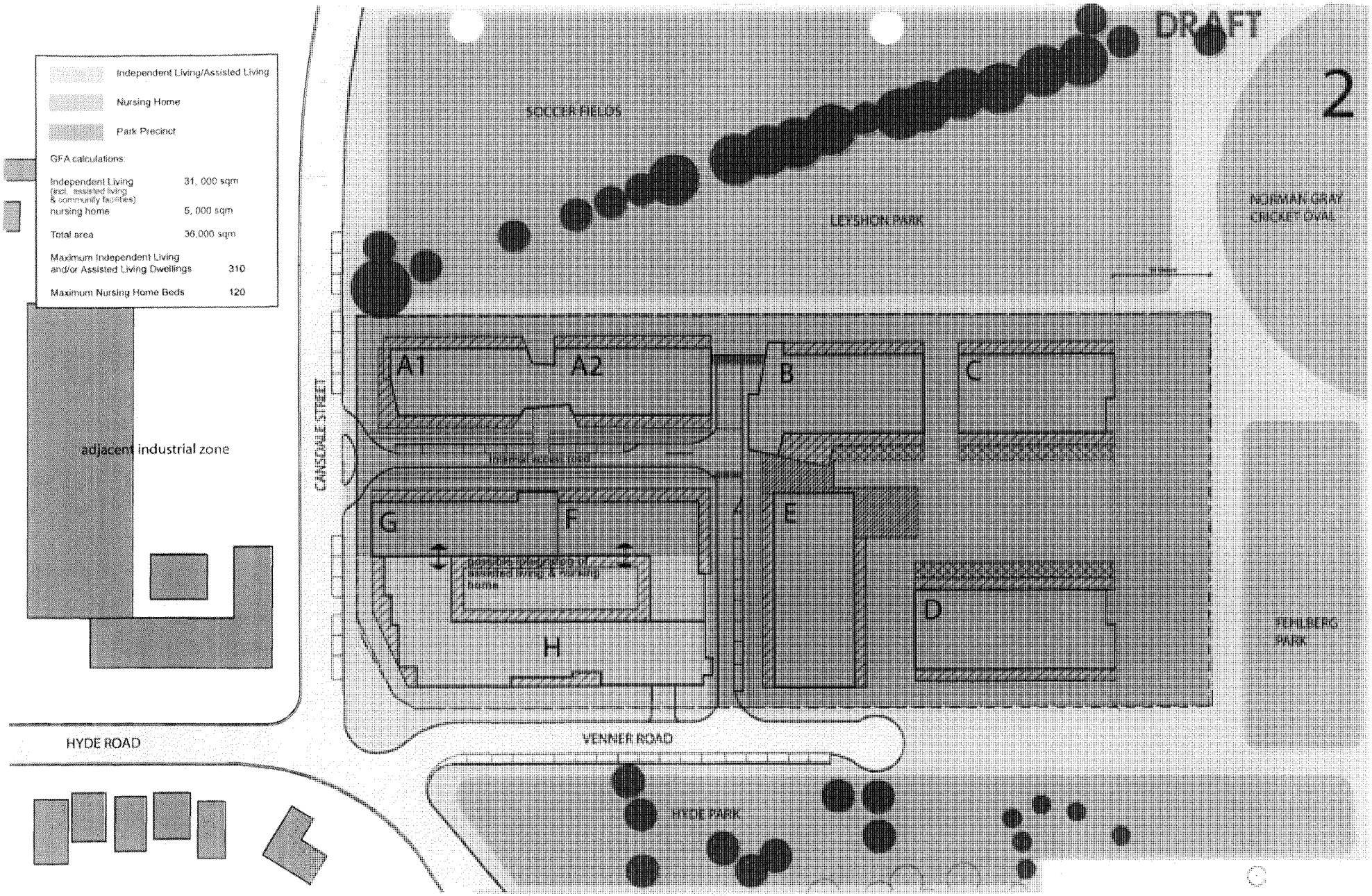

Precinct Plan

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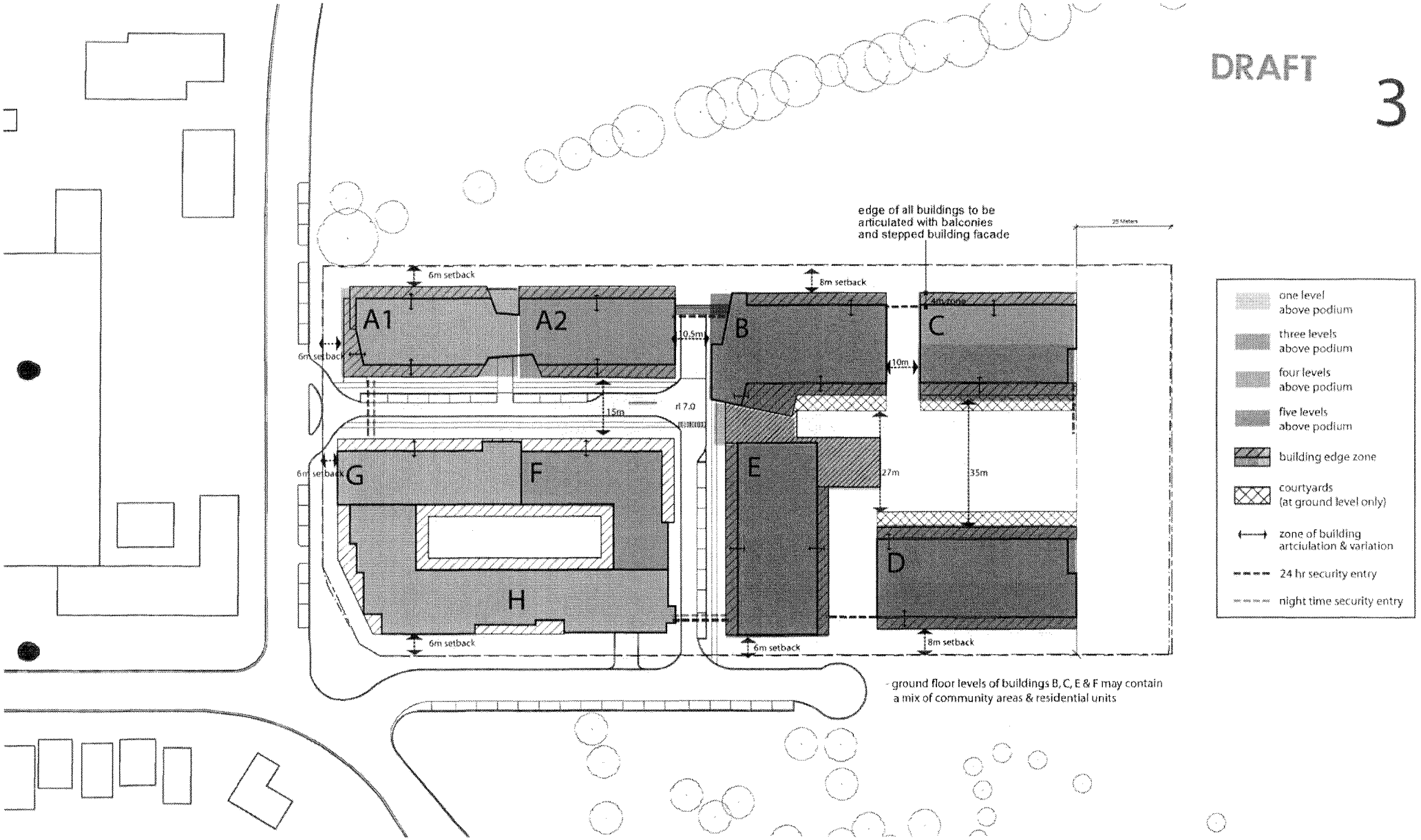

Building Envelope Plan

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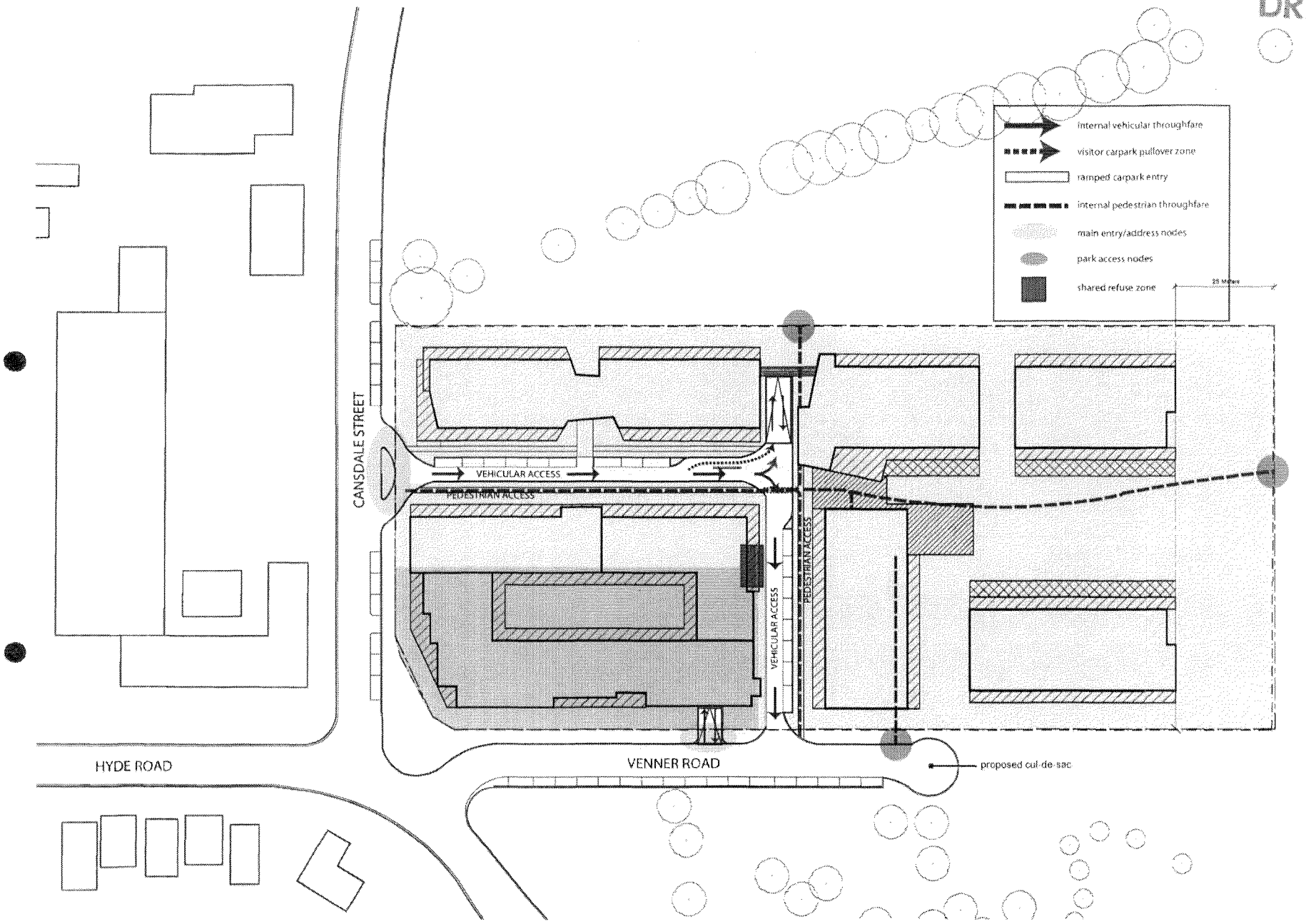

Circulation Plan

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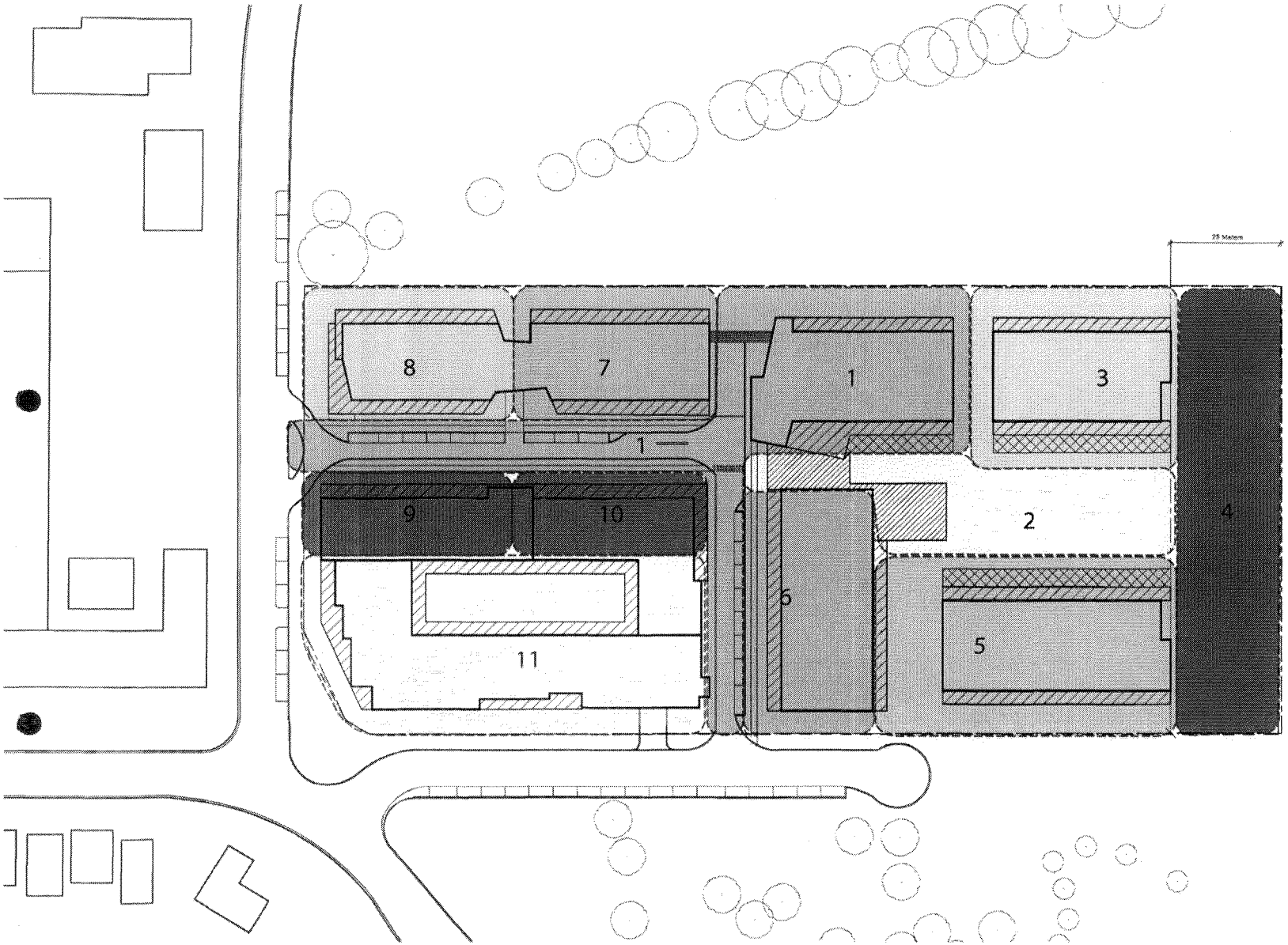

- block B & access road
- community facilities
- block C
- block D
- block E
- block F
- block G
- block A2
- block H
- block A1
- block I nursing home
- landscape/stormwater works

staging is indicative only and non sequential

Conceptual Staging Plan

Yeronga Village

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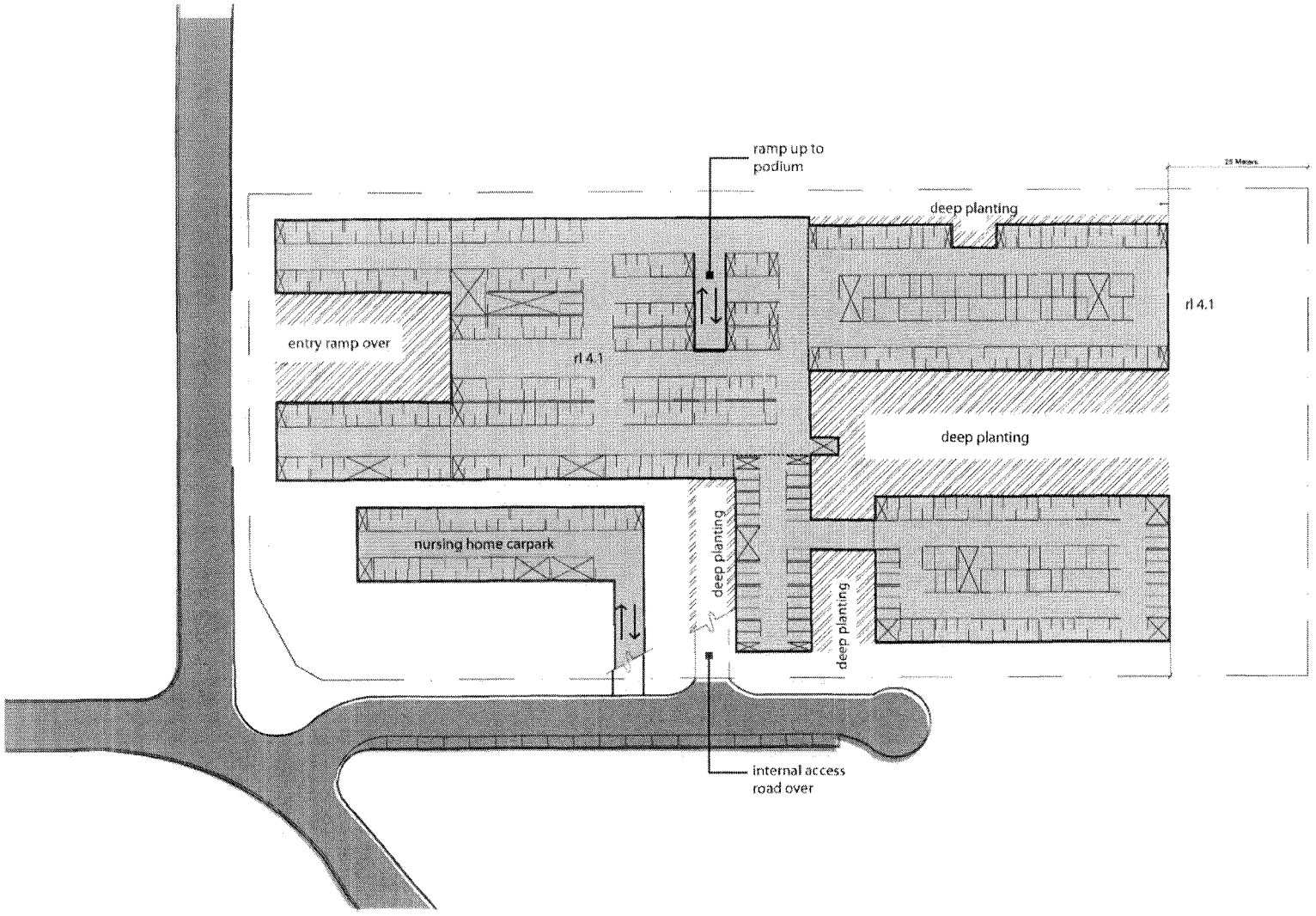

- independant living & visitors carpark
- nursing home carpark
- road at ground level
- residents' workshop, store room and outdoor room

carparking numbers:

residential	- 278 cars
visitors -	
basement	- 105 cars
on grade	- 17 cars
nursing home	- 30 cars
total	- 430 cars

Basement is to be staged relative to above podium works as required. Layout is indicative only.

Conceptual Basement Plan

Yeronga Village

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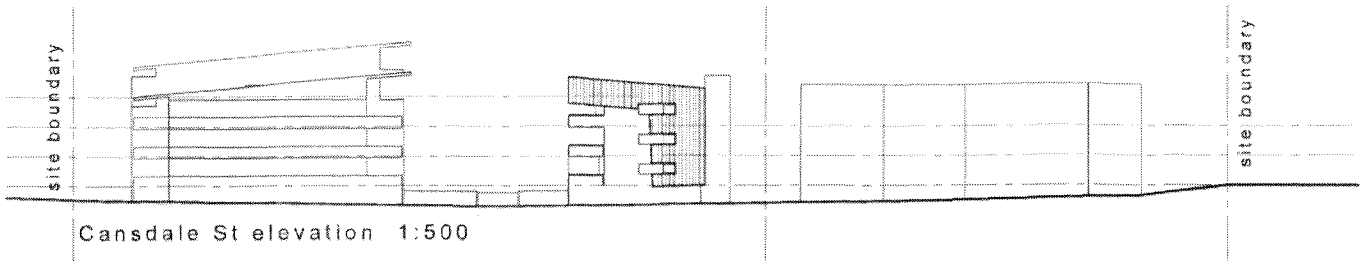
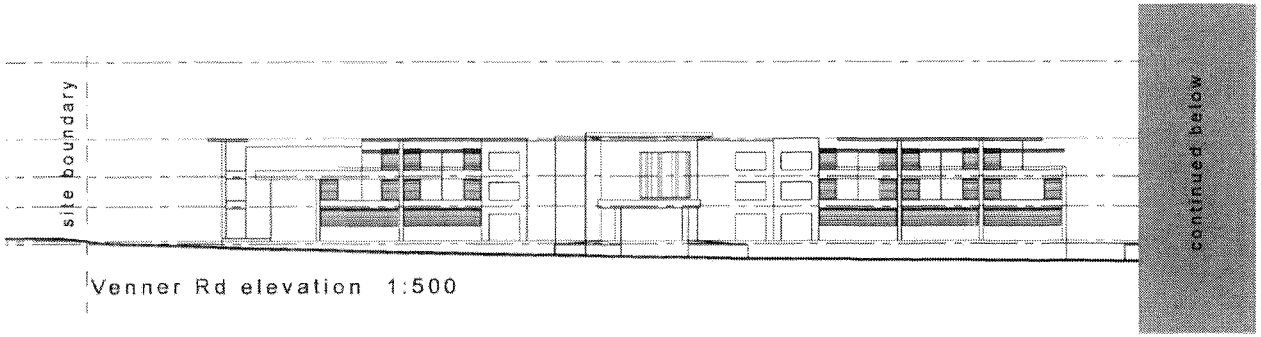
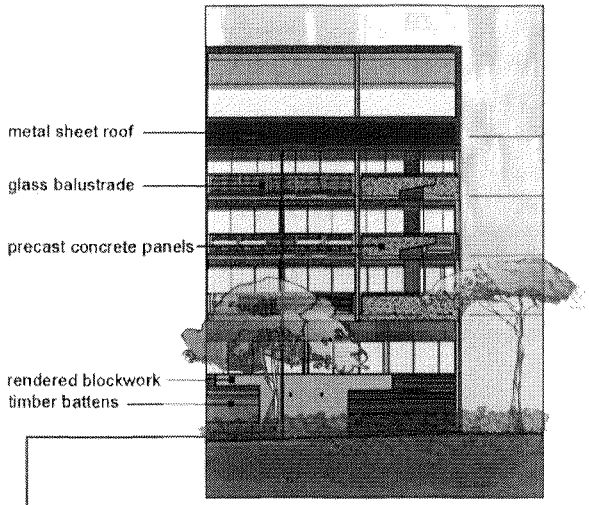


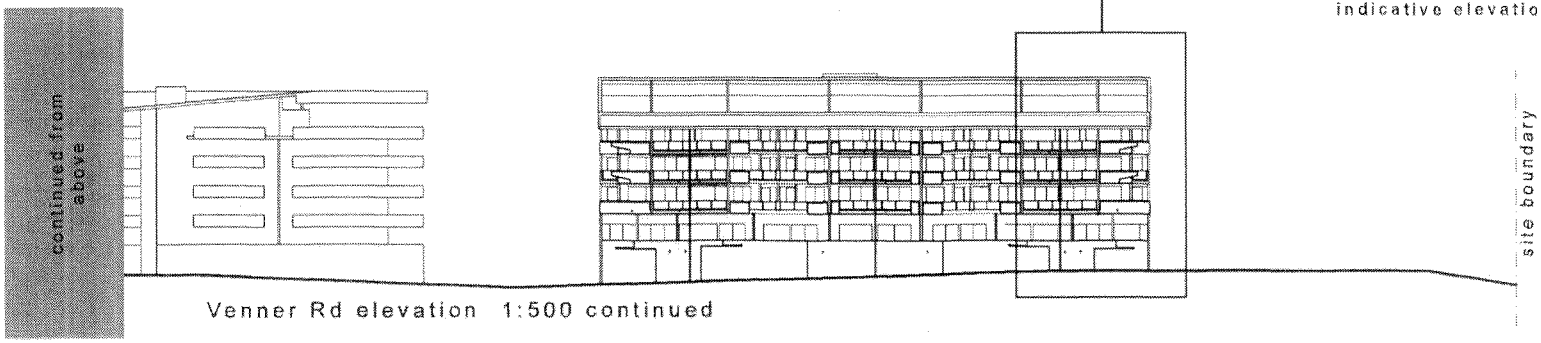
Cansdale St elevation 1:500



Venner Rd elevation 1:500



indicative elevations



Venner Rd elevation 1:500 continued

Indicative Site Elevations

Yeronga Village

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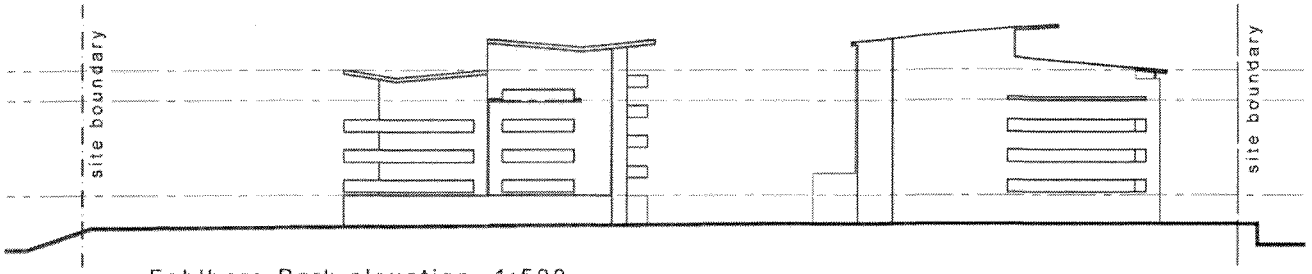
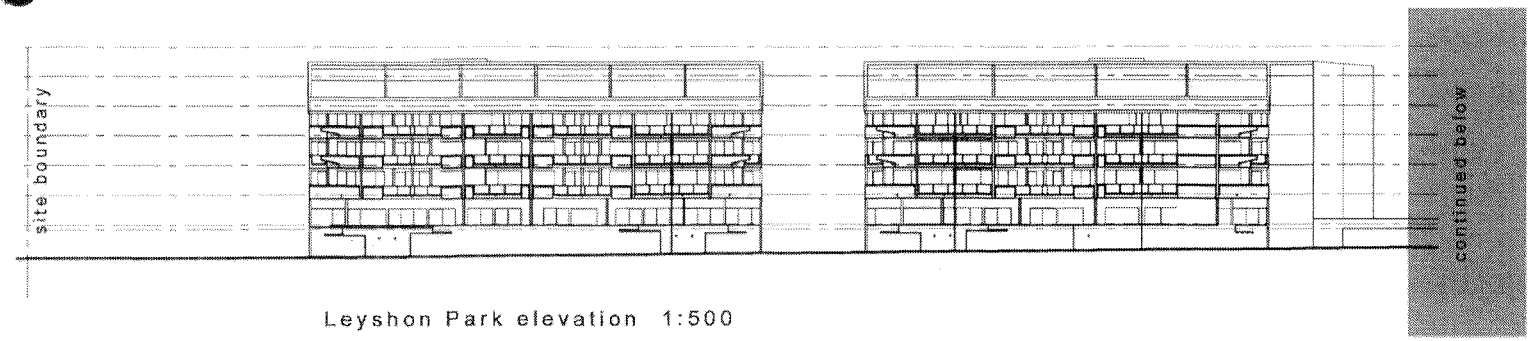
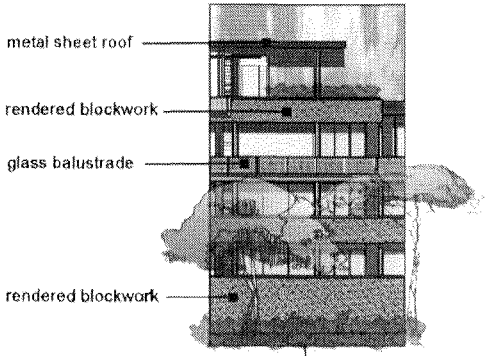


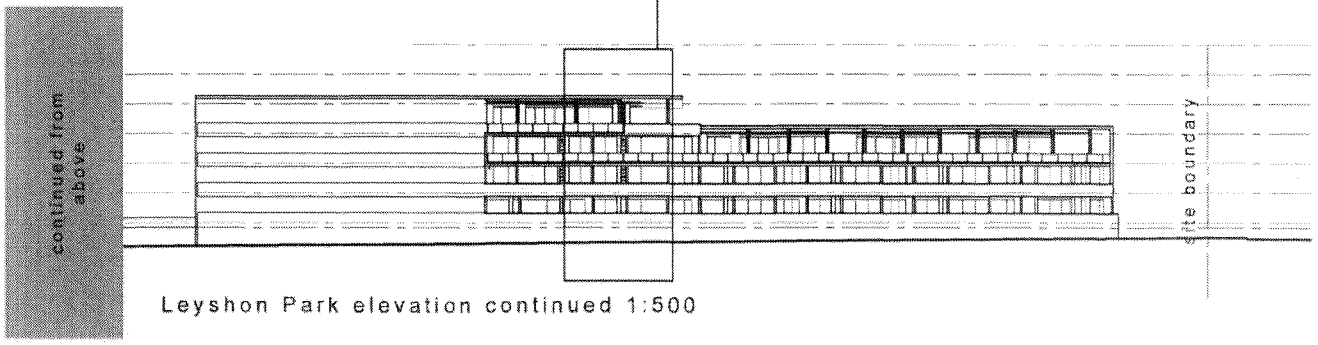
Fehlberg Park elevation 1:500



Leyshon Park elevation 1:500

indicative elevations





Leyshon Park elevation continued 1:500

Indicative Site Elevations

Yeronga Village

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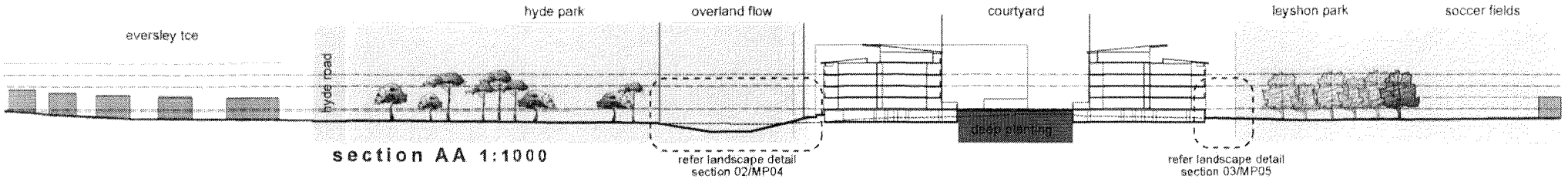

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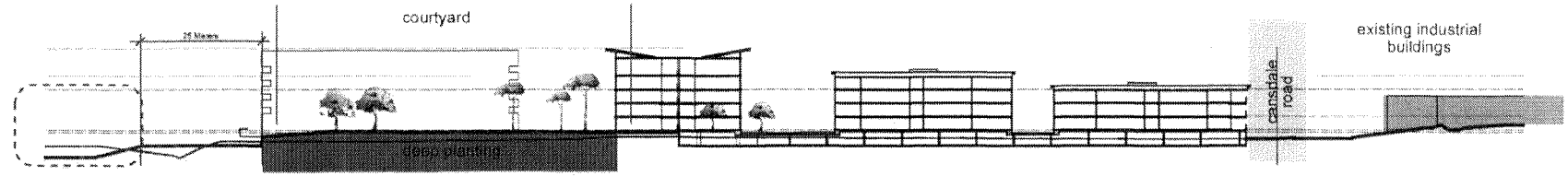

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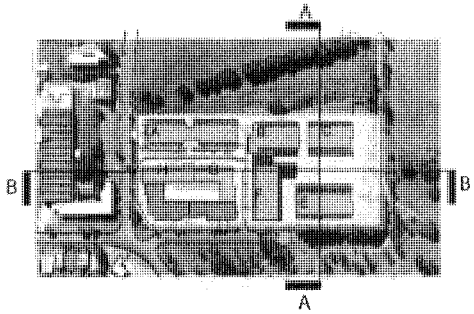

Context Sections

Yeronga Village

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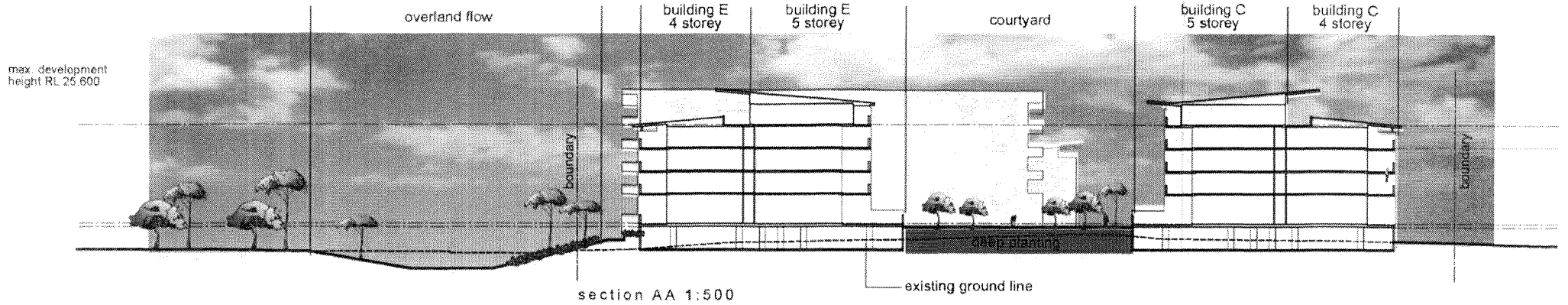

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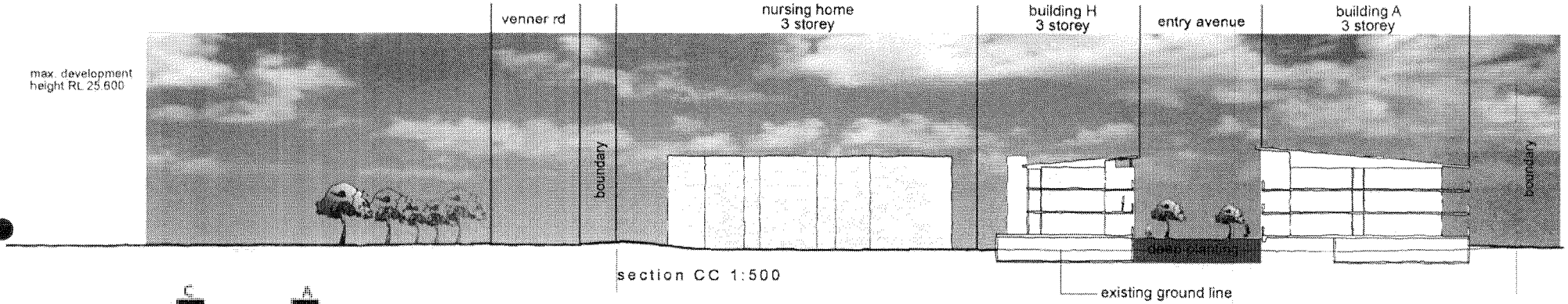

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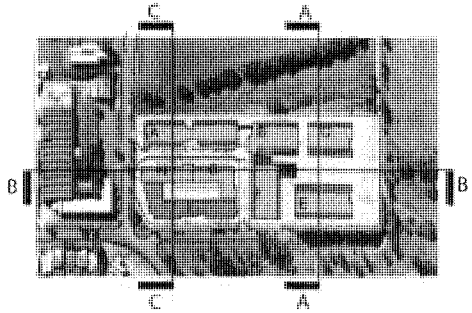

Site Sections

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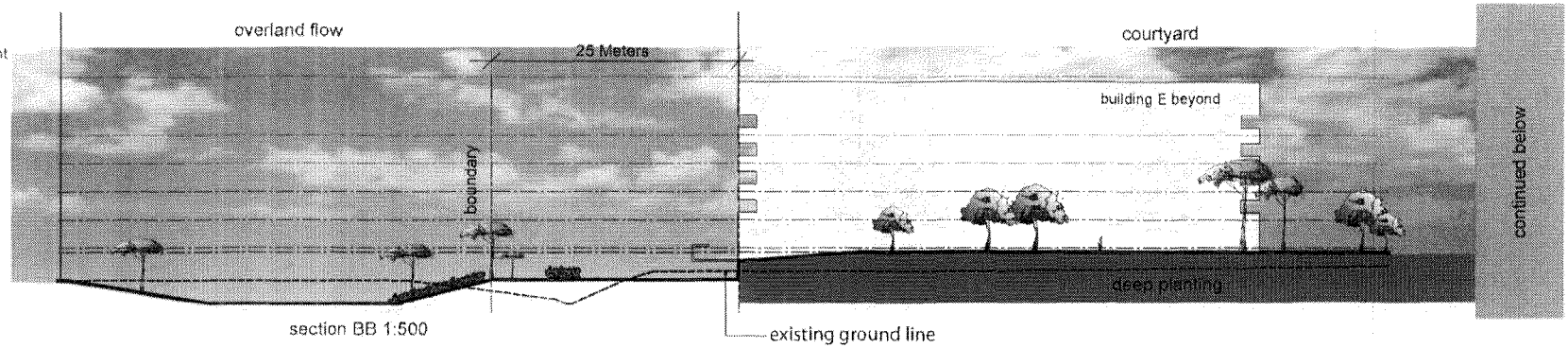

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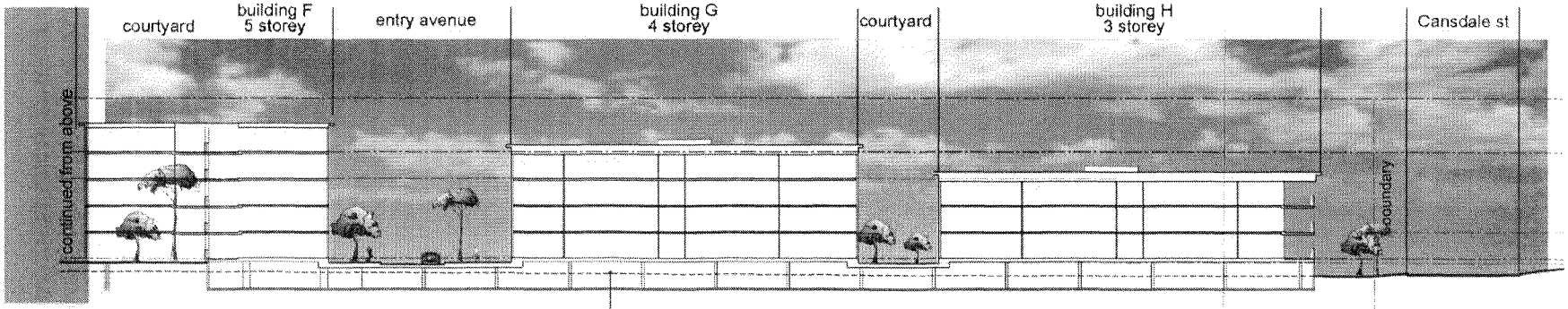

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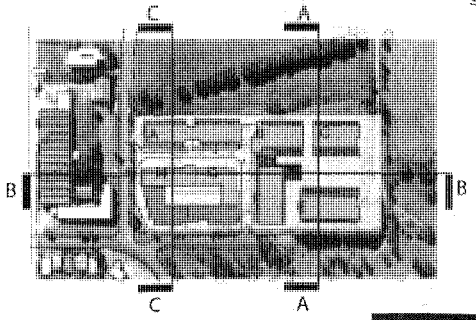

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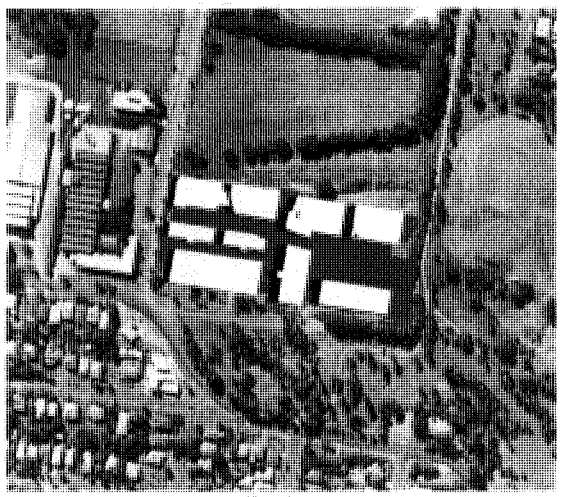

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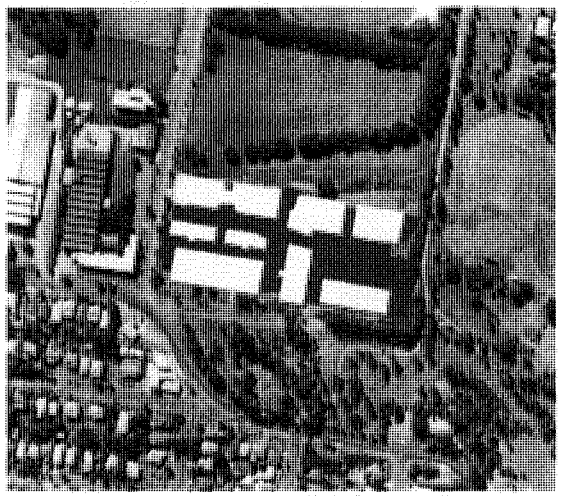

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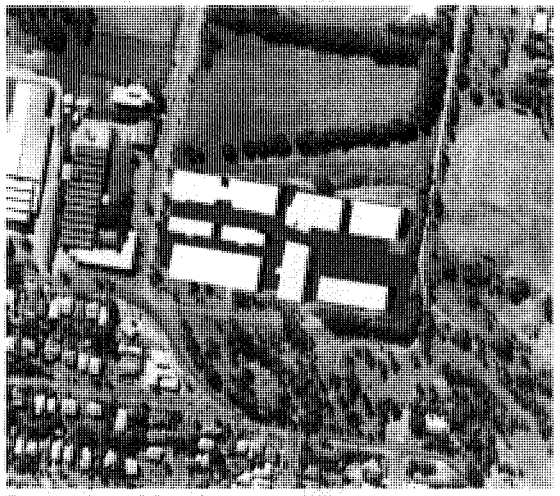

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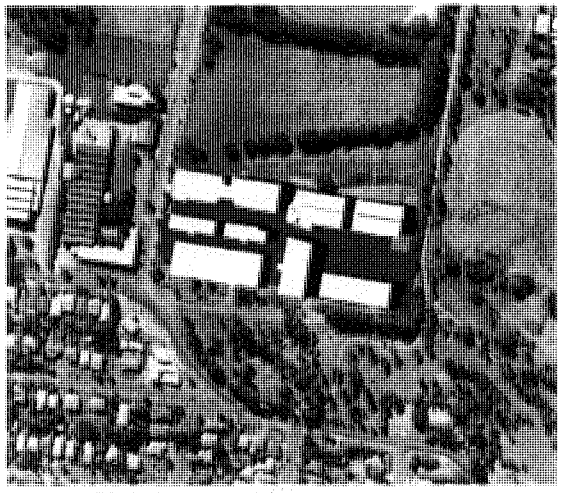

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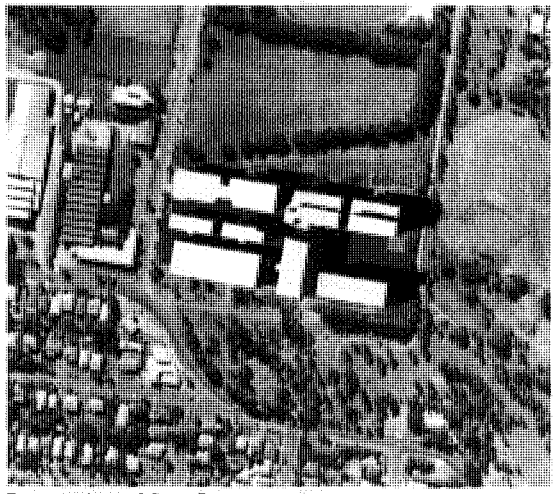

December 22 5pm

Shadow Diagrams - Summer

Yeronga Village

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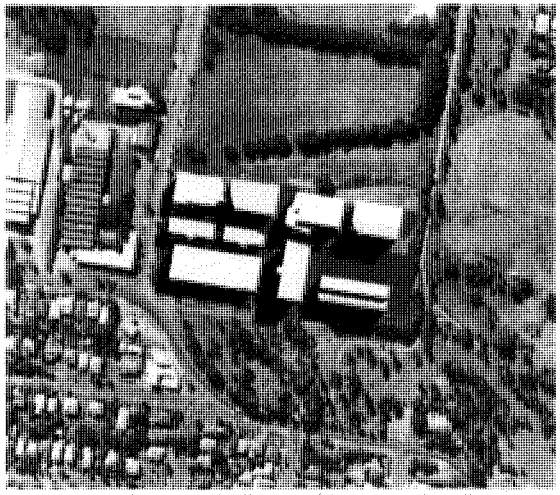

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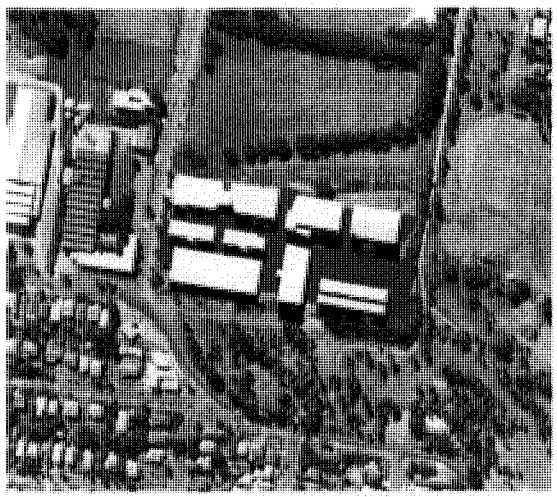

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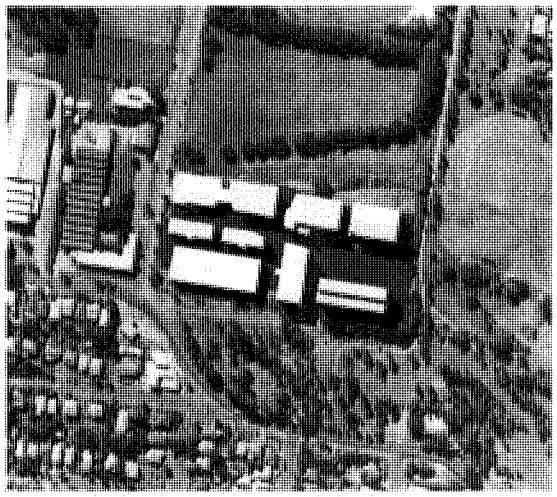

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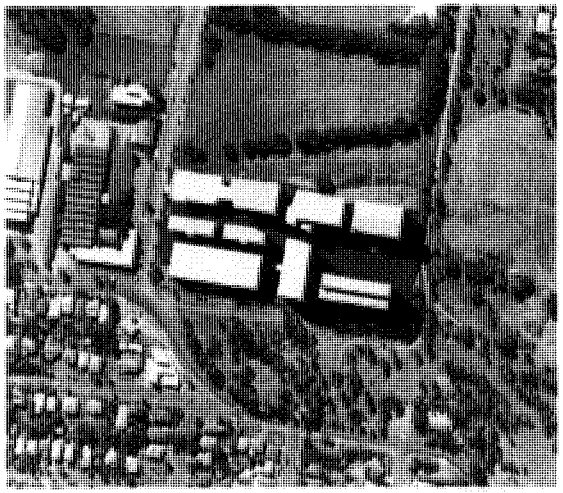

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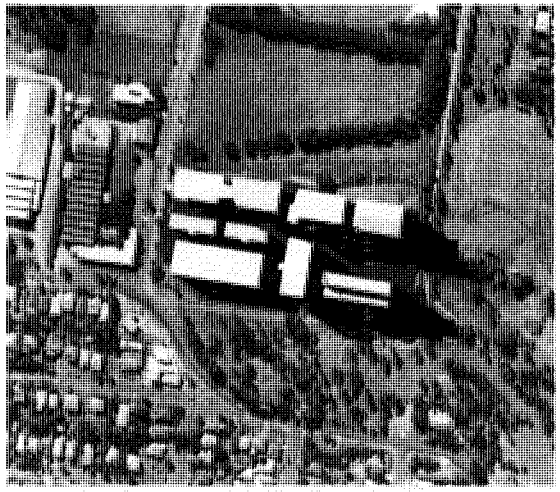

June 22 4pm



June 22 5pm

NORTH

Shadow Diagrams - Winter

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APPENDIX C

Cardno Hydraulic Report

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Cardno
Engineering the Future



Yeronga Retirement Village

Hydraulic Analysis

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22 March 2006
Job No. 3500/34

Harrisons Real Estate Development

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Document Control

Version	Date	Author		Reviewer	
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YERONGA RETIREMENT VILLAGE
HYDRAULIC ANALYSIS

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APPENDICES

APPENDIX A Peak Flows and Velocities
APPENDIX B Hydraulic Grade Line Calculations – Cansdale Street

1. INTRODUCTION

It is proposed to construct a retirement village on a site at the corner of Cansdale Road and Venner Road in Yeronga (the study site). Figure 1 shows the location of the site. The lot is described as Lot 1 on RP150512.

A preliminary investigation into the hydraulic issues associated with the development was carried out by Cardno in March 2005 as part of the initial submission to Council. The analysis identified the hydraulic constraints affecting the site and identified a potential design solution for drainage of the site.

Item 2 of the information request received in relation to the development dated 21 June 2005 relates to flooding of the site:

"2. Demonstrate that the proposal:

(i) complies with section 4.2 P1 of the Stormwater Management Code. Specifically, demonstrate that the proposed stormwater management system or site works do not adversely impact on flooding or drainage of properties that are upstream, downstream or adjacent to the subject site.

(ii) complies with section 4.2 P2 of the Stormwater Management Code. Specifically, demonstrate that the drainage network provides adequate capacity to safely convey stormwater run-off resulting from relevant design storm events taking into account increased run-off from roof drainage.

(iii) Complies with section 4.2 P3 of the Stormwater Management Code. The development design must reduce property damage and, where applicable, ensure public safety by ensuring that the development levels are set above the relevant design flood level or storm surge level.

(iv) Complies with section 4.2 P4 of the Stormwater Management Code. Demonstrate that the channel works, major drainage works and flood mitigation works maintain and/or enhance the environmental values of the waterway corridor or drainage corridor.

In addition, there is an overland flow path through the south-eastern corner of the site, which has been identified in the ***Yeronga Local Stormwater Management Plan.****"*

In response to the information request, detailed modelling of the works required to obtain a satisfactory hydraulic solution has been completed. The proposed works have been developed in consultation with ecologists and landscape architects to ensure that the outcome achieved maximises the environmental values of the waterway corridor. Modelling has considered both the need to cause no adverse impact and the desirability of including the design solution as part of an overall flood mitigation strategy for the catchment.

This report presents the results of the modelling investigations.

2. SITE DESCRIPTION

The development site covers an area of approximately 2.79 ha. Ground levels throughout the site are generally between 5 m AHD and 6 m AHD. The site is currently used for industrial purposes. The western half of the site contains sheds and parking areas while the eastern half of the site is predominately grassed with some heavier vegetation such as trees and shrubs along the eastern boundary.

The extent of this flooding assessment is not limited to the development site as described above. Drainage paths considered in this assessment are presented in Figure 2. From this figure it can be seen that the main drainage path within the catchment is located on the eastern boundary of the site. The catchment drains in a northerly direction to the Brisbane River through Leyshon Park and Downs Oval and beneath the Brisbane Corso. The drain takes the form of an excavated channel with a concrete invert.

Smaller tributary flows enter the main channel approximately 80 metres upstream of the southern boundary of the development site. At this location stormwater drainage pipes from the west and the east meet and stormwater continues down the main open channel.

Despite the fact that the channel is not a natural waterway, a Waterway Corridor has been defined that affects the site (refer Figure 2). The corridor has been defined 30 metres either side of the low flow invert of the channel. As the centreline of the waterway is about eight metres inside the eastern boundary of the site, the corridor affects about a 38 metre width of the site.

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3. PREVIOUS STUDIES

A flood study of the area was conducted by Brisbane City Council in June 2003 (*Yeronga Local Stormwater Management Plan (LSMP) June 2003*). This report has been referenced as part of the current assessment. In addition, Council made available the models developed for the LSMP for the current investigation. The models provided base information for use in the detailed modelling undertaken for this investigation.

The major storm event considered for the local stormwater management plan had a recurrence interval of 50 years. This is considered appropriate given that the drain can be classified as a designed open channel, for which the major storm event for the specification of fill and floor levels is the 50 year event according to Table B2.2.1 of the *Subdivision and Development Guidelines* (2000). Consequently, the 50 year event was considered for the analysis of local catchment flooding when investigating the drainage requirements for the proposed development.

As shown in Figure 6, the flood mitigation measures proposed in the *Yeronga Local Stormwater Management Plan* include retaining the existing concrete invert of the channel and increasing the width of the grassed base of the channel by 12 metres (p30 and Appendix L) along the eastern boundary of the site and downstream (north) of the site. A Mannings n value of 0.04, which corresponds to grass, was adopted for the channel to maximise its flow carrying capacity.

The works envisaged for the area also include the excavation of channels to convey the runoff from the eastern and western portions of the catchment to the main drain on the eastern boundary of the site. The proposed base width of the eastern and western channels is 10 metres and 8 to 12 metres respectively. As for the main channel, grass lined channels with a Mannings n value of 0.04 was envisaged. Bank slopes of 1 in 4 were adopted for the channel.

Based on the dimensions indicated in the LSMP and existing ground levels in the vicinity of the drain, the main drain following the completion of channel works would have a top width of about 39 metres. The western drain would have a top width of between 36 and 40 metres and the eastern drain a top width of about 30 metres.

The channel design presented in the LSMP is preliminary. It is likely that Council will give consideration to obtaining a design more conscious of environmental and safety issues if the flood mitigation works are implemented. However, such a design would necessitate the construction of a wider channel to provide for flatter bank slopes and the reduced flow capacity associated with a level of vegetation higher than grass. If the bank slopes were to be flattened to improve safety (as proposed for the development at the request of Council), the top width of the channels could need to increase by as much as 13 metres (a top width of 52 metres) as a worst case.

Further, it is also important to note that the proposed location of the main channel and western channel in the LSMP affect private property (i.e. the proposed site) and would require the resumption of a significant area in order to be constructed. The existing drain is not contained within an easement and therefore Council has no current right to modify the drain without the consent of the owner of the property.

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4. GOVERNING FLOOD LEVELS

Based on a flood report obtained from Council and the *Yeronga Local Stormwater Management Plan* (City Design June 2003), the applicable flood levels to the site are listed in Table 1. Table 1 also lists the peak flood levels calculated by the current study (refer Section 6).

Table 1 Defined Flood Levels

Event	Brisbane River Flooding (mAHD)	Local Flooding (mAHD)			
		Yeronga LSMP		Current Modelling	
		Existing	Post Mitigation	Existing	Post Mitigation
100 Year	6.7	-	-	-	-
50 Year	5.5	3.70 – 4.35	3.70 – 3.74	3.89 – 4.38	3.62 – 3.65
20 Year	3.7	-	-	-	-
10 Year	-	3.25 – 4.27	3.10 – 3.24	3.51 – 4.18	3.20 – 3.22
2 Year	-	3.00 – 4.23	2.80 – 2.97	3.03 – 3.69	2.72 – 2.74

The figures quoted in Table 1 for local flooding include the levels predicted for the site following the completion of proposed flood mitigation works. The proposed mitigation works that affect the site are shown in Figure 6 and described in Section 3.

Based on Table B2.2.1 of the *Subdivision and Development Guidelines* (2000), the design levels applicable to the development are listed in Table 2.

Table 2 Design Levels for Development

Case	Brisbane River		Local Flooding		Governing Level (mAHD)
	Design Level	Level (mAHD)	Design Level	Level (mAHD)	
Allotment fill	100y ARI + 0.3m	7.0	50y ARI + 0.3m	4.68	**7.0**
Habitable Floor	100y ARI + 0.5m	7.2	50y ARI + 0.5m	4.88	**7.2**
Non-Habitable Areas	100y ARI + 0.3m	7.0	50y ARI + 0.3m	4.68	**7.0**
Carparking*	20y ARI	3.7	50y ARI	4.38 existing 3.65 mitigated	**4.38 existing 3.65 mitigated**

Note: Basement car parks can be set below the nominated level provided that suitably waterproofed perimeter walls, air vents, and entry/exit ramps at the car park entrance are above the 100 year ARI flood levels for all sources including the Brisbane River (i.e. 6.7 m AHD).

A basement car park (floor level 4.1 m AHD) is proposed for the development. As the entry/ exit to the basement car park will be from the podium level (7.0 m AHD minimum), the Council requirements with respect to basement car park immunity will be achieved.

5. FLOOD MODELLING

5.1 Overview

The existing stormwater drainage system in the area consists of a series of overland flow paths, stormwater pipes and open channels. Given this interaction between surface and underground drainage, XP-STORM was considered the most suitable package for modelling the investigation area. Version 8.5 of XP-STORM was used for the analysis.

XP-STORM is capable of modelling hydrology and hydraulics in a single model, and includes the algorithms used in RAFTS. It was therefore possible to import the Council RAFTS model of the catchment to the XP-STORM model to derive inflow hydrographs for the hydraulic layer of the XP-STORM model that were consistent with those obtained by Council.

The following sections of the report discuss the various components of the XP-STORM model and the modelling procedures adopted for this assessment. A schematic of the XP-STORM model developed for the site is provided in Figure 3.

5.2 XP Storm Hydrology

As part of the preparation of the *Yeronga Local Stormwater Management Plan* (2003) Brisbane City Council developed a RAFTS model to represent the hydrology of the East Yeronga catchment. The data from the RAFTS model was transferred to the hydrology layer of the XP-STORM model. Table 3 summarises the parameters adopted for each sub-catchment. Sub-catchment boundaries are shown on Figure 4.

Table 3 Sub-Catchment Details

Sub-Catchment	Area (ha)	Fraction Impervious (%)	Slope (m/m)	Manning's Roughness
AB	22.30	44	0.045	0.035
CDE	10.50	65	0.048	0.025
F	3.66	81	0.040	0.025
G	13.23	36	0.020	0.033
HM	42.57	50	0.016	0.025
N	2.95	90	0.045	0.025
O	3.40	29	0.016	0.033
P	3.95	3.4	0.070	0.025
Q	9.90	47	0.012	0.025
R	8.80	33	0.010	0.040
Main1	2.20	30	0.040	0.037
Main4	1.96	20	0.020	0.040
Main7 (D2)*	2.17	20	0.020	0.040
Main12	4.22	15	0.020	0.036
Main17	3.42	23	0.010	0.039
Main22	4.33	23	0.010	0.039
Main26	1.50	20	0.010	0.037

* Node Main7 is labelled D2 in the developed case model.

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XP-STORM allows the specification of configuration parameters which apply globally to the model. One of the configuration parameters that can be set is the value of the storage multiplier B_x, which is directly analogous to the B_x factor in RAFTS. In order to achieve calibration for the Yeronga LSMP, a B_x factor of 1.75 was adopted for the RAFTS model. This storage coefficient was applied as a configuration parameter (BX=1.75) to the XP-STORM model. A configuration parameter was also set to specify that runoff routing was to be completed in accordance with the algorithms used in RAFTS.

Three detention basins were included in the Council RAFTS model of the catchment and were thus duplicated in the XP-STORM model. The first basin is formed between the Gold Coast Railway line and the Yeronga TAFE (Node AB). The second basin, which is smaller than the first, is formed between Fairfield Road and the Gold Coast Railway Line (Node CDE). The third detention basin is located towards the downstream end of the main channel, and discharges just upstream of the Brisbane Corso (Node Q). This basin is formed in the residential streets to the east of the main channel. Table 4 reports the storage information, drawn from the Council model, used to model each of these detention zones. In this table the depth of storage reported is relative to the invert of the node to which the storage is assigned.

Table 4 Detention Basin Details

Basin 1 (Node AB)		**Basin 2 (Node CDE)**		**Basin 3 (Node Q)**	
Node Invert = 4.20 mAHD		Node Invert = 1.96 mAHD		Node Invert = 2.00 mAHD	
Depth* (m)	**Area (m²)**	**Depth* (m)**	**Area (m²)**	**Depth* (m)**	**Area (m²)**
0	0	0	0	0	0
1.1	5	0.5	2	1.2	61
1.8	16	1.0	2	1.3	1800
2	30	1.2	10	1.4	2010
2.2	55	1.4	20	1.5	3710
2.3	100	1.5	80	1.6	5620
2.4	170	1.6	320	1.7	8030
2.5	310	1.6	800	1.8	10200
2.6	480	1.7	1080	1.9	12400
2.7	620	1.8	1760	2	13930
2.8	770	1.9	2550	2.1	16820
3.1	1120	2.0	3250		
3.3	1440	2.2	2820		
3.5	1600	2.5	1667		
4.3	1904				
5.3	2477				
5.8	3190				
6.3	3966				

** Depth is relative to the invert of the node to which the storage is assigned.*

Rainfall losses were set to match those adopted by Council, namely 15 mm of initial loss followed by a continuing loss rate of 2.5 mm per hour.

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Rainfall intensities were taken from the Brisbane Intensity Frequency Duration curve provided in the BCC Supplement to QUDM (Appendix A to Section 6 of the Brisbane City Council *Subdivision and Development Guidelines* (2000)).

To be consistent with the Yeronga LSMP, events with recurrence intervals of 2, 10, and 50 years were modelled. Storm durations ranging from 30 minutes to 2 hours were considered for the analysis. A storm with a duration of 60 minutes was found to produce peak flow rates in the vicinity of the site.

The peak flows predicted by the hydrology layer of XP-STORM are presented in Table 5. The table also reports the corresponding (Council) RAFTS discharge. It can be seen from these results that the peak flows predicted by the XP-STORM model closely agree with the discharges determined for the Yeronga LSMP. Given this close agreement, it was considered that the hydrology component of the XP-STORM model was providing satisfactory results.

Table 5 XP-STORM Hydrology Results - 60 Minute Duration Storm

Sub-Catchment	2 year ARI Discharge (m^3/s)		10 year ARI Discharge (m^3/s)		50 year ARI Discharge (m^3/s)	
	STORM	RAFTS	STORM	RAFTS	STORM	RAFTS
AB	4.97	4.79	8.79	8.55	12.06	12.01
CDE	3.43	3.35	5.33	5.24	6.96	6.95
F	1.30	1.29	1.98	1.95	2.55	2.55
G	2.47	2.72	4.14	3.95	5.94	5.81
HM	7.63	7.37	13.47	13.00	19.29	19.08
N	1.07	1.06	1.61	1.59	2.07	2.06
O	0.64	0.61	1.12	1.09	1.61	1.58
P	1.16	1.14	1.83	1.79	2.40	2.39
Q	1.98	1.91	3.48	3.31	4.98	4.88
R	1.10	1.05	2.04	1.93	3.05	2.94

Note: STORM refers to results from XP-STORM, RAFTS to results from Council model

5.3 XP Storm Hydraulics

5.3.1 Overview of Hydraulic Model

Detailed survey was collected for the region downstream (north) of approximately Hyde Road to the Brisbane River. The survey, completed by PMM Group (Drawing 7203-2a) included spot levels and cross sections through the existing drain. This information was augmented by design data for pipes and culverts in the vicinity of the study area.

Based on discussions with Counci[redacted]t is understood that the survey upon which the Council hydraulic model is based was taken from aerial (helicopter) survey and that the levels obtained from the aerial photogrammetry are quite variable in the channel.

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Therefore, in addition to potential variations associated with the different models used for the Yeronga LSMP (MIKE-11 and HEC-RAS) and the current investigation (XP-STORM), the fact that detailed survey was used for the current investigation will produce calculated flood levels which differ from those obtained by Council. As the model is based on detailed survey rather than aerial photogrammetry, it is considered that the results obtained from the new modelling will be more reliable than those presented in the Yeronga LSMP.

5.3.2 Cross Section Information

As noted in Section 5.3.1, cross sectional information was obtained from the detailed survey of the site. A total of 28 cross sections were used to define the water courses within the model area in the developed case (one additional cross section was included in the existing case model). The location of each of these cross sections is shown in Figure 5.

Manning's n roughness coefficients were applied to the centre, left and right banks of each cross section. The value of the Manning's coefficients adopted for the model varied from 0.03 to 0.08, similar to the values adopted for the Yeronga LSMP. Downstream of the development site the channel is well maintained with mowed grassed slopes and a concrete invert. Therefore the roughness along this section of the model was generally set at 0.03 for the entire width of the cross section.

Roughness values were increased within the western and eastern overland flow paths due to the presence of more significant vegetation along these watercourses. These roughness estimations were based on aerial photography and site inspection.

5.3.3 Structures

The detailed survey indicated stormwater pipes under the western and eastern overland flow paths. These pipes convey runoff from catchments upstream of the site and discharge it to the main channel approximately 40 metres north of Venner Road. The details of these pipes are presented in Table 6.

Table 6 Stormwater Pipe Dimensions (Existing)

Line	Dimensions	Number of pipes	Total Length (m)
Fairfield Rd to Main Drain	1200 dia RCPC	2	137
Fairfield Rd to Main Drain	1200H x 1800W Oval	2	277
Hyde Rd to Main Drain	1650 dia RCPC	1	170

Brisbane Corso crosses the main channel at the downstream end of the model, just upstream of the Brisbane River. A bank of culverts allows runoff to pass under the road. The details of these culverts are presented in Table 7. Invert levels at the inlet of the culvert indicate that there is a significant drop in bed level from the main channel to the culvert invert.

Table 7 Brisbane Corso Culvert Details

XP-STORM Link Location	Geometry	No. of culverts	Length (m)	Upstream Invert (mAHD)	Downstream Invert (mAHD)
Main23-24	1650& RCPC	4	27.3	-0.45	-0.80

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5.3.4 Boundary Conditions and Simulation Details

Previous modelling for the Yeronga LSMP (Brisbane City Council June 2003) was based upon a constant tailwater level of 1.2 m AHD in the Brisbane River, which is equivalent to the Mean High Water Springs tide level. The same boundary condition was adopted for the current modelling at the downstream end of the model (node Main26) with the model reverting to normal depth if required.

The XP-STORM model was run for a period of 24 hours at 5 second time steps.

5.4 Proposed Mitigation Option

5.4.1 Overview of Proposed Council Mitigation Scheme

As part of the Brisbane City Council Yeronga LSMP, mitigation options were investigated to relieve some of the flooding pressures already experienced by residents within the catchment. The final proposed relief configuration included the following components (from the *Yeronga Local Stormwater Management Plan* (June 2003)):

- Widening of the western overland flow path from Hyde Road, through Venner Road to the confluence with the main drain. In the existing case this flow path is poorly defined. Under the proposed relief conditions the base of this channel would be increased to between 8 metres and 12 metres.
- Widening of the eastern overland flow path from Fairfield Road, through Fehlberg Park to the confluence with the main drain. As with the western flow path, this channel is poorly defined under existing conditions. The proposed mitigation solution indicates a widening of the base of this channel to approximately 10 metres with 1v:4h batter slopes.
- Widening of the main channel downstream of the confluence with the eastern and western overland flow paths. The proposed mitigation option indicates that the concrete lined channel invert should be maintained with the channel widened by 12 metres. This widening may occur as 6 metres either side of the concrete invert or 12 metres to one side depending on the location of other elements within the floodplain such as houses. In the vicinity of the site, this would produce a channel with a top width of about 39 metres assuming 1 in 4 bank slopes.
- Diversion of part of the piped stormwater from sub-catchment G to the piped system of sub-catchment O. Under existing conditions, the pipe infrastructure at the outlet of sub-catchment G is not sufficient to convey the 2 year ARI discharge. Sub-catchment runoff in addition to the capacity of the pipe in the 2 year event will be diverted to sub-catchment O.

A number of other mitigation measures were recommended involving upgrading and replacing pipe drainage infrastructure throughout the catchment. The measures relevant to the currently proposed development only have been mentioned here. Figure 6 presents the proposed mitigation solution diagrammatically and is drawn from Appendix L of the LSMP.

5.4.2 Proposed Mitigation Solution

The extent to which the site is flooded for the 50 year local flooding event (Figure 2) is limited to within about 15 to 20 metres of the boundary of the site. Based purely on hydraulic grounds, the development could proceed to the limit of inundation (i.e. to within 15 to 20 metres of the eastern boundary of the site) without impacting on existing flooding.

However, the situation is complicated by the following factors:

- **Waterway corridor**

  A waterway corridor has been defined based on a nominal 30 metre offset from the centre of the drain (refer Figure 2). A width of between 38 metres and 57 metres on the eastern boundary of the site is within the defined waterway corridor.

  Performance Criteria P3 of the Filling and Excavation Code of City Plan requires that filling or excavation must not cause any increase in flooding or drainage problems. Acceptable Solution 3.1 to the performance criteria is to ensure that no filling or excavation is located within a waterway corridor. Compliance to the acceptable solution would quarantine a significant area without providing any hydraulic benefit. As an alternate solution, as noted above the site could be filled to the existing flood line (i.e. 15 to 20 metres from the property boundary) without adversely impacting on flood levels.

  Council has agreed to development up to a 25 metre setback from the property boundary on the eastern side, within the waterway corridor.

- **Flood Mitigation Works**

  The Yeronga LSMP (refer Section 3 and Section 5.4.1) notes the need for flood mitigation works to occur to reduce the incidence of flooding in areas upstream of the site.

  With reference to Figure 6, the mitigation solution recommended in the Yeronga LSMP significantly encroaches on the proposed development site. As no easement exists on the site for drainage, Council would either need to obtain permission from the land owner for works to be completed on the land or purchase the land for drainage purposes.

  Further, the proposed works will affect land that is presently free from inundation rather than being sited within the parkland to the east that is subject to inundation.

  Given the above, the logical location for the mitigation works is within the Council controlled open area to the east of the site rather than within the site.

Based on discussions with Council mitigation works within the open channel along the eastern boundary of the site will be limited to those proposed by Council. Some beautification of the channel will be carried out through landscaping however the essential properties of the channel will be preserved.

It can be noted that the proposed diversion of flow from subcatchment G (refer Section 5.4.1) was not included in the modelled mitigation measures. This will conservatively increase the modelled flow in the eastern tributary of the drain.

6. MODELLING RESULTS

6.1 General

As mentioned in the previous section, Council has agreed to a 25 metre setback from the property boundary on the eastern side at the limit of development within the site. The open drain will be retained in its existing conditions and beautification landscaping conducted above the 100 year flood line (3.95 m AHD) in order to ensure flood levels are not impacted by the proposed development. Considering these points, only the existing case was modelled for this study.

As noted in Section 5.3.1, the flood levels predicted by the XP-STORM modelling of the catchment differ from those calculated using MIKE-11 and HEC-RAS for the Yeronga LSMP. This can be attributed to the use of different hydraulic models for the two studies and, more significantly, the use of cross sections based on detailed survey for the current investigation.

When quantifying the performance of the proposed works, comparisons were made between the flood level estimates obtained from the current modelling and those presented in the Yeronga LSMP.

Peak flow rates and velocities calculated for the existing case scenario are provided in Appendix B.

6.2 Existing Situation

The peak flood levels calculated for the existing situation are presented in Table 8 also presents the peak flood levels reported in the Yeronga LSMP at cross sections in close proximity to nodes in the XP-STORM model.

In the western tributary upstream of the site, the flood level predicted by the XP-STORM model is less than that presented in the Yeronga LSMP by between 570 mm and 140 mm for the 2 and 50 year events respectively. In the eastern tributary upstream of the site, the flood levels predicted by the XP-STORM model are generally less than those presented in the Yeronga LSMP by up to 130 mm. The Council model predicts a level up to 100 mm lower than that obtained from the current model immediately upstream of the site.

Within the main channel in the vicinity of the site, the XP-STORM model predicted levels up to 200 mm higher than those presented in the Yeronga LSMP. In the vicinity of the Brisbane Corso the difference in flood level is greater, with the XP-STORM model predicting that the Corso will control levels upstream to a greater extent than calculated in the Yeronga LSMP modelling.

From the results presented above it was concluded that the current modelling provided a satisfactory prediction of flood levels within the catchment despite not exactly matching the results previously reported. However, this is to be expected given the differences in modelling and base data for the XP-STORM and Yeronga LSMP models (refer Section 6.1).

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Table 8 Existing Case Results

		2 Year Event Peak Levels			10 Year Event Peak Levels			50 Year Event Peak Levels		
Council Cross Section	XP-STORM Node	LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
Western Tributary										
	HM	-	4.46	-	-	4.59	-	-	4.67	-
	Trib A	-	4.05	-	-	4.16	-	-	4.36	-
Y2020	Trib B	4.27	3.64	-0.63	4.39	4.16	-0.23	4.52	4.36	-0.16
	Trib B.1	-	3.62	-	-	4.16	-	-	4.36	-
Y2010	TribC	4.23	3.62	-0.61	4.27	4.16	-0.11	4.35	4.36	0.01
Eastern Tributary										
	AB	-	4.67	-	-	4.90	-	-	5.16	-
	CDE	-	3.80	-	-	3.96	-	-	4.09	-
	FRd	-	3.80	-	-	3.96	-	-	4.09	-
	F	-	3.73	-	-	3.91	-	-	4.05	-
	G	-	3.61	-	-	3.79	-	-	3.94	-
Y140	Main1	3.85	3.73	-0.12	4.03	3.91	-0.12	4.17	4.05	-0.12
Y130	Main2	3.78	3.69	-0.09	3.95	3.88	-0.07	4.11	4.01	-0.09
Y120	Main3	3.71	3.64	-0.07	3.86	3.82	-0.04	4.07	3.96	-0.11
Y110	Main4	3.68	3.61	-0.07	3.83	3.79	-0.04	4.05	3.94	-0.11
Y100	Main5	3.65	3.57	-0.08	3.79	3.75	-0.04	4.02	3.94	-0.08
Y79	Main6	3.39	3.51	0.12	3.61	3.70	0.09	3.96	3.93	-0.03
Main Channel										
	Main 7	-	3.18	-	-	3.59	-	-	3.92	-
	Main 8	-	3.12	-	-	3.57	-	-	3.92	-
	Main 9	-	3.10	-	-	3.56	-	-	3.91	-
Y75	Main 10	2.98	3.06	0.08	3.24	3.54	0.30	3.69	3.90	0.21
	Main 11	-	3.04	-	-	3.53	-	-	3.89	-
Y70	Main 12	3.05	3.03	-0.02	3.34	3.52	0.18	3.79	3.89	0.10
	Main 13	-	3.02	-	-	3.52	-	-	3.89	-
	Main 14	-	3.00	-	-	3.52	-	-	3.89	-
Y60	Main 15	2.95	2.98	0.03	3.23	3.51	0.28	3.72	3.88	0.16
	Main 16	-	2.96	-	-	3.50	-	-	3.87	-
Y50	Main 17	2.87	2.93	0.06	3.12	3.48	0.36	3.67	3.86	0.19
	Main 18	-	2.92	-	-	3.48	-	-	3.86	-
Y40	Main 19	2.59	2.90	0.31	2.79	3.47	0.68	3.56	3.85	0.29
	Main 20	-	2.88	-	-	3.46	-	-	3.85	-
	Main 21	-	2.85	-	-	3.45	-	-	3.84	-
Y30	Main22	2.03	2.84	0.81	2.48	3.44	0.96	3.5	3.84	0.34
u/s Corso	Main23	1.75	2.82	1.07	2.5	3.44	0.94	3.52	3.83	0.31
d/s Corso	Main24	1.4	2.65	1.25	1.63	3.10	1.47	1.9	3.31	1.41

		2 Year Event Peak Levels			10 Year Event Peak Levels			50 Year Event Peak Levels		
Council Cross Section	XP-STORM Node	LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
	Main 25	-	2.64	-	-	3.09	-	-	3.31	-
	Main 26	-	2.48	-	-	2.93	-	-	3.14	-
Nodes off Main Channel										
	O	-	3.03	-	-	3.52	-	-	3.89	-
	P	-	2.93	-	-	3.48	-	-	3.86	-
	Q	-	2.84	-	-	3.44	-	-	3.84	-
	R	-	6.09	-	-	6.13	-	-	6.16	-
	N	-	3.03	-	-	3.52	-	-	3.89	-

Note *Nodes on eastern boundary of site shaded*
Refer to Figure 3 and Figure 5 for node locations
Council cross sections column specifies section at or near XP-Storm node location

6.3 Stormwater Drainage Network Upgrades

Detailed survey of the site indicates two stormwater pipes that traverse the site as shown on Figure 7. The development proposed for the site makes it necessary to realign these pipes.

- ***Cansdale Street***

Existing stormwater infrastructure includes a sag on Cansdale Street approximately 77 metres north of the intersection of Venner Road and Cansdale Street. A total catchment of 3.6 ha drains to this point and is then conveyed to the open channel via a 900 mm diameter stormwater pipe. A field inlet is located approximately 89 metres north east of the sag.

The proposed development for the site includes the construction of a basement car park in the north western corner of the site making it is necessary to realign this pipe as shown in Figure 7. As part of the conditions required by Council, it was also necessary to upgrade this pipe to entirely convey the 100 year discharge.

It was decided to alter the pipe alignment to pass around the basement car park and connect to the existing field inlet. In order to design the upgraded pipe line such that no adverse impacts were experienced at Cansdale Street a hydraulic grade line analysis was carried out. The full results of these calculations are reported in Appendix C. Key outcomes from this assessment are summarised in Table 9. The total length of pipe has increased from 263 metres to 280 metres. The results of this assessment will be finalised during detailed design.

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Table 9 Cansdale Street Pipe Upgrade Results

Pipe Section	A	B	C
Contributing Catchment Area (ha)	3.15	0.47	0.98
Total Flow Q100 (m^3/s)	1.90	2.17	2.72
Pipe Section Length (m)	40.3	66.4	172.9
Pipe Diameter (mm)	900	1050	1200
Upstream invert level (m AHD)	5.00	4.00	2.50
Downstream Invert Level (m AHD)	4.50	2.50	1.35
Upstream Head (m AHD)	4.31	3.41	2.19
Downstream Head (m AHD)	3.86	2.99	1.35

- ***South East Corner***

As shown on Figure 7, a single 1650 mm diameter stormwater pipe crosses the south eastern corner of the development site. This pipe conveys stormwater runoff from catchments upstream and discharges it into the upstream end of the open drain, at the point where piped runoff from the west also enters the drain. Again, due to the proposed development it was necessary to realign this pipe to pass around the boundary of the site rather than through it. The proposed pipe alignment is shown on Figure 7.

Analysis of the effect of this realignment was carried out using the XP-STORM model developed for the flood assessment. The addition of a man hole and extra pipe length to this section of the stormwater drainage system means that additional losses are incurred. In order to ensure no worsening of flood levels in the vicinity of the pipe, it was necessary to upgrade the pipe by adding a second 1650 diameter pipe. Current invert levels were maintained. Based on the alignment shown in Figure 7 it is clear that an extra section of pipe has been added. The total length of pipe has increased from 77 metres to 96 metres. The results of this analysis are summarised in Table 10. The results of this assessment will be finalised during detailed design.

Table 10 South East Corner Pipe Upgrade Results

	50 year ARI			10 year ARI		
Node	Existing WSL (mAHD)	Developed WSL (mAHD)	Mitigated WSL (mAHD)	Existing WSL (mAHD)	Developed WSL (mAHD)	Mitigated WSL (mAHD)
Trib B	4.36	4.38	4.26	4.16	4.19	3.98
Trib B.1	4.36	4.38	4.26	4.16	4.19	3.98
Trib C	4.36	4.38	4.26	4.16	41.9	3.98

	2 year ARI		
Node	Existing WSL (mAHD)	Developed WSL (mAHD)	Mitigated WSL (mAHD)
Trib B	3.64	3.77	3.58
Trib B.1	3.62	3.76	3.49
Trib C	3.62	3.76	3.46

BCC.058.8289

7. CONCLUSION

It is proposed to construct a retirement village on a site at the corner of Cansdale Road and Venner Road in Yeronga (the study site). Figure 1 shows the location of the site.

Development of the site is constrained by the presence of a waterway corridor that affects the eastern part of the site (refer Figure 2) and flood mitigation measures proposed in the *Yeronga Local Stormwater Management Plan* (June 2003) (refer Figure 6). The waterway corridor boundary is approximately 38 metres from the eastern boundary of the site, thus limiting development within this area. However, Council has agreed to a 25 metre set back from the eastern boundary. The open drain will remain unchanged under developed conditions thus no impact on flood levels is expected.

Some stormwater drainage infrastructure has been upgraded to accommodate for the aspects of the proposed development such as basement car parks. The Cansdale Street sag has been redesigned and the pipe realigned to convey the 100 year ARI discharge to the open channel, around the edge of the development. Similarly, the pipes traversing the south eastern corner of the development have also been upgraded and realigned.

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FIGURES

Figure 1 Locality Plan

Figure 2 Drainage Paths

Figure 3 XP-STORM Model Layout

Figure 4 Catchment Boundaries

Figure 5 Cross Section Locations

Figure 6 Previous Proposed Mitigation Option

Figure 7 Stormwater Pipe Locations

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APPENDIX A

Peak Flows and Velocities

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	Existing Case Peak Velocities (m/s)		
Node	Q50	Q10	Q2
G-Main4	0.60	0.29	0.17
O-Main12	0.25	0.65	0.22
P-Main17	0.25	0.25	0.24
F-Main1	0.29	0.31	0.25
R-Main22	0.15	0.12	0.09
N-Main12	0.20	0.20	0.19
Main22-23	1.61	1.61	1.52
Main24-25	-0.38	-0.36	-0.29
Main25-26	0.74	0.74	0.73
Main17-18	0.99	1.00	1.01
Main18-19	0.87	0.86	0.81
Main19-20	-0.84	-0.85	-0.85
Main20-21	1.05	1.03	1.03
Main21-22	1.00	0.99	1.01
Main12-13	0.90	0.88	0.85
Main13-14	1.09	1.08	1.04
Main14-15	1.20	1.19	1.15
Main15-16	0.99	0.99	0.95
Main16-17	-0.91	-0.89	-0.88
Drain4	-	-	-
Main10-11	1.00	0.99	1.01
Main11-12	0.71	0.68	0.64
Drain3	-	-	-
Drain1	-	-	-
Drain2	-	-	-
AB-CDE	0.82	0.77	0.70
CDE-FRd	0.39	0.34	0.30
Q-Main22	0.65	0.56	0.40
244.1	1.00	0.83	0.66
PipesL21	1.14	1.15	1.20
CorsoPipes	2.33	1.86	1.33
PipesD5	-	-	-
OverlandC	0.34	0.29	0.23
PipesC	1.10	1.06	0.99
OverlandD	0.45	0.38	0.47
PipesD	0.93	0.89	0.87
OverlandE	-0.33	-0.27	-0.17
PipesE	0.97	0.99	0.91
OverlandA	0.39	0.34	0.23
PipesA	1.33	1.31	1.21

	Existing Case Peak Velocities (m/s)		
OverL47	0.64	0.54	0.41
PipesL47	2.09	2.07	2.08
OverL48	0.57	0.47	0.27
PipesL48	2.35	2.32	2.25
OverM5D2	-	-	-
PipesM5D2	-	-	-
Weir	0.00	0.00	0.00
FREE	1.00	1.00	1.00

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	Existing Case Peak Discharges (m^3/s)		
Node	Q50	Q10	Q2
G-Main4	8.45	4.03	2.27
O-Main12	2.24	5.87	2.00
P-Main17	3.44	3.55	3.40
F-Main1	3.89	3.41	3.12
R-Main22	3.04	2.03	1.10
N-Main12	2.38	2.46	2.24
Main22-23	20.31	16.12	11.42
Main24-25	-17.07	-13.28	-8.79
Main25-26	20.13	15.99	11.39
Main17-18	20.03	15.25	10.28
Main18-19	19.11	14.99	10.18
Main19-20	-16.87	-12.09	-7.86
Main20-21	18.50	14.61	10.07
Main21-22	18.21	14.45	10.05
Main12-13	22.83	16.66	10.46
Main13-14	21.61	15.85	10.22
Main14-15	21.00	15.54	10.16
Main15-16	20.25	15.27	10.08
Main16-17	-17.61	-12.21	-7.82
Drain4	-	-	-
Main10-11	23.35	16.53	10.16
Main11-12	21.97	16.12	10.03
Drain3	-	-	-
Drain1	-	-	-
Drain2	-	-	-
AB-CDE	11.12	8.02	6.61
CDE-FRd	14.88	10.04	5.36
Q-Main22	4.88	3.48	1.98
244.1	14.61	9.23	4.36
PipesL21	1.08	1.09	1.14
CorsoPipes	5.04	4.00	2.85
PipesD5	-	-	-
OverlandC	10.51	6.67	3.15
PipesC	1.09	0.99	0.94
OverlandD	10.04	6.33	2.89
PipesD	0.84	0.84	0.82
OverlandE	-8.01	-4.50	-1.31
PipesE	0.92	0.93	0.86
OverlandA	11.39	7.47	3.00
PipesA	1.51	1.48	1.37

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	Existing Case Peak Discharges (m^3/s)		
OverL47	14.95	9.23	3.53
PipesL47	4.56	4.52	4.48
OverL48	17.23	10.10	2.70
PipesL48	5.13	5.08	4.92
OverM5D2	-	-	-
PipesM5D2	-	-	-
Weir	0.00	0.00	0.00

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APPENDIX B

Hydraulic Grade Line Calculations – Cansdale Street

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Hydraulic Grade Line Calculations for Cansdale Street Sag
Major Event Q100

	Catchment Calcs								Pipe Calcs																			
Section	Sub Catch Contributir	Area Contribu	Sub Cat tc	Intensity	fi	C100	CA	Runoff	tc	Intensity	Total CA	Total Flow	Diameter	Velocity	u/s IL	d/s IL	Length	A	R	flow time in pipe	Head loss 0.013	Du/Do	Qg/Qo	MH Loss	MH Loss		Actual head	
		m²	min	mm/hr			ha	m³/s	min	mm/hr	ha	m³/s	m	m/s	mAHD	mAHD	m	m²	m	min	m			coeff	m		mAHD u/s	mAHD d/s
A		31511.7	15	217	0.7	1.000	3.15	1.899	15.00	217.0	3.15	1.899	0.900	2.986	5.00	4.50	40.3	0.64	0.23	0.22	0.443		[illegible]	1.0	0.484		4.305	3.862
B		4661.3	5	324	0.7	1.000	0.47	0.420	15.22	215.7	3.62	2.167	1.050	2.502	4.00	2.50	66.4	0.87	0.26	0.44	0.418	0.857	0.116	2.5	0.796		3.408	2.990
C		9808.8	5	324	0.7	1.000	0.98	0.883	15.67	213.0	4.60	2.721	1.200	2.406	2.50	1.35	172.9	1.13	0.30	1.20	0.842	0.878	[illegible]	2.5	0.737		2.192	1.350

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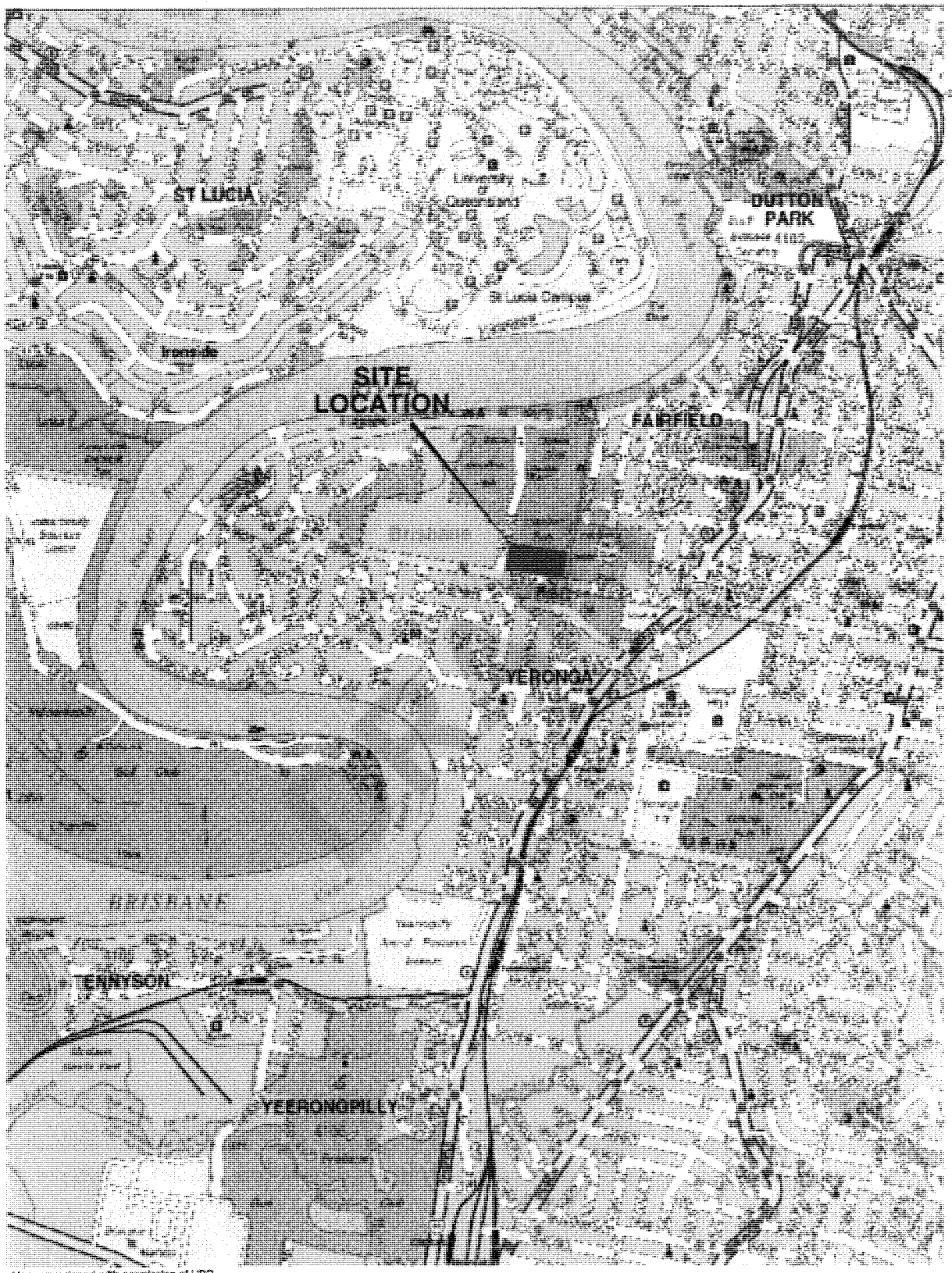

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N.T.S.

FIGURE 1
SITE LOCALITY PLAN

Rev: Orig. Date: September 2005

Project No.: 3500/34

Harrisons Real Estate Development

PRINT DATE: 27 March 2006 - 8:50am

CAD FILE: J:\3500\3500-34\Acad\Flood Study\Figure 1 - Site Location Plan.dwg

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LEGEND

- SITE BOUNDARY
- DRAINAGE PATH
- WATERWAY CORRIDORS
- Q50 Existing Inundation (Yeronga LSMP)

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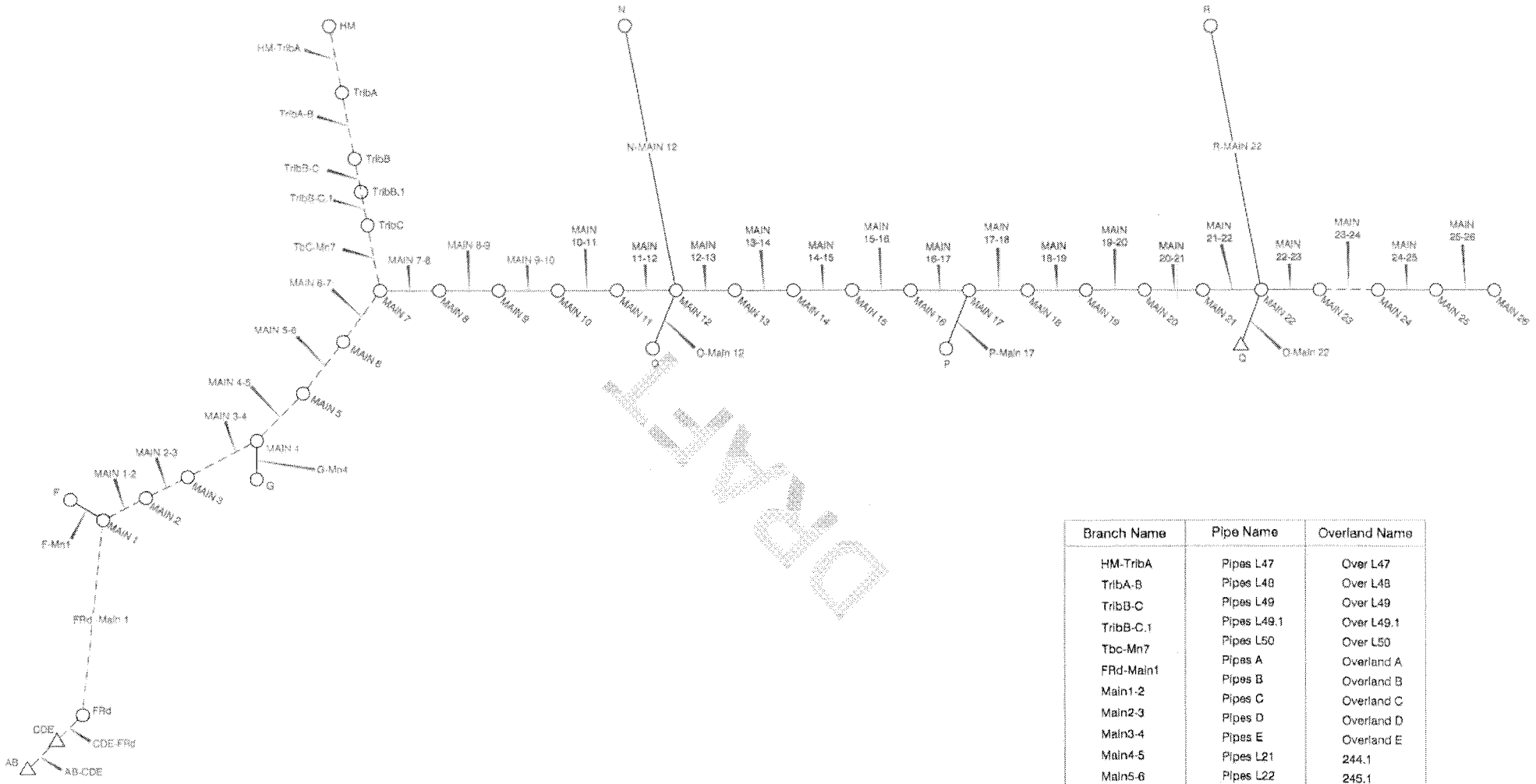
FIGURE 2
DRAINAGE PATHS

Rev: Orig. Date: September 2005

Harrisons Real Estate Development

Project No.: 3600/34



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Branch Name	Pipe Name	Overland Name
HM-TribA	Pipes L47	Over L47
TribA-B	Pipes L48	Over L48
TribB-C	Pipes L49	Over L49
TribB-C.1	Pipes L49.1	Over L49.1
Tbc-Mn7	Pipes L50	Over L50
FRd-Main1	Pipes A	Overland A
Main1-2	Pipes B	Overland B
Main2-3	Pipes C	Overland C
Main3-4	Pipes D	Overland D
Main4-5	Pipes E	Overland E
Main5-6	Pipes L21	244.1
Main6-7	Pipes L22	245.1
Main23-24	Pipes L23	246.1
Drain 5	Corso Pipes	Weir
	Pipes D5	-

LEGEND

MULTI LINKS

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Rev: 1 Date: 27 March 2006

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FIGURE 3

XP-STORM MODEL LAYOUT

Project No.: 3500034

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Cardno



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75 0 75 150 225 300 375m
1:7500

Scale 1:7500 (A3)

FIGURE 5
CROSS SECTION LOCATIONS

Rev: Orig. Date: September 2005

Harrisons Real Estate Development

Project No.: 3600/34

BCC.058.8303

Cardno



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40 0 40 80 120 160 200m
1:4000

Scale 1:4000 (A3)

FIGURE 6
PREVIOUS PROPOSED MITIGATION OPTIONS

Rev: Orig. Date: September 2005

Project No.: 3500/34

Harrisons Real Estate Development

Cardno



LEGEND

- Pipe Catchment Boundaries
- Existing Stormwater Pipe Locations
- Proposed Stormwater Pipe Locations

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Rev: Orig. Date: 27 March 2006

Harrisons Real Estate Development

Scale 1:1500 (A3)

FIGURE 7
STORMWATER PIPE LOCATIONS

Project No.: 3500/34

DRAFT

APPENDIX D

JW Concepts Landscape Plans

DRAFT

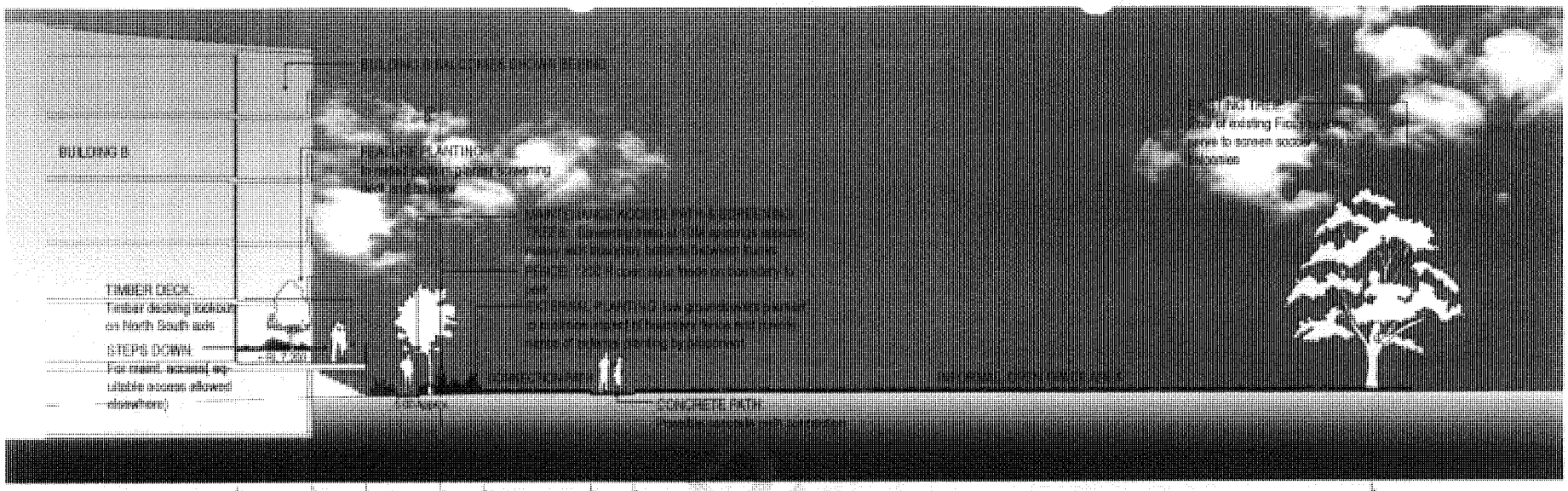


YERONGA VILLAGE
PDR Hardware Real Estate Development
Yerong Rd, Yerongo

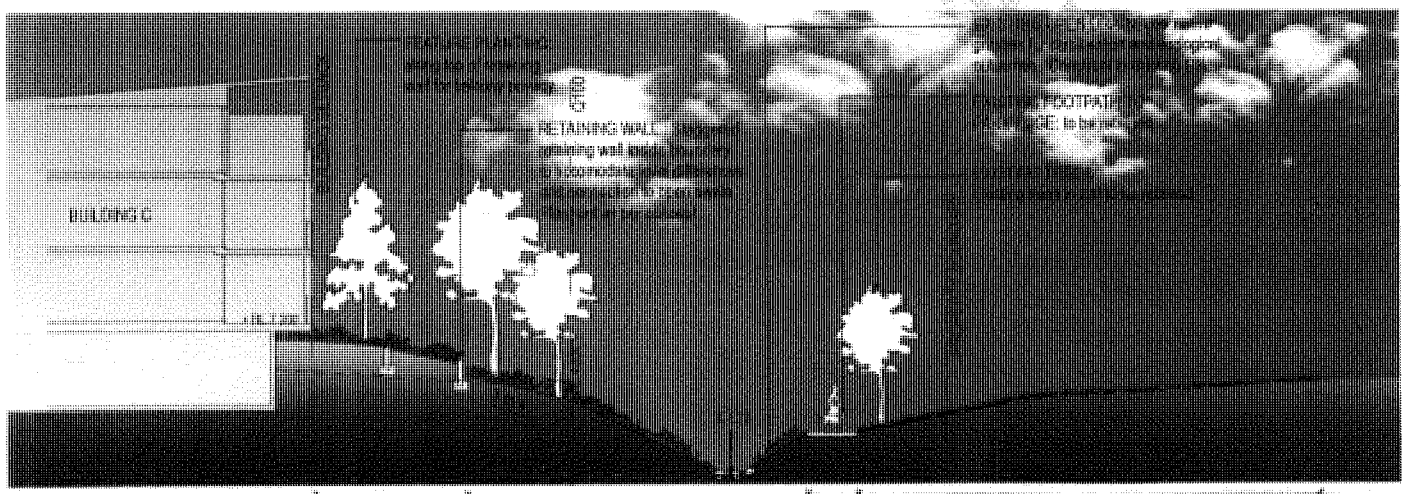
MP03> LANDSCAPE MASTER PLAN

1540 MASTERPLAN ISSUE B 22.03.06

BCC.058.8307



01 MP04 LANDSCAPE SECTION
Scale 1:200



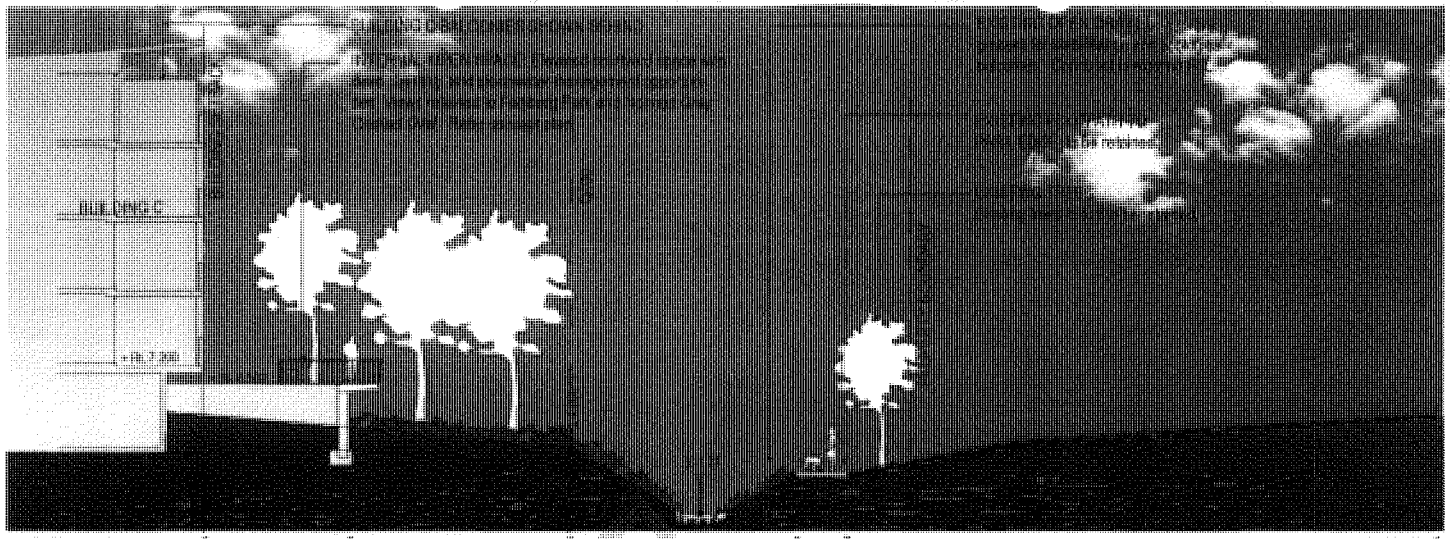
02 MP04 LANDSCAPE SECTION
Scale 1:200

JW
1546 MASTERPLAN ISSUE B 27.03.06

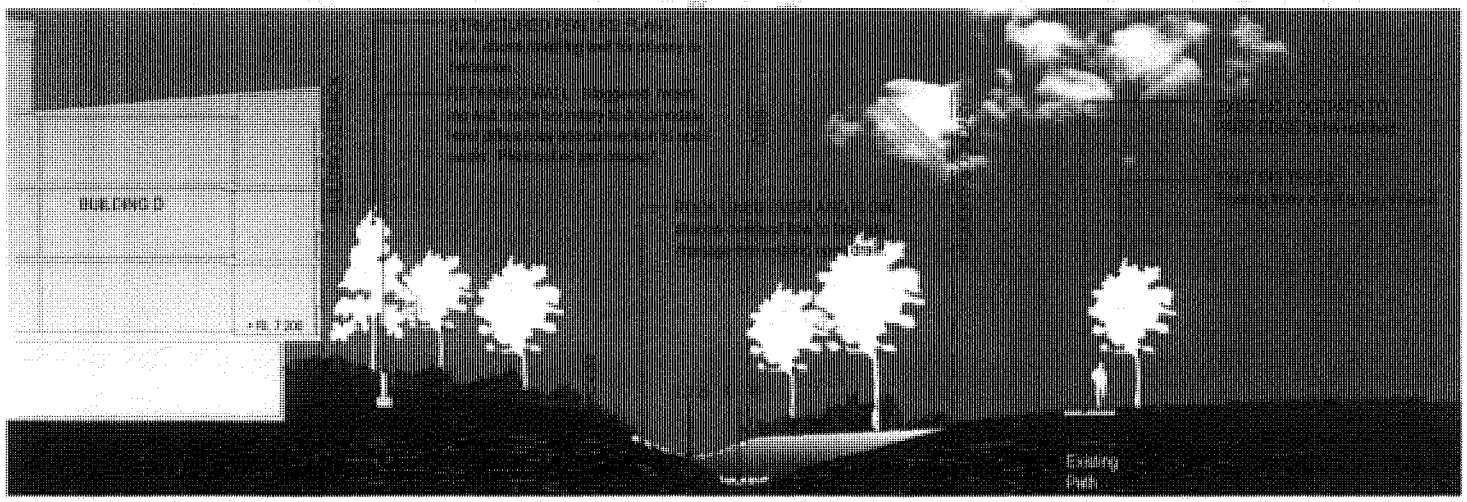
YERONGA VILLAGE
FOR Harrisons Real Estate Development
Venner Rd, Yeronga

MP04> Landscape Sections - Sheet 1

BCC.058.8308

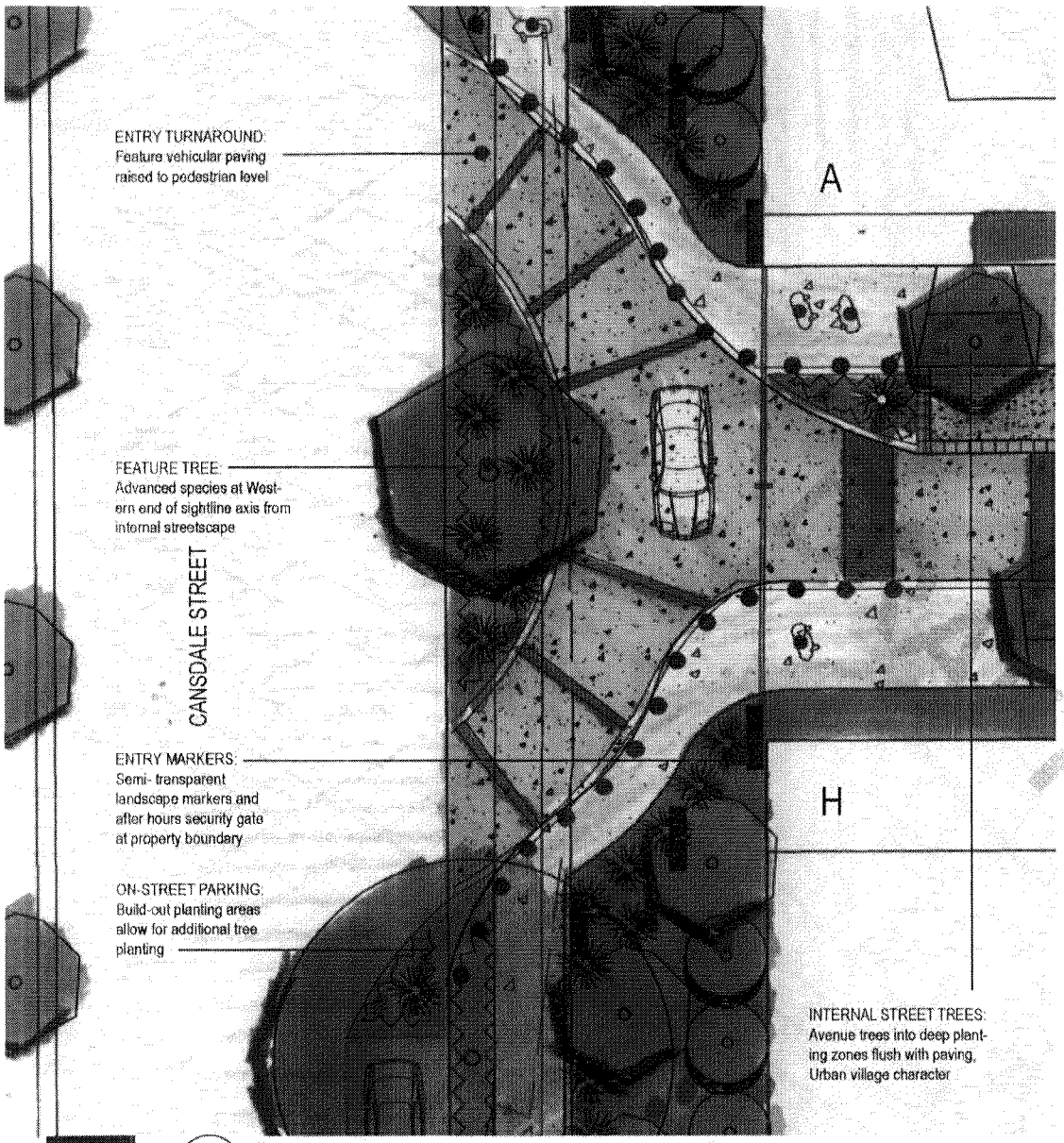


03 MP05 LANDSCAPE SECTION
Scale 1:200

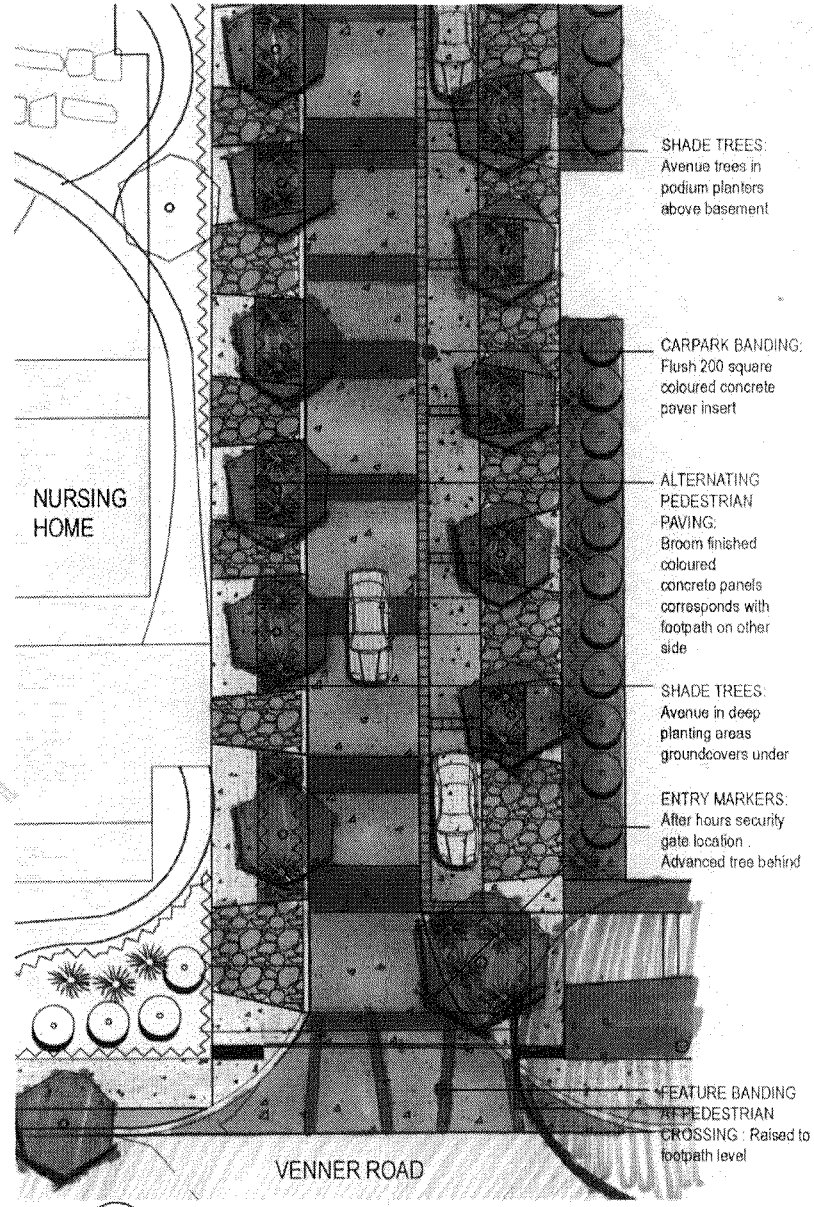


Structured Planting Zone
Ecological Planting Zone
Overland Flow
Ecological Planting Zone
Open drain (dashed behind)
Existing Park/Fields

04 MP05 LANDSCAPE SECTION
Scale 1:200



A MP06 CANSDALE STREET ENTRY - DETAIL PLAN
Scale 1:200 @ A3



B MP06 VENNER ROAD EXIT - DETAIL PLAN
Scale 1:200 @ A3

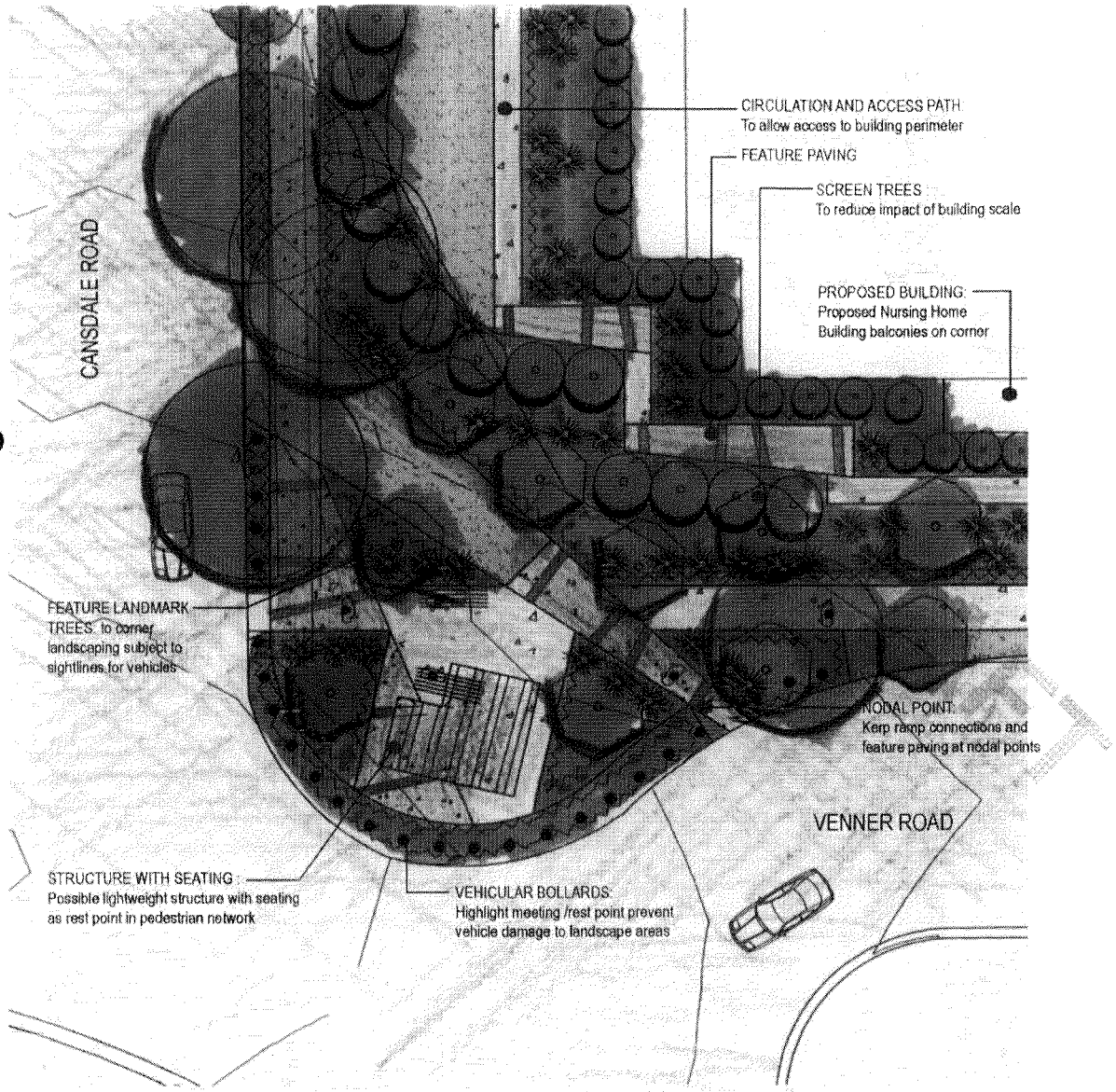


YERONGA VILLAGE
FOR Harrisons Real Estate Development
Venner Rd. Yeronga

MP06> Landscape Details - Sheet 1

1540 MASTERPLAN ISSUE B 27.03.06

BCC.058.8310



C
MP07

VENNER ROAD/ CANSDALE STREET CORNER - DETAIL PLAN

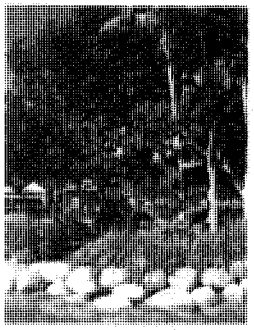
Scale 1:200 @ A3

JW
1540 MASTERPLAN ISSUE B 27 03 08

YERONGA VILLAGE
FOR Harrisons Real Estate Development
Venner Rd. Yeronga

MP07> Landscape Details - Sheet 2

BCC.058.8311



A.



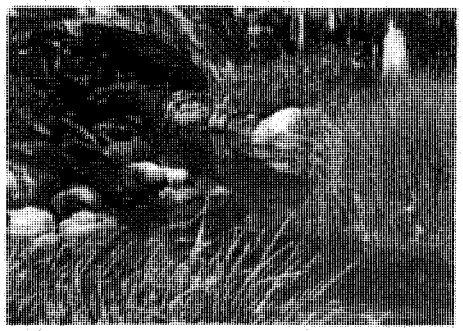
B.



C.

IMAGE KEY

A. Boulder edging / low walls to provide bank stability and
B. deep planting areas alongside constructed swales.
C. Use of graded rock sizes, curving alignments and pool
D. and riffle sections to reflect natural channel conditions.
E. Possible flush kerbs and gravel mulch for harvesting of
F. rainwater adjacent to hard-stand areas.
G. Above-ground overland flows incorporated into landscaping.
H. Bollards to prevent vehicle access at flush kerbs.
I. Riverine planting into benched areas above inverts for water
J. quality and amenity.
Jutematting in steep areas for
K. bank stabilisation and weed control.
L. Boardwalk crossings at key points for park permeability.



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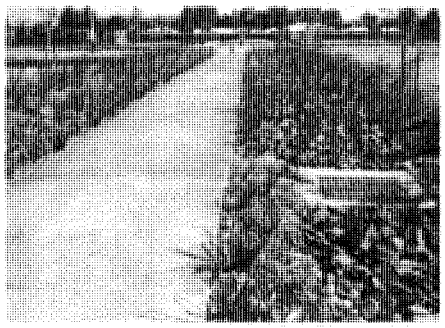
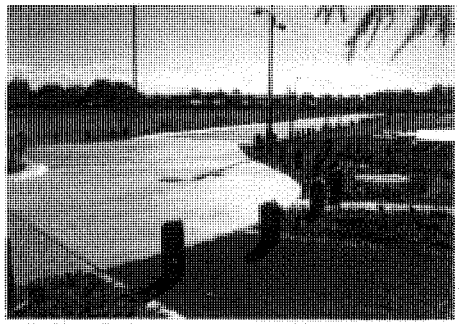


F.



G.



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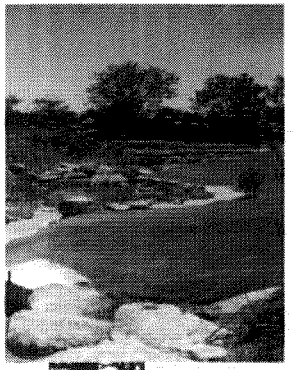
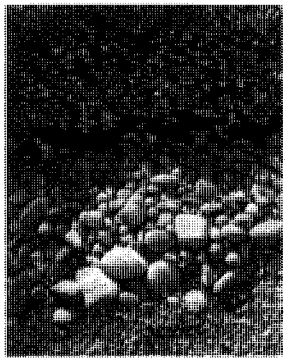








L

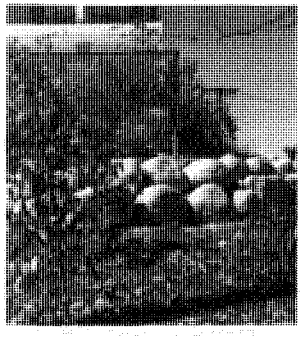
JW
1540 MASTERPLAN ISSUE R 27.03.08

YERONGA VILLAGE
FOR Harrisons Real Estate Development
Venner Rd, Yeronga

MP08> ecological sustainability initatives

BCC.058.8312

A.



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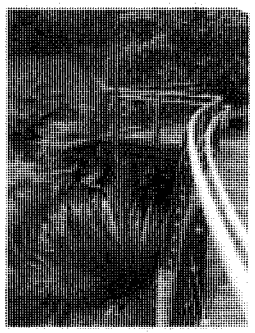

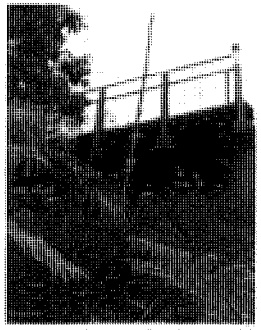

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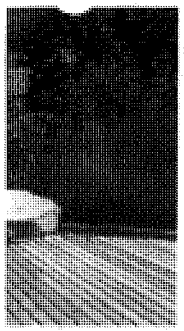

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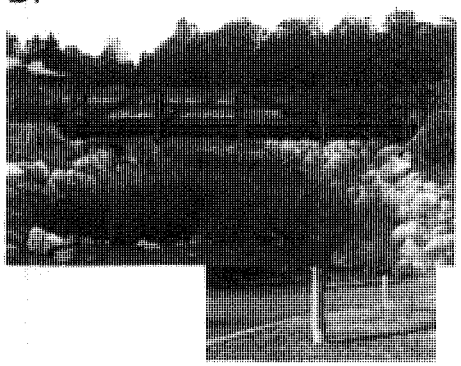

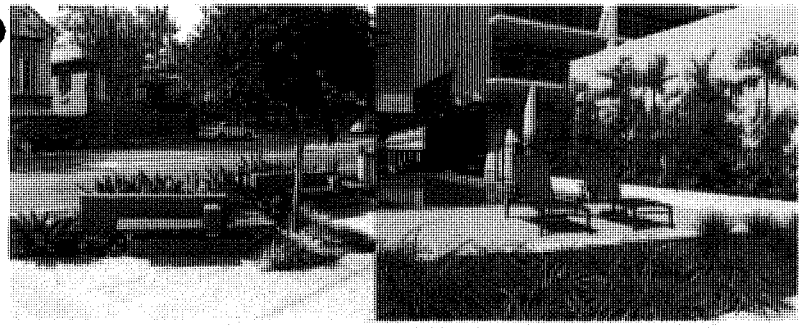

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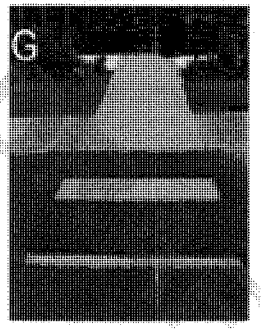
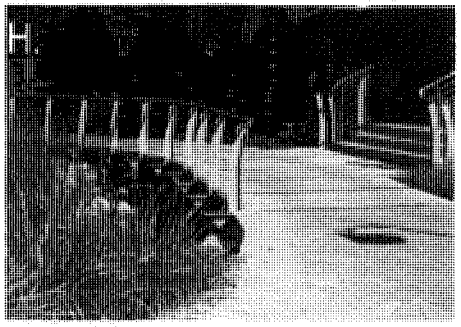
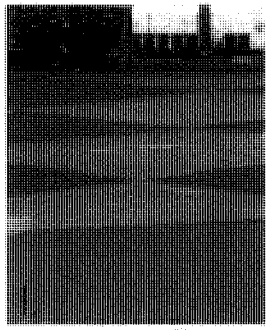


IMAGE KEY

A. Rockwork to stabilise batters on densely planted bunds
B. Raised timber platforms over rockwork.
C. Large rocks and timber decking over drainage line.
D. Boardwalk style connections from communal area to park
E. Outdoor furniture and seating opportunities under shade
F. Pool area solar access - selective tree placement.
G. Private courtyard paths extend into communal areas
H. High quality paving and balustrade finishes at park edge.
I. Detailed paving finishes in high use common areas.
J. Ramping, handrails & tactiles to meet disability mobility A.S.
K. Deep planting areas adjacent to outdoor areas.
L. Possible water feature - ambient noise.
M. Possible permeable paving finish for passive irrigation.

H.





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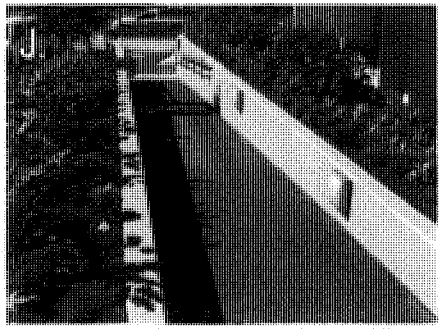


K.



M.



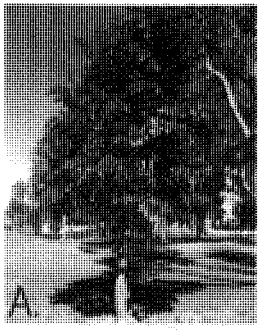


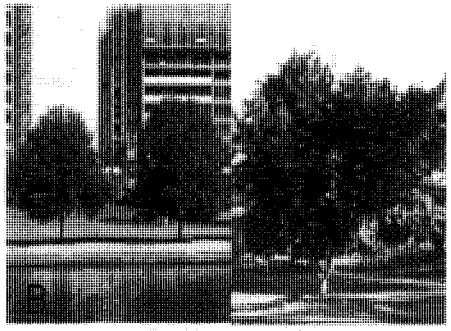
JW
15AU MASTERPLAN ISSUE B 27.03.06

YERONGA VILLAGE
FOR Harrisons Real Estate Development
Venner Rd. Yeronga

MP09> landscape finishes palette

BCC.058.8313







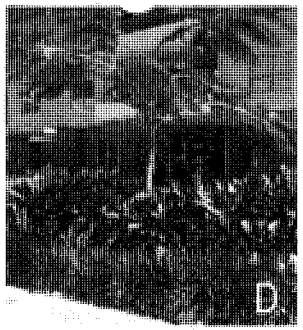










IMAGE KEY

A. Brachychiton acerifolius
Feature tree.

B. Syzygium sp./ Ficus sp. Park shade tree.

C. Eucalyptus tesselaris
Park buffer tree.

D. Peltophorum pterocarpum
Avenue tree.

E. Xanthostemon chrysanthus
Courtyard feature tree.

F. Doryanthes excelsa
Feature plant

G. Zamia furfuracea
Feature pots.

H. Cycas revolutum
Feature plant.

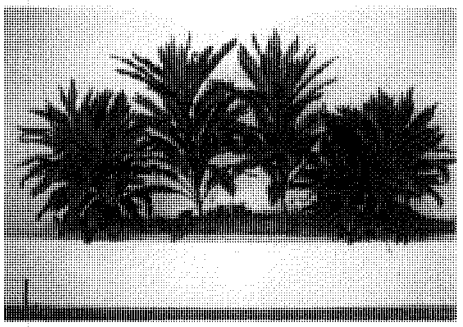
I. Cordyline fruticosum sp.
Feature plant against walls.

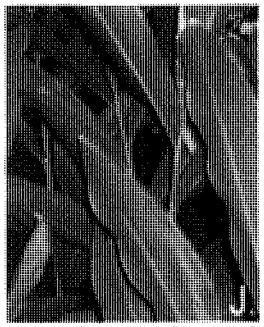
J. Alpinea purpurea
Screening plant.

K. Variegated Heliconia
Screening plant.

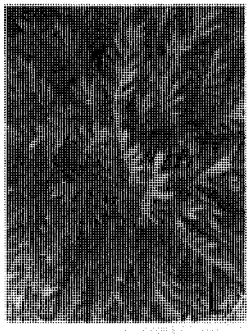
L. Philodendron Xanadu
Dense groundcover.

M. Anigozanthus sp.
Colourful groundcover.











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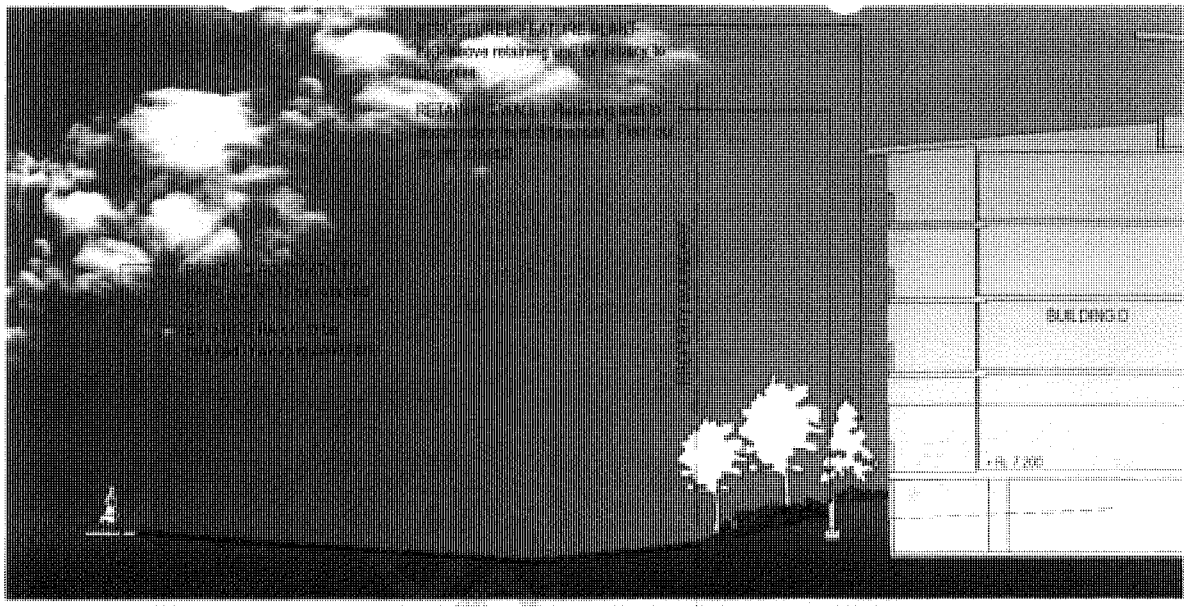
1540 MASTERPLAN ISSUE 6 27.03.06

YERONGA VILLAGE
FOR Harrisons Real Estate Development
Venner Rd. Yeronga

MP10> landscape planting palette



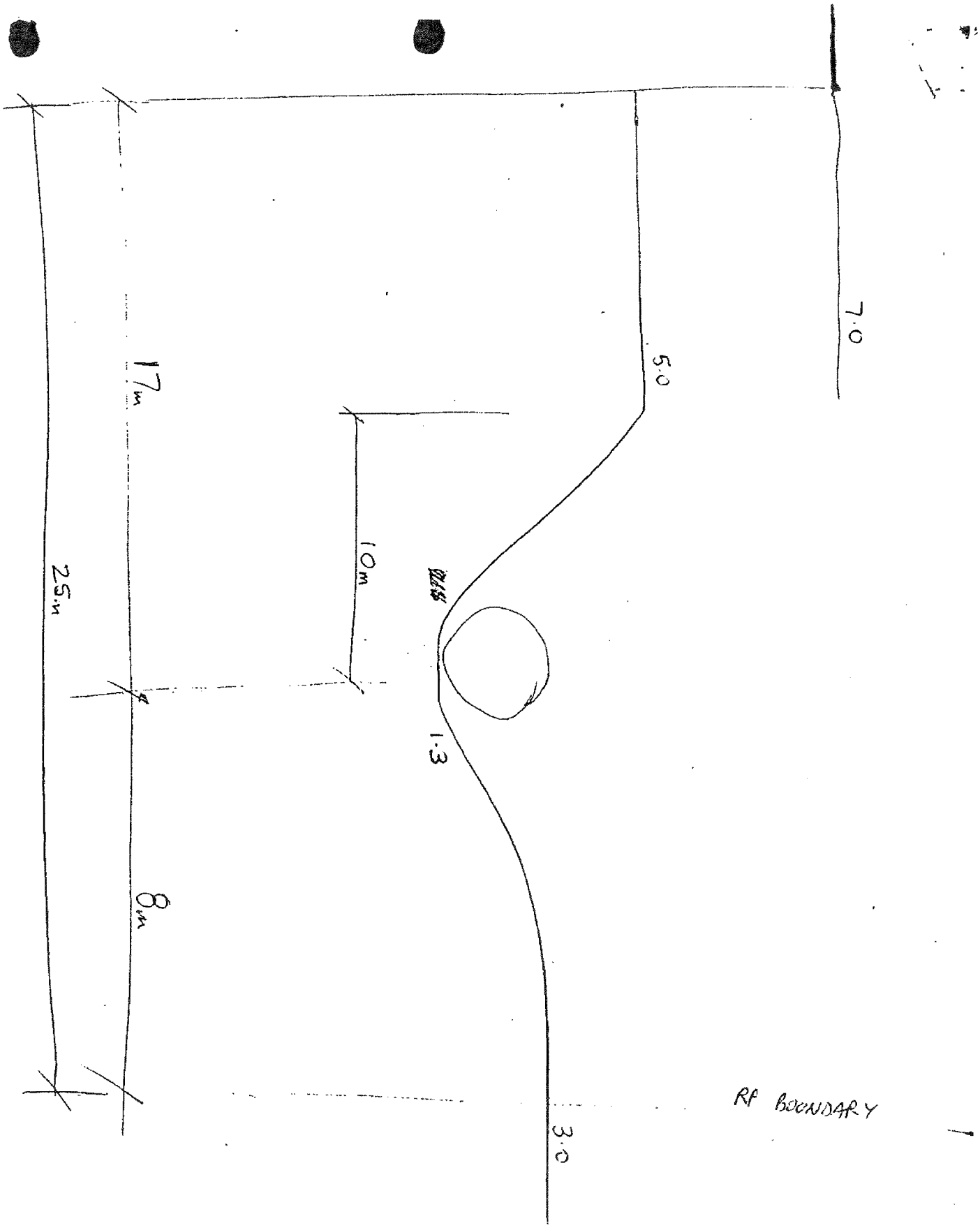
05 MP11 LANDSCAPE SECTION
Scale 1:200

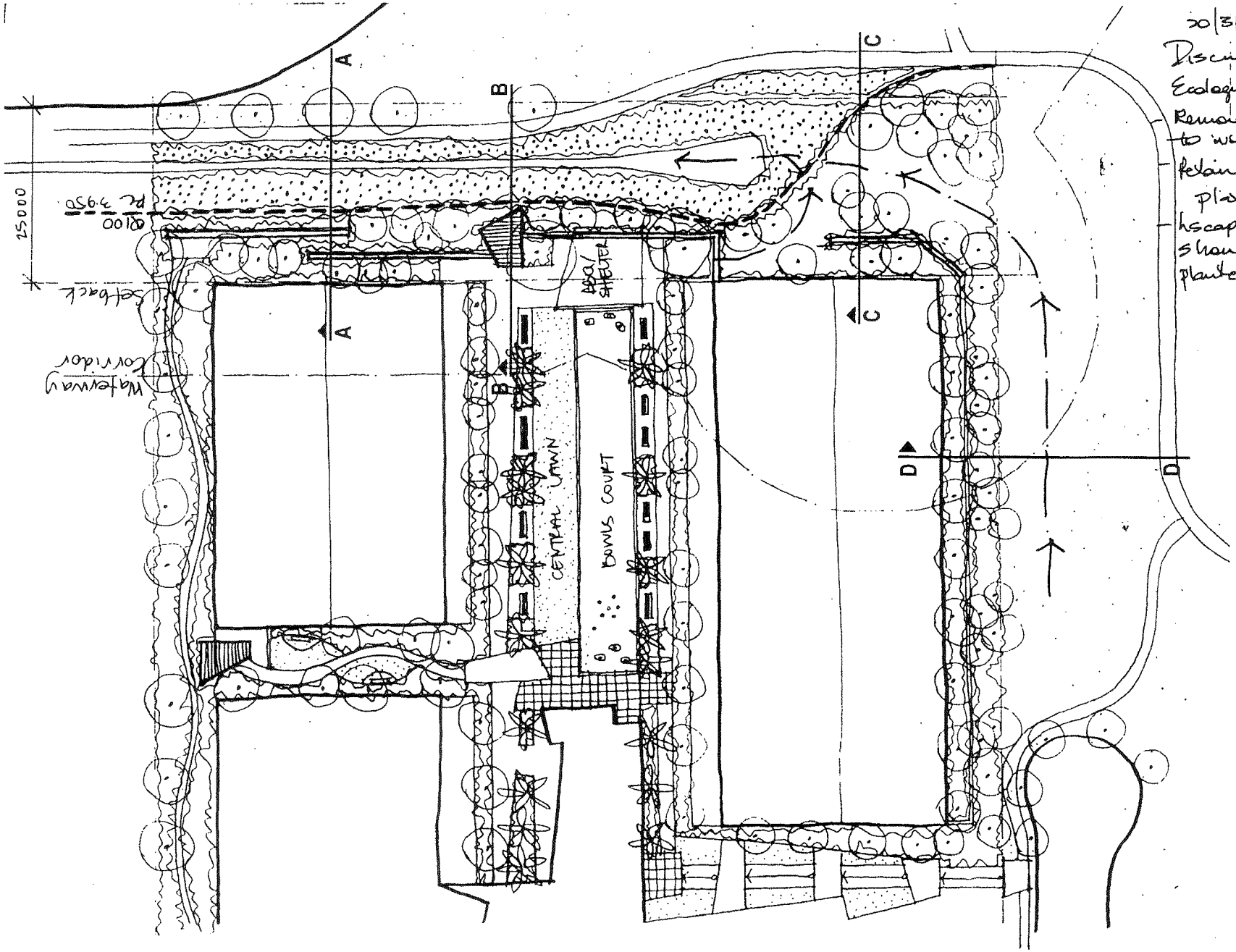
DRAFT

JW
1540 MASTERPLAN ISSUE B 27 03 06

YERONGA VILLAGE
FOR Harrisons Real Estate Development
Venner Rd, Yeronga

MP11> Landscape Sections - Sheet 3

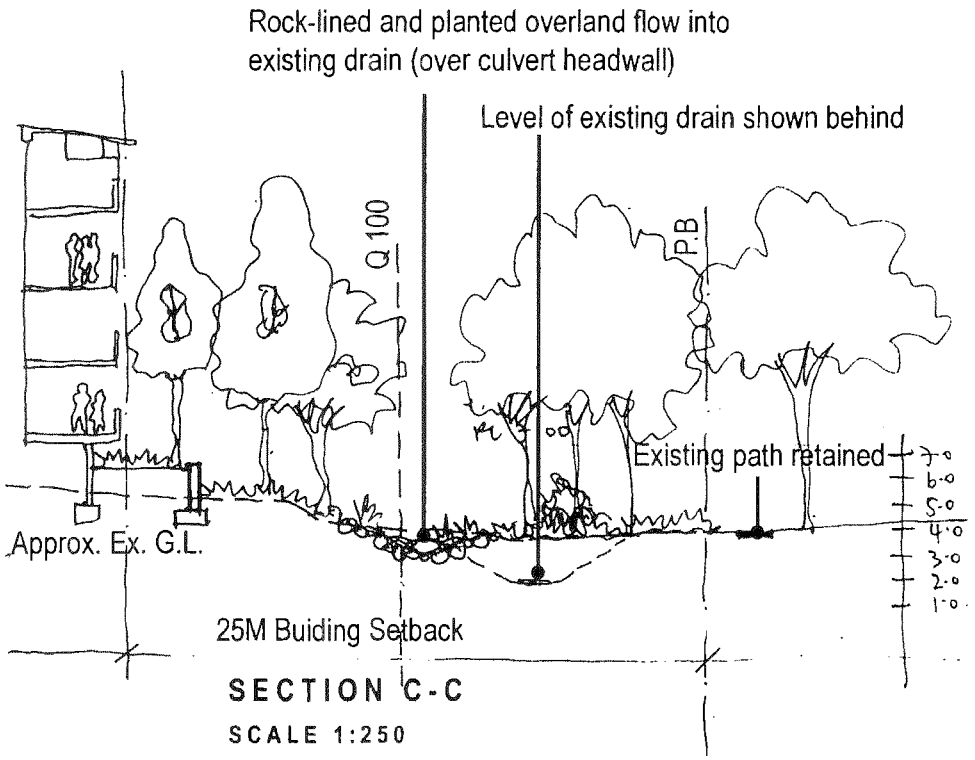

7.0
5.0
17m
10m
25m
8m
1.3
3.0
RF BOUNDARY



20/3/06
Discussed with Ecologist Paul M.
Remove bbq structure to within court area
Retain viewing platform
Lscape plan to show vet walls planted to obscure.

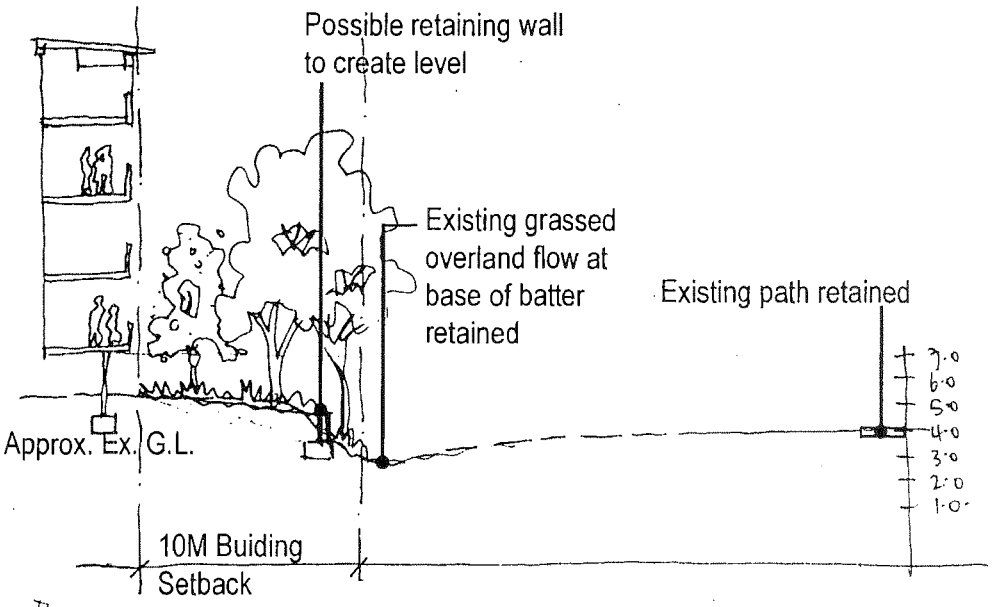
Phoned 21/3/06
Simon M. PMM
Advised above

REVISED LANDSCAPE CONCEPT PLAN
YERONGA VILLAGE
1:500@A3 FOR DISCUSSION
14.03.06



SECTION C-C

SCALE 1:250



SECTION D-D

SCALE 1:250

jw

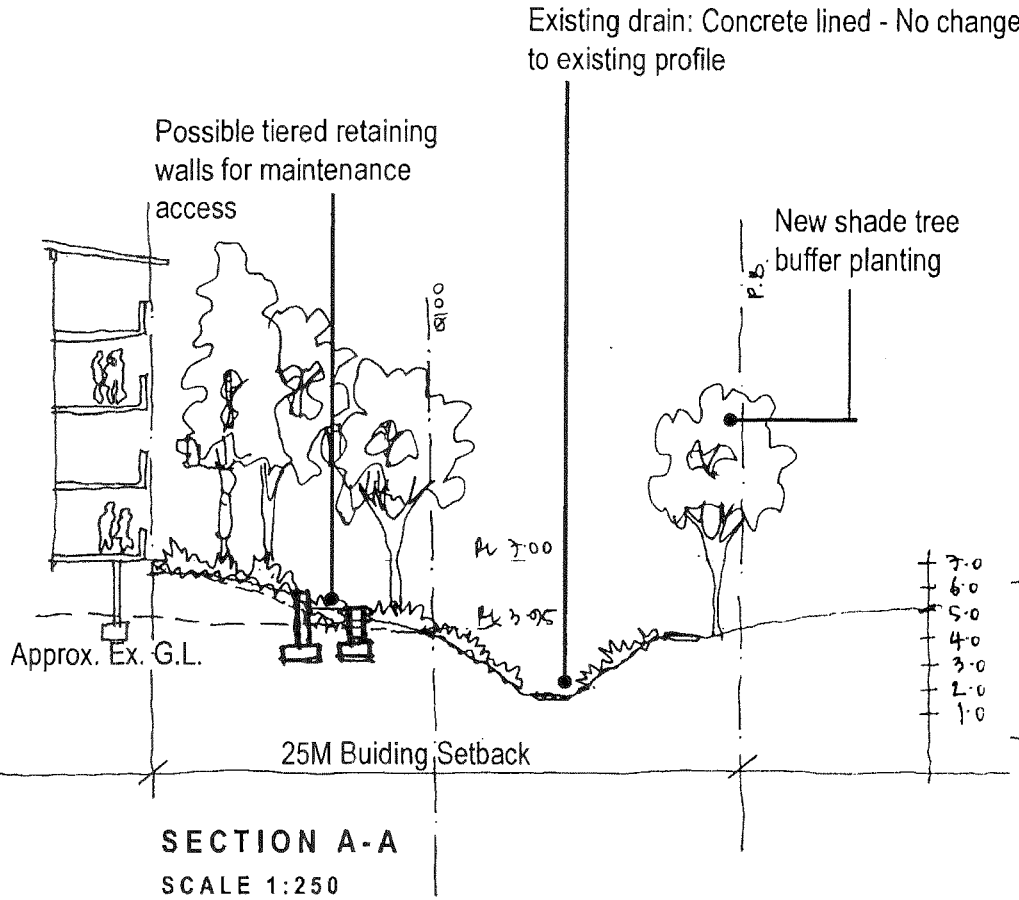
1540 LCONCEPT 05.09.05

YERONGA VILLAGE

FOR Harrisons Real Estate Development

Venner Rd, Yeronga

BCC.058.8318



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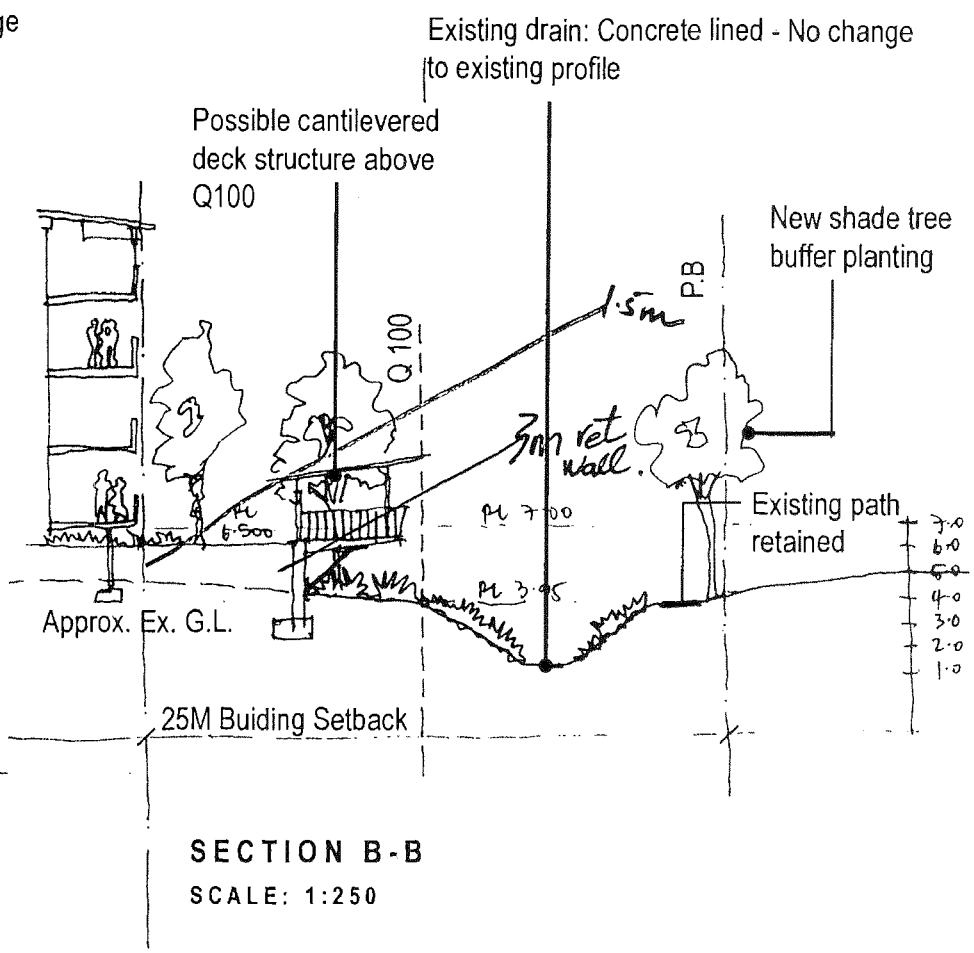

SECTION B-B

SCALE: 1:250

jw
1540 LCONCEPT 05.09.05

YERONGA VILLAGE

FOR Harrisons Real Estate Development
Venner Rd, Yeronga



BRISBANE CITY

Date: 17/03/2006
Time: 11:12:24
Userid: pas4
Scale: 1:1500

Themes:
Cadastre
Property Holdings
Non Urban Zone
CP Waterways
Aerial Photo 2005

Disclaimer:

"While every care is taken by Brisbane City Council (BCC) and Dept. of Natural Resources & Mines (NRM) to ensure the accuracy of this data, BCC and DNR jointly and severally make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaim all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which may be incurred as a result of data being inaccurate in any way and for any reason."
Based on Data provided with the permission of NRM: Cadastral Data (December 2005)

GDA
N

Quality System
Quality Endorsed Company

webmap

Copyright BCC, 2003
WebBASX version 2.0

Location:

501537 6956947

BCC.058.8320

63

Brisbane City Council
ABN 72 002 765 795

Development Assessment Team South
Customer & Community Services Division
Level 10, 69 Ann Street
Brisbane Qld 4000
GPO Box 1434
Brisbane Qld 4001

Facsimile 07 3403 5379

Application No: DRS/USE/H05-917956
Project No: DRS/PRO/P05-107231
Contact: [redacted]
Telephone: (07) 340 36628

2 February 2006

M E Harrison Investment Co Pty Ltd
C/- Pmm Group
Po Box 1559
FORTITUDE VALLEY QLD 4006

Attention: [redacted]

Dear [redacted]

Development application over land at 15 Cansdale St, Yeronga Qld 4104 and described as Lot 1 on RP150512, Parish of Y'pilly.

Thankyou for your response to the Information Request of 21 June 2005. The information has been considered and I can now advise that your response of 27 September does not adequately address the following Items of the Information Request letter Item 2 (i), (ii), (iii), and (iv); Item 3 (i), (ii) and (iii); Item 4 which are concerned with the proposed hydraulic works in the parkland and within the waterway corridor. Although the other items raised in your response have been assessed a final resolution of these matters are contingent upon resolution of the hydraulic issues underlined below.

The proposed works within the parkland to alleviate flooding problems on the site are not supported for the following reasons:

The proposal to alter the overland flow drainage by diverting the proposed channel into the parkland to the south of the development is not acceptable. The Local Plan and the Yeronga LSMP show a waterway corridor and drainage improvement works respectively on the subject site. Moving these issues into the adjoining parkland is not supported.

The proposed entertainment area is to be set at RL 4.1 m AHD which does not meet the flood immunity standard of 100 year ARI Brisbane River flood (RL 6.7 m AHD). Note 6 to Table B2.2.1 of the SDG requires a retirement village to comply with Table B2.2.1.

A creek or waterway requires Q100 analysis and the proposed application includes a Q50 analysis. This is in accordance with Table B2.2.1 of the Subdivision and Development Guidelines (SDG) however for development in the waterway the Q100 analysis is required.

It is proposed to pipe the waterway at the north-eastern part of the site by constructing 3/3300 x 2100 RCBC's 52 m long. This proposal is not supported on hydraulic, safety, maintenance and environmental grounds, as follows:

- Hydraulic:
  No blockage factor has been allowed.
  The culverts have only been modelled for a 50 year ARI event. They will increase flood levels for larger events.
- Safety:
  The culverts will be unsafe with or without a safety screen.
- Maintenance:
  The culverts may require periodic desilting and removal of debris.
- Ecological:
  This is a waterway corridor and piping is not an option.

The proposal has not addressed the trapped sag, west of the site in Cansdale Street. This area is currently drained by an overland flow path through the site. Filling the site without accounting for drainage from the west and north of the site may cause an adverse impact on adjacent properties and roads.

The existing channel is in a waterway corridor on the applicant's property in this area. The proposed channel will need to be constructed on the applicant's property and will require an amended layout plan.

Council has a responsibility to ensure that the community has an adequate level of service provision for community infrastructure including parks. The Stephens District Local Plan states that "any future works in these parks should provide further opportunities for passive recreation for local communities". The proposal does not demonstrate any benefit for the local community within the park.

The proposal does not recognise the existing waterway corridor in the vicinity. The waterway corridors are not only for flooding purposes but also for environmental and recreational reasons.

The Waterway and the Biodiversity Codes have not been addressed. Demonstrate compliance with the relevant Performance Criteria of the Waterway Code and the Biodiversity Code and provide an amended plan of development that demonstrates no intensification of use within the mapped waterway corridor.

To conclude an amended proposal is required where all excavation works within the waterway to mitigate adverse flood impacts are retained wholly within the site. Any works within the Council parkland are to be minimal.

In order to discuss these matters so that the application can continue to be processed in a timely manner it is suggested that a meeting be held. Please contact me on (07) 340 36605 to arrange a time and date

Yours faithfully,

[redacted]

A/S Urban Planner
Development Assessment Team South
Development and Regulatory Services
Customer and Community Services

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MEMORANDUM

Brisbane City Council

TECHNICAL SPECIALIST TEAM
Development Assessment
Development & Regulatory Services
Customer & Community Services

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Brisbane Qld 4001

Phone: [redacted]
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Internet: www.brisbane.qld.gov.au

To: [redacted] Date: **21 December 2005**

Attn:

CC: **Kevin Matthews**
Bob Adamson

From: [redacted] – **SELDP**

Re: **15 Cansdale Street, Yeronga**
CD/W2 – 050216-H05-917956

(Please note that this is an internal document only and shall NOT be reproduced in any correspondence with the applicant)

1.0 INTRODUCTION

Item No	Description	Comment
1.1	Report by:	Darren Rogers – Storm Water Consulting Pty Ltd and David Simpson – City Design
1.2	Documents Reviewed:	Report by Cardno (QLD) Pty Ltd • "Yeronga Retirement Village, Hydraulic Analysis", Rev 1, dated 26 September 2005 XPStorm model data files on CD dated 10th October 2005
1.3	Document Summary:	Hydrologic and hydraulic information submitted to support an application for development of a retirement village at the corner of Cansdale Street and Venner Road in Yeronga.
1.4	Objective of Review:	Assess whether the proposal is in compliance with the Stormwater Management Code, the Waterway Code and the Subdivision and Development Guidelines.
1.5	Issues Identified:	• **Entertainment area level.** • **Details of relocated drain, extension of existing pipes and location of proposed pipes.** • **Proposed channel to be on the applicant's property in the north-eastern corner. Development layout to be amended.** • **Trapped sag in Cansdale Street.**
1.6	**Hydraulic Status:**	**Hydraulic analysis is technically acceptable, except for the proposed culverts. Revised layout and details required.**

2.0 COMMENTS

2.1 The results of the applicant's analysis differ from Council's LSMP. The applicant states that this is because his analysis is based on surveyed cross sections and the LSMP is based on aerial survey. Usually the assumed roughness is the major factor. City Design has checked this and advises that the roughness used in the applicant's Storm model is 0.04, the same as that used in the LSMP

Hecras model, but different to the figure of 0.03 used in the LSMP Mike11 model. However, since the applicant has used the same figure in their before and after cases, it is not an issue.

2.2 A creek or waterway requires Q100 analysis, but the LSMP includes Q50 analysis. The application only includes a Q50 analysis, and justifies the use of Q50 by asserting that the drainage channel is a designed open channel. This is in accordance with Table B2.2.1 of the Subdivision and Development Guidelines (SDG) and is acceptable. However, the entrance to an underground carpark is still required to be above the 100 year ARI flood level from all sources. The applicant's proposal is in accordance with this requirement.

2.3 The proposed entertainment area is to be set at RL 4.1 m AHD which does not meet the flood immunity standard of 100 year ARI Brisbane River flood (RL 6.7 m AHD). The SGD (Table B2.2.2 Note 6) allow a relaxation of flood immunity provided a risk evaluation is carried out to demonstrate that the design and associated risk management measures will reduce property damage and ensure public safety. Unfortunately, this only applies to industrial/commercial developments. Note 6 to Table B2.2.1 of the SDG requires a retirement village to comply with Table B2.2.1, which does not allow such a relaxation.

2.4 The applicant intends altering the proposed overland flow drainage network shown on Council Drawing No. W11060 Sheet 38 of 47 by diverting the proposed channel into the parkland to the south of the development. Most of the existing 50 year ARI flow inundation is in the Council parkland. The applicant states it is therefore logical that the channel should be on Council parkland. Council's proposal relied on cutting a channel and constructing new pipes in the applicant's property. The applicant points out that there is no easement on the property. It is likely that the applicant would seek compensation if the channel was constructed on the applicant's property. It is therefore recommended that the overland flow path be constructed in the parkland to the south of the development as proposed by the applicant.

2.5 The applicant is proposing to build on the south-eastern corner of the site over an existing Council 1650 mm diameter pipe. The LSMP proposed large relief drainage pipes in the same corner.

2.6 The applicant is proposing to build along the eastern side of the site to within 9 m of the eastern boundary. This requires that the existing drain be completely relocated into the park. Insufficient detail has been provided by the applicant to show how the relocated drain will reconnect to the existing drain, how the existing pipes will be extended and where the proposed pipes will be constructed. Additional sections and details are required before the proposal can be considered.

2.7 The applicant is proposing to pipe the waterway at the north-eastern part of the site by constructing 3/3300 x 2100 RCBC's 52 m long. The culverts are proposed so that the oval leased by the South Brisbane Cricket Club will not be adversely affected by the diversion of the proposed

channel. The location of the culverts has not been shown on drawings. This proposal is not supported by Council on hydraulic, safety, maintenance and environmental grounds, as follows:

- Hydraulic:
  No blockage factor has been allowed.
  The culverts have only been modelled for a 50 year ARI event. They will increase flood levels for larger events.
- Safety:
  The culverts will be unsafe with or without a safety screen.
- Maintenance:
  The culverts may require periodic desilting and removal of debris.
- Environmental:
  This is a waterway corridor and piping is not an option.

The existing channel is in a waterway corridor on the applicant's property in this area. The proposed channel will need to be constructed on the applicant's property in the north-eastern corner in the waterway corridor. This will require the proposed development layout to be amended.

2.8 The proposal has not addressed the trapped sag west of the site in Cansdale Street. This area is currently drained by an overland flow path through the site. Filling the site without accounting for drainage from the west and north of the site may cause an adverse impact on adjacent properties and roads. This issue needs to be addressed by the applicant. It is likely that 50 year ARI piped drainage will be required through the site.

3.0 RECOMMENDATIONS

3.1 That the submission be rejected, pending the provision of a revised report, layout, details and drawings.

3.2 That the applicant be advised:

- To revise and resubmit the report.
- That the proposed entertainment area cannot be set at RL 4.1 m AHD as it does not meet the flood immunity standard of 100 year ARI Brisbane River flood (RL 6.7 m AHD).
- To provide details to show how the relocated drain will reconnect to the existing drain, how the existing pipes will be extended and where the proposed pipes will be constructed. Additional sections and details are required before the proposal can be considered.
- That the proposal to pipe the channel in culverts is not acceptable. The proposed channel will need to be constructed on the applicant's property in the north-eastern corner. This will require the proposed development layout to be amended.
- That the issue of the drainage of the trapped sag west of the site in Cansdale Street needs to

be addressed by the applicant. It is likely that 50 year ARI piped drainage will be required through the site.

[redacted]
Product Manager
Stormwater Planning and Investigation
Water and Environment
City Design

BCC.058.8339

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MEMORANDUM

To: **City Planning** Date: **17/10/05**

Attn: [redacted]

CC: [redacted]

From: [redacted] **PPOEPB**

Re: **15 Cansdale St, Yeronga**
Information Request Response

Brisbane City Council

Natural Environment & Sustainability Branch
City Policy & Strategy Division

Level 5, 69 Ann Street
GPO Box 1434
Brisbane Qld 4001

Phone: 07 3403 6558
Facsimile: 07 3403 9072
Email: [redacted]
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Natural Environment and Sustainability Branch has provided previous advice on 5/505 for the proposed Reconfiguration of a Lot and Material Change of Use and Preliminary Approval within the City Plan 2000 Light Industrial Classification. The subject site is included within the Stephens District Local Plan, however the Plan does not refer to the subject site. The proposal is for a Retirement Village comprising nine, five storey buildings comprising 310 independent/assisted living units and120 bed aged care facility.

This advice refers to the response provided by the applicant as part of a Council Information Request.

Strategic Recommendations
Natural Environment and Sustainability Branch does not support the proposal in it's current form for the following reasons:

- While it is understandable that the applicant wishes to maximise the development potential of the subject site, known constraints exist including a waterway corridor and the overland flow paths mapped in the Yeronga Local Stormwater Management Plan.
- Council has a responsibility to ensure that the community has an adequate level of service provision for community infrastructure including parks. Additionally, the Stephens District Local Plan states that "any future works in these parks should provide further opportunities for passive recreation for local communities". The proposal by the applicant does not demonstrate any benefit for the local community within the park.
- Advice received from Water Resources is that it is unlikely that the Yeronga LSMP planned works will have any detrimental impacts on Fehlberg Park contrary to the claims from the applicant.
- The proposal does not recognise the existing waterway corridor in the vicinity. The waterway corridors are not only for flooding purposes but also for environmental and recreational reasons. Council has identified the existing waterway corridor for future flood mitigation purposes.
- Given that the Local Plan and the Yeronga LSMP show a waterway corridor and drainage improvement works respectively on the subject site, it is completely unreasonable to expect that the applicant can shift these issues into the adjoining property. If this property was privately owned rather than owned by Council as park this would not occur.
- NES does not support the proposed culvert arrangement of piping the open channel in Leyshon Park. This will worsen the situation for mitigating the overall catchment flooding problems.
- The proposal presents an unacceptable safety risk to users of the park in times of flood etc. The design of the drain and it's inclusion in the park effectively creates a play space for children who may then be exposed to danger through the potential of being dragged into the culvert drains.
- The applicant is to amend the plans to show an outcome that lessens the impact on the parks, and demonstrates a net community benefit. Council will negotiate with the applicant on the extent of park affected, but only under the proviso of no net loss of community benefit and access to this park.

Natural Environment and Sustainability Branch requests copy of the integrated response. Should you wish to discuss this response, please contact please contact Brad Wilson on ext 36558 or Illira Margaritis on ext 35713 for further information.

[redacted]
Principal Program Officer
Environmental Planning Section
NATURAL ENVIRONMENT AND SUSTAINABILITY

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MEMORANDUM

Brisbane City Council

TECHNICAL SPECIALIST TEAM
Development Assessment
Development & Regulatory Services
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Phone: (07) [redacted]
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To: DA South Team Date: 17 October 2005

Attn: Bruce Mc Arthur

CC: [redacted]

From: Bob Adamson

Re: **Carnsdale St Yeronga**
DRS/USE/H05-917956

(Please note that this is an internal document only and shall NOT be reproduced in any correspondence with the applicant)

1.0 INTRODUCTION

Item No	Description	Comment
1.1	Report by:	Robert Adamson
1.2	Documents Reviewed:	Yeronga Retirement Village – Hydraulic Analysis for Harrisons Real Estate Development by Cardno MBK dated 26 September 2005
1.3	Document Summary:	Application proposes diverting flow and creating drainage system with pipes and open channel in council park. Analysis by XP-Storm hydraulic program..
1.4	Objective of Review:	To give preliminary advice on the concept without examining the details of ther modelling. To ensure the proposal meets the water quantity (flooding and drainage) requirements of City Plan and the Subdivision and Development Guidelines.
1.5	Issues Identified:	**1. Change to LSMP** **2. Bring forward relief drainage** **3. Flood immunity for Waterway is to be Q100** **4. Work in Park, building over pipes** **5. Risk evaluation for entertainment area** **6. Piping a waterway** **7. Trapped area west of site**
1.6	**Hydraulic Status:**	**Concept to be addressed by DA**

2.0 COMMENTS

2.1 The proposal has reworked councils Yeronga Local Stormwater Management Plan (LSMP) with a different type of model (XP-Storm). The flood level results from XP Storm are different from council's model for the existing case. The reasons for this must be checked by City Design but at this stage we are looking at the concept only. The Cardno-MBK say a major cause of the differences in levels from the LSMP to the consultants model is the cross sections. This should be checked by City Design, usually the assumed roughness is the major factor.

2.2 The proposal will do works that will assist in mitigating flooding as shown in the Yeronga Local Stormwater Management Plan (LSMP). However for the works to be immediately useful council would need to bring forward spending on relief works to augment the work being done by the developer.

2.3 The Q100 flood is the design flood for waterway, Consultant has used the Q50 flood.

2.4 The applicant intends altering the proposed overland flow drainage network shown on council drawing W11060 Sheet 38 of 47 by diverting the proposed channel into the parkland. Please note most of the existing Q50 flow inundation is in the council parkland, the applicant states it is logical therefore that the channel should be on council's parkland. Council's proposal relied on cutting a channel and constructing new pipes in the applicants' property. The proposal relies on using/alienating a large area of council parkland to provide drainage channels and

pipes.

The applicant is proposing to build on the south-eastern corner of the site over an existing council 1650dia pipe and waterway corridors. The LSMP proposed very large relief drainage pipes in the same corner. The cost/benefit to council of this proposal must be examined before a decision is made on the application.

2.5 The proposed entertainment area is proposed to be set at RL4.1mAHD which does not meet the flood immunity standard of Q100 Brisbane River Flood (RL 6.7mAHD). However the SDG (Table B2.2.2 note 6) allow a relaxation of flood immunity provided a risk evaluation is carried out to demonstrate that the design and associated risk management measures will reduce property damage and ensure public safety.

2.6 The applicant is proposing to pipe the waterway at the north eastern part of the site by constructing 3/3300 x 2100 Reinforced Concrete Box Culverts 52m long. The culverts are proposed so that the oval leased by the South Brisbane Cricket Club will not be adversely affected by the diversion of the proposed channel. The location of the pipes should be shown on drawings. This is not a proposal supported by council on hydraulic, maintenance and environmental grounds.

2.7 The proposal has not addressed the trapped sag west of the site in Cansdale Rd. This area is currently drained by an overland flow path through the site, Filling the site without accounting for drainage from the west and north of the site may cause an adverse impact on adjacent properties and roads.

3.0 RECOMMENDATIONS

3.1 Discuss concept with assessment manager and Water Resources before asking City Design to go through the calculations and model.

Robert Adamson
Principal Engineering Officer
Technical Specialist Team

Discussed W. Kevin M.
* ? Time for City Design to assess will be excessive
* Major issues: (1) Not used the BCC model
(2) Gone away from the Yeronga LSMP.
(3) Results of Cardnos analysis are about 1 metre different from councils levels.

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Australia

Our Ref: 7203
Date: 27 September 2005

Attn: [redacted]

Development Assessment Team South
Brisbane City Council
Level 10, Brisbane Administration Centre
69 Ann Street
BRISBANE QLD 4000

Via: Delivery

Dear [redacted]

RE: **YERONGA RETIREMENT VILLAGE**
15 CANSDALE STREET, YERONGA
LOT 1 ON RP 150512
COUNCIL REFERENCE: DRS/ USE/ H05-917956

We write on behalf of our client, Harrison's Real Estate Development in, addressing the items raised in the coordinated information request provided by the Department of Local Government, Planning, Sport and Recreation (DLGPSR) on 21 June 2005. This response, in accordance with Section 3.3.8(3) (a) of the *Integrated Planning Act 1997* constitutes a full response to the issues raised and we request that assessment of the application by all parties commence.

REFERRAL AGENCY RESPONSES

Brisbane City Council is the Assessment Manager for the application, but as the application is a Preliminary Approval seeking to Override the Planning Scheme, the application is required to undergo Referral Coordination. As part of the Referral Coordination process, the application was referred to the Department of Main Roads (DMR) as a Concurrence Agency, to Energex as an Advice Agency, and the Office of Urban Management (OUM) as a Third Party Advice Agency. A response from DMR was received on 10 May 2005, and identified that the DMR had no further requirements for the application (refer *Appendix A*). Similarly, a response from Energex was received on 18 July 2005 (refer *Appendix A*) and identified no objection to the proposed development. The OUM has not provided a response, but it is understood from the Information Request that no further advice from OUM will be provided.

DISCUSSIONS WITH COUNCIL

In responding to the items of the information request, several meetings have been conducted with Brisbane City Council Officers. These meetings facilitated discussion of the items raised in the information request and assisted in the further development of the proposal now presented in this Information Request Response. The meetings held throughout July, August and September discussed in detail, issues associated with urban design outcomes, hydraulics and the overall intent of the development. The meetings sought to ensure that the work conducted by the project team was sufficiently addressing Council's information request and ensuring that the site planning and other aspects of the development were consistent with a quality planning and urban

Directors: [redacted] B App Sc (Surv) LS MIS Aust, Graham Dunlop B Surv MIS Aust JP (C Dec) GDURP MPIA [redacted] B App Sc (Surv) GDURP MPIA
[redacted] B App Sc (Surv) LS MIS Aust C Dec [redacted] BRTP MPIA

design outcome for the site. The meetings also sought to confirm that suitable detail would be provided in order for Council to issue a Preliminary Approval in accordance with Section 3.1.6 of the *Integrated Planning Act 1997*.

PROPOSAL OVERVIEW

The application lodged with Brisbane City Council on the 11 April, 2005 sought Preliminary Approval (Overriding the Planning Scheme) for an Integrated Retirement Village. The proposal presented basically consisted of:

- 230 independent living units;
- 80 assisted living units;
- 120 bed aged care facility;
- 36,750m2 total gross floor area;
- building form ranging from 3 – 5 storeys above podium and basement car parking; and
- community facility spaces i.e. swimming pool, recreation hall etc.

In response to the information request issued, the site planning of the subject development has been re-worked. The re-worked scheme is presented in *Appendix E – Architectural Plans* and *Appendix F – Landscape Response*, and consists of the following drawings:

Appendix E – Architectural Drawings (Arkhefield)

1. Site Context
2. Precinct Plan
3. Building Envelope Plan
4. Circulation Plan
5. Conceptual Staging Plan
6. Conceptual Basement Plan
7. Indicative Site Elevations
8. Indicative Site Elevations
9. Context Sections
10. Site Sections
11. Site Sections
12. Shadow Diagrams – Summer
13. Shadow Diagrams – Winter

Appendix F – Landscape Response (J W Concepts)

MP01 – Existing Site Conditions
MP02 – Site Potentials and Constraints
MP03 – Landscape Concept Plan - Masterplan
MP04 – Landscape Sections – Sheet 1
MP05 – Landscape Sections – Sheet 2
MP06 – Landscape Details – Sheet 1
MP07 – Landscape Details – Sheet 2
MP08 – Ecologically Sustainable Initiatives

MP09 – Landscape Finishes Palette
MP10 – Landscape Planting Palette.

This required proposal also presents detailed information relating to:

- Hydraulic solution and stormwater management, refer *Appendix C – Hydraulic Analysis (Cardno).*
- Ecological assessment, refer *Appendix D – Natural Assets Assessment (Cardno).*
- Pollution review, refer *Appendix G – Air Quality Assessment (Max Winders).*
- Sustainable development, refer *Appendix H – Sustainability Initiatives* (PMM Group).
- Servicing, refer *Appendix I – Servicing Response (BMD & Brisbane Water)*

In summary, the revised proposal achieves the following:

- The proposed development consists of the following:
  - 310 independent/ assisted living units;
  - 120 bed aged care facility;
  - 36,000m² maximum gross floor area (plot ratio of 1:1.29);
  - Maximum building height of 5 storeys (RL25.6m)
  - Built form consists of up to 9 buildings.

- The proposal involves the establishment of vehicle access from Cansdale Road as a one-way entrance to the site. This leads into the central area of the site where the reception building is to be located. The lane continues around to the exit at Venner Road.

- Pedestrian access is available throughout the site, creating a pedestrian oriented development, reducing the potential for conflict with vehicles. Residents and visitors can access basement level parking along the central driveway. Pedestrian access to the site is available from both the Venner Road and Cansdale Street frontages with additional access to the site from the Fehlberg Park and Leyshon Park interfaces. The site also features views through the site including a view through from the Cansdale Street frontage through to Fehlberg Park.

- The unique location surrounded on three sides by parkland is maximised, with buildings orientated where possible towards the parkland. The buildings are also stepped up from the boundaries to maximise the number of units within the development that have outlook. All units include balconies to ensure that the development is outward oriented and to maximise the quality of life for the residents of the development.

- Central community facilities are provided to contribute to the quality of life of the residents. Possible facilities may include an indoor swimming pool, bowling green and central meeting place. A majority of the uses are located in a central area to minimise the distance for residents to walk to access the facilities.

- The future built form of the development is anticipated to be contemporary in appearance. The site will be developed as a series of buildings including between 30-40 units per building. The establishment of smaller groups of buildings, as opposed to one large building on the site assists with reducing the apparent bulk of the development, allows view sheds through the site assists with the staging and construction of the development

and provides opportunity for architectural variety throughout the lifespan of the development.

- Buildings are orientated were possible with a northerly aspect to maximise the views towards the river and to minimise the impact of the sun directly into the units during summer. The balconies on all units also assist with cooling of the units. To maximise comfort for residents, units will also be air conditioned.

- All buildings will be established with lifts to assist residents of varying levels of mobility to access the units. It is noted that the security for the residents is an important consideration. It is proposed to have the development open during daylight hours with security provided at each building. During night hours, the village would be secured to minimise any potential security threat. Access for visitors will be through the use of an intercom system to control access to the individual units.

- The aged care facility, which is located on the corner of Venner Road and Cansdale Street will be of a similar built form as the rest of the development, providing an attractive building on the corner of the development site. It is noted that this site will require additional security to residents and control of access into the development. It is anticipated that the nursing home will include a separate reception area.

- The residents of the aged care facility are anticipated to require high levels of care and this proposed building will seek to maximise the quality of life of the residents. As such, the building will include windows and balconies to enable residents to view the surrounding activities. Surrounding the aged care facility will be substantial landscaping to maximise the visual amenity of the development.

- In accordance with the Yeronga Local Stormwater Management Plan, a hydraulic analysis of the drainage line that exists along the eastern boundary of the site has been undertaken and a detailed solution proposed. This solution incorporates best practice engineering design in combination with ecological and landscape design principles to achieve a high quality urban creek solution. The solution presented, significantly improves the current drainage situation (reduction in local flood levels) and provides a quality landscape asset to the city.

Given the above matters and the comprehensive response provided that illustrates the opportunities presented by the subject site, we are of the opinion that the subject application warrants approval with reasonable and relevant conditions.

We now provide a detailed analysis and response to each point raised in the information request.

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MATTERS OF INTEREST TO THE ASSESSMENT MANAGER – BRISBANE CITY COUNCIL

The Brisbane City Council, as assessment manager for the application, raises the following matters of concern and requests the following additional information:

INFORMATION REQUESTED

The Council has carried out an initial review of the above application and requires the applicant to provide further information that satisfactorily addresses the key issues outlined below:

1. *Please submit appropriate wording varying the provisions for Gross Floor Area and height for the various precincts, as the creation of a new Code particular to this development is not favoured. The preferred manner to manage the proposed development of the site is as discussed in the prelodgement meetings, that is, to use the existing Residential Design Codes, with the provisions with regard to Gross Floor Area and Height being varied by conditions inserted in the conditions package.*

Response: The original application lodged with Brisbane City Council nominated the creation of a 'Yeronga Retirement Village Code', which was based on the provisions of the 'Residential Development – Medium Density Code' of the *Brisbane City Plan 2000*. It is understood from Council's Information Request that the introduction of a new development code particular to this development site is not supported, and as such we have undertaken an assessment of the proposed development against the Medium Density Code in its own right. It is identified from this assessment that the proposal as it is presented in this Information Request Response complies with the provisions of the Medium Density Code with exception to:

- P2 Building size must be consistent with the Intentions for the area, specifically:
  - A2.1 Maximum Gross Floor Area is
    - Up to 0.8 times the site area, where the site area is greater than 1,200m^2; or
    - GFA = (1.2 times site area) – 480, where the site area is less than 1,200m^2, where GFA and site area are both expressed in square metres
  - A2.3 Building height at any point is no more than:
    - 15m from ground level to the underside of the ceiling of any habitable room
    - 5 storeys above ground level

Please refer to *Appendix B – Residential Design Medium Density Code Analysis.*

Further, it is identified that future applications made in accordance with this preliminary approval proposal can achieve compliance with the Residential Design – Medium Density Code, and the plans presented in this response. Therefore, future applications achieving this compliance warrant 'code assessment' rather than 'impact assessment'. Accordingly, we propose that a condition be applied to the Preliminary Approval Overriding the Planning Scheme that requires future development applications to be undertaken in accordance with the Residential Development – Medium Density Code of the *Brisbane City Plan 2000* as modified by the condition. It is submitted that a condition worded such as that provided below would be satisfactory to the applicant.

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Future applications for Development Permits will be Code Assessable where they comply with Residential Design – Medium Density Code as amended below and the provisions of this Preliminary Approval;

- Maximum building height is to be in accordance with the Building Envelope Plan prepared by Arkhefield. Refer *Plan 4*.
- A plot ratio of 1:1.29 (or 36,000m² gross floor area) is permitted for the entire development.

2. *Demonstrate that the proposal:*
   (i) Complies with Section 4.2 P1 of the Stormwater Management Code. Specifically, demonstrate that the proposed stormwater management system or site works do not adversely impact on flooding or drainage of properties that are upstream, downstream or adjacent to the subject site.

Response: Cardno has been engaged to provide a detailed response to hydraulic matters raised by Council. The report prepared by Cardno describes the proposed stormwater management plan for the site in comparison to the plan previously prepared by Council and undertakes a hydraulic analysis of the proposed alternative. The report identifies that the proposed solution results in a decrease in the local flood levels throughout the entire model for the Q10 and Q50 flood events, thereby benefiting the local community with a reduction in the level of local flood events.

Refer *Appendix C – Hydraulic Analysis.*

(ii) Complies with section 4.2 P2 of the Stormwater Management Code. Specifically, demonstrate that the drainage network provides adequate capacity to safely convey stormwater run-off resulting from relevant design storm events taking into account increased run-off from roof drainage.

Response: The report prepared by Cardno includes modelling of the subject site and the proposed channel to the south and east. The report identifies that the proposal complies with the requirements of section 4.2 P2 of the Stormwater Management Code through the adequate conveyance of the local stormwater runoff.

Refer to *Appendix C – Hydraulic Analysis.*

(iii) Complies with Section 4.2 P3 of the Stormwater Management Code. The development design must reduce property damage and, where applicable, ensure public safety by ensuring that the development levels are set above the relevant design flood level or storm surge level.

Response: The report prepared by Cardno demonstrates that the proposed hydraulic solution results in an overall reduction of the local flooding. The report notes that the Brisbane River flooding levels are higher than those of the local flooding levels and as such this solution does not impact upon the regional flood levels of the Brisbane River. The proposal is considered to comply with the provisions of the section 4.2 P3.

Refer to *Appendix C – Hydraulic Analysis.*

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(iv) Complies with Section 4.2 P4 of the Stormwater Management Code. Demonstrate that the channel works, major drainage works and flood mitigation works maintain and/or enhance the environmental values of the waterway corridor or drainage corridor.

Response: The proposed hydraulic solution prepared by Cardno has been developed in coordination with the project ecologist and landscape architects. The solution proposed is considered to establish improved environmental values for the waterway compared to the existing concrete invert channel.

Refer to *Appendix C – Hydraulic Analysis, Appendix D – Natural Assets Assessment and Appendix F – Landscape Response.*

In addition, there is an overland flow path through the south-eastern corner of the site, which has been identified in the Yeronga Local Stormwater Management Plan.

Response: The hydraulic solution prepared by Cardno was developed in response to the Yeronga Local Stormwater Management Plan prepared by Council. The hydraulic solution proposed establishes an improvement on the local flooding situation achieved by the Council management plan.

Refer to *Appendix C – Hydraulic Analysis.*

3. *Demonstrate that the proposal complies with the following performance criteria of the Biodiversity Code:*
   (i) P1 - Ecological features and processes on or adjacent to the site, including those identified in the Natural Assets Planning Scheme Policy, are protected, managed and restored, where necessary to ensure their long term viability.
   (ii) P5 - Ecological Features and processes associated with waterways and wetland are not significantly and adversely impacted by changes in the hydrological regimes, including wet/dry regimes
   (iii) P6 - Ecological assessment accompanying applications must be comprehensive, competent and adequate.

Response: The Natural Assets Assessment prepared by Cardno has determined that the proposed development complies with the requirements of the Biodiversity Code within the City Plan 2000. The report prepared by Cardno identifies that the vegetation on the site comprises 64.6% of non-native species and 41.7% of Council recognised weeds. The existing City Plan mapping illustrates the existence of a small wetland area to the north of the site, however the report prepared by Cardno notes that this wetland does not exist on the ground and as such the mapping of the wetland is incorrect.

The area along the eastern boundary that includes the land for the proposed hydraulic solution is already highly disturbed with limited ecological values and no areas of biodiversity significance. The report identifies that the constructed concrete drainage channel is degraded and dominated by exotic weeds. The report states that the proposed works will improve the existing situation through the establishment of appropriate native plant species.

Refer to *Appendix D – Natural Assets Assessment.*

4. *Demonstrate that the proposal complies with 4.1 P1 of the Waterway Code. Specifically, demonstrate that the natural functions of waterways as landscape and environmental corridors must be preserved.*

Response: The report prepared by Cardno demonstrates that the proposal is consistent with the requirements of the Waterway Code. The report identifies that the existing constructed drain currently features highly disturbed vegetation and is dominated by weeds. The waterway is deemed by the report not to be a functional environmental corridor and with limited environmental values. The proposed hydraulic solution for the site will establish improved ecological values for the drain.

Refer to *Appendix D – Natural Assets Assessment.*

5. *Demonstrate that from Venner Road, Cansdale Road, the residential precincts and the surrounding parklands, the proposed three storey components will have the appearance of three storey buildings and the five storey components will have the appearance of five storey buildings. This is required, as due to the proposed filling on the site, the proposed three storey and five storey components, have the appearance of four and six storey buildings, respectively.*

Response: It is acknowledged that given the need to lift the proposed development to a level of 7.2m AHD there is the potential for 3, 4 and 5 storey buildings to be perceived as taller than they are. To address this issue, the following elements have been embraced:

- Site boundary setbacks (to podium) of 6m or greater have been adopted for all boundaries to facilitate a deep planting landscape zone around the entire site.
- Building form along all boundaries will be stepped in height and façade treatment so as to break up bulk and scale of buildings.
- Strong pedestrian and visual corridors have been established north/ south and east/ west through the site.
- Clear pedestrian and vehicle entry/ exit points have been identified provided access clarity in the proposed urban form.
- Comprehensive landscape treatments are proposed for all edge areas, thereby facilitating a softening of podium structures and the overall building height.

For the above reasons, and the matters illustrated in the detailed plans in *Appendix E and F*, are submitted to Council that the building heights proposed are appropriate for the development proposal and for the subject site.

6. *All car parking is to be provided on the application site.*

Response: Car parking is provided on the site that is generally in accordance with the *City Plan* provisions and is illustrated on 'Conceptual Basement Plan' (*Appendix E*). The car parking is provided predominantly at basement level, with some additional parking at grade on the site.

The parking for the Independent Living Units will be provided in a basement that is separate from the Aged Care car parking basement. The parking provided for the Independent Living Units will be 278 spaces for residents with 139 spaces for visitor parking. The parking required for the Aged Care Facility is 12.5 spaces with 6.25 visitor spaces. In accordance with the applicant's requirements for the aged care facility, 30 spaces total are allocated for the Aged Care Facility use in the separate basement. The Conceptual Basement Plan illustrates that the car parking required for this subject site can and will be accommodated on site.

All residents' car parking is located at the basement level of the site. Visitor parking is predominantly located at basement level with an additional 17 parking spaces located at grade on the site.

The requirements of the City Plan specify the need for:

- 1 space per self contained unit.
- 1 space per 6 beds for nursing home.
- 50% of residents provision for visitors.

The parking provision generally complies with a total of 430 spaces provided and 435.75 required by the scheme. It is noted that while the provision is short by approximately 6 spaces, the nature of the use of the development makes it likely that this required rate is excessive. To support this argument, a parking assessment was completed by Holland Traffic Consulting as part of the original submission to Council. This submission states that the Road Traffic Authority of New South Wales includes parking requirements as outlined below for Retirement Villages:

- 2 spaces per 3 units, plus 1 visitor space per 3 units
- 1 visitor space per 10 hostel beds, plus 1space/ 2 hostel employees, plus an ambulance space.

Based on the proposed development includes:

ILU =	185.33 residents spaces plus 55.6 visitor spaces.
Nursing Home =	7.5 spaces plus approximately 30 staff spaces.
Total =	278.43 spaces

This calculation demonstrates that the proposed car parking provision is sufficient for the proposed uses.

Some further parking is included within the Venner Road and Cansdale Street reserves. This parking does not contribute to the parking provisions for the proposal is available for use by the public, however will be included in the landscaping and development of the site to assist with improving the streetscaping and operation of surrounding parkland.

7. *Demonstrate how it is intended to control the extent of buildings in Precincts 3b and 2c and provide details of the proposed future tenure of the various types of accommodation. In addition, please indicate, on any amended plans that are to be submitted, the buildings in Precinct 3b as being five storeys so that the overall scale and bulk of the building can be seen and provide the ultimate height of the proposal*

Response: In response to the issues raised in the Information Request and discussions with Council, the site planning of the proposed development has changed. It is submitted that the proposal now before Council provides a more effective urban design outcome for the site, and the plans now provided clearly articulate the proposed building scale.

The revised layout involves the establishment of a 3 storey Aged Care Facility (maximum 120 bed facility) on the corner of the Venner Road and Cansdale Street intersection. The proposal also includes the establishment of 310 Independent Living/ Assisted Living Units within 9 individual buildings on the site with heights ranging from 3 to 5 storeys. To compliment the residential component of the development, high quality comprehensive community facilities ancillary to the use will also be provided. These include:

- Heated swimming pool
- Gymnasium
- Bowling green.

The Landscape Masterplan prepared by J W Concepts identifies the outdoor recreation spaces proposed (refer *Appendix F*).

The building heights of the development are stepped up, away from the site boundaries to reduce the appearance of building bulk from the surrounding area. The Aged Care facility on the corner of the site is maintained at a maximum height of 3 storeys to establish a residential scale development on the corner that is in closest proximity to other residential development, as are the buildings along Cansdale Street.

The other boundaries of Leyshon Park and the eastern boundary of the site with Fehlberg Park include a maximum building height of 4 storeys, stepping towards the centre of the site up to 5 storeys. These interfaces are in a unique location adjacent on both sides to parkland and with residential development located a significant distance from the development.

Following correspondence with Council, a Real Level (RL) was adopted for the development as a means of limiting the maximum height of the development and to assist with controlling the extent of the development that features the maximum height. The adopted maximum building height is 25.6m AHD. In doing so, the Building Envelope Plan illustrates the areas of the site to be developed to particular heights. This plan is to form part of the Preliminary Approval document and all subsequent applications for Development Permits will be required to comply with the maximum building heights identified for that particular building envelope.

With respect to the tenure of the buildings, we make the following observations:

- Aged Care Facility – Tenure of the Aged Care Facility will be in accordance with the State and Commonwealth legislation associated with Retirement Villages.

- Independent/ Assisted Living Units – Tenure of the Independent/ Assisted will be in accordance with any State and Commonwealth Retirement Villages legislation. Buildings will be subdivided by Building Format Plan.

Further reconfiguration applications are anticipated to be made to establish separate titles over the land.

Refer to Appendix E – Architectural Plans.

8. Provide amended plans and perspectives, which incorporate the following:

a) Design recognises this 'urban opportunity' which could be promoted by simply including a pronounced urban 'all of site' character achieved through:

Response: The revised layout enhances legibility through the establishment of the main vehicle thoroughfare through the site, a central view shed through the site and an grid-like layout of the buildings. The siting of buildings enables views through the site and the central reception area and community facilities provide a central meeting place for residents.

Clear pedestrian access is available from both the Venner Road and Cansdale Street frontages along with access from both the Leyshon Park and Fehlberg Park interfaces.

ii) Concerted 'hierarchal internal streetscapes' and 'public open space' linking precincts;

Response: The site planning includes a main entrance to the site, in the form of a one-way boulevard through the site, incorporating the main entrance from Cansdale Street and exiting on Venner Road. This laneway also provides pedestrian access. The layout of the buildings and the limited use of vehicles on the site maximises the pedestrian oriented nature of the development.

The development interacts with the surrounding public open space and includes several connections out of the site to these public areas. A main courtyard is proposed at the centre of the development that serves as both a meeting place and an area for community facilities for residents.

iii) Enhancing urban fabric with visually prominent on route 'node' sites of built forms with immediate entry points;

Response: The proposal includes the establishment of a central community facilities and reception area that is located as part of the 5 storey building at the centre of the site. This area serves as a central meeting area for residents and establishes activity at the centre of the site to be overlooked by residents surrounding this central courtyard.

This central courtyard is also located along the driveway access and is also located along the view shed that runs through from the Cansdale Street entrance through to the Fehlberg Park boundary.

The main entrance point to the development is from Cansdale Street and exiting at Venner Road. Pedestrian access is also available at these points along with other entrances from the parkland. The driveway will form a boulevard type entrance to the development with deep planting along part of the driveway. It is also important to note that each of the proposed buildings will have their own entry/ exit points and operate independently.

Key landscaping will be included on the Venner Road and Cansdale Street corner to provide a visually interesting feature for the development. This landscaping may include some public artwork, substantial planting and other design features.

iv) Usually enhanced, physically linked and socially/pedestrian active streets and upper level building frontages;

Response: The buildings are to be located to enhance the urban nature of the development, with open, attractive, pedestrian access ways throughout the site. Substantial landscaping is also proposed to contribute to the appearance of the internal streetscape.

Buildings are outward oriented, maximising the interaction with the units and the communal open space within the development, creating an active, village development. Details relating to upper level frontages will be addressed by future applications within the framework approved by this application.

v) A strongly developed urban village character,

Response: The proposal involves the establishment of a medium density residential development within Yeronga on a site that is currently used for Light Industry uses. The proposal includes buildings with a maximum building height of 5 storeys, stepped down to 3 and 4 storeys along property boundaries. It is important observation that the subject site does not share a residential interface directly and therefore presents a unique opportunity to create a clear landmark development.

The proposal also includes significant communal open space on the site that provides residents with shared recreation areas. The built form interacts with the shared open space on the site and also addresses the surrounding parkland areas. These communal spaces include recreation facilities that may include indoor swimming pools and meeting areas to contribute to the quality of life for the residents of the development.

The layout of the site provides view sheds and pedestrian corridors through the site to the adjoining parkland, maximising the interaction of the site with the surrounding area.

vi) A diversity in design and variety in building form- domestic in language and detailing, reflecting its suburban context;

Response: At this Preliminary Approval stage of the development, the site layout has been developed to ensure that the location of the buildings of the site contributes to the appearance of

the development and minimises the appearance of building bulk once the buildings are developed in the future stages.

While detailed design of the buildings has not yet occurred, future building form will include stepping of the heights and articulation of facades. It is also important to note that as the development will be developed in stages a variety of architectural form are likely to provide further variety in built form.

Substantial landscaping will also be established on the site to contribute to the appearance of the built form on the site.

vii) *Enhanced 'open space' access promoting social, passive and recreational activity within, and external to the site.*

Response: The proposed site layout incorporates several connections to the adjoining park areas. The site includes one main access into Leyshon Park at the centre of the site, adjacent to the reception area. There are also other access points along the park interface providing connections to the parkland. All buildings interact with the parkland through the inclusion of balconies overlooking the parkland.

Similarly, there are access points along the Fehlberg Park interface.

viii) *Detailed interface treatment of the site bounding edges to streets and parks of the setbacks and facades and the external patios immediate internal planning diagrams*

Response: The plans prepared by Arkhefield (*Appendix E*) and JW Concepts (*Appendix F*) demonstrate the proposed edge and interface treatments of the development. It is noted from previous correspondence with Council that the treatment of the podium level and the interaction of the development with the surrounding parkland areas must be considered in the design. The plans provided illustrate, in detail, how these areas will be designed.

Treatments include the establishment of individual addresses for units along the street frontages, stepping and articulation of the building façade and significant landscaping work to treat the edges and interfaces of the development.

Refer to *Appendix E – Architectural Plans and Appendix F – Landscape Response.*

b). *Provide shadow diagrams which indicate the extent of the shadows cast within the proposed development and on the surrounding parklands and residential development, by the proposed buildings at 10am, noon, 2pm and 4pm on 22 June and provide a commentary on how any overshadowing will be addressed.*

Response: Shadow diagrams have been prepared by Arkhefield and are included within *Appendix E.* The shadow diagrams illustrate the minimal overshadowing impact that the development will have will have on the surrounding land uses.

The shadow diagrams provided include the anticipated shadowing in both summer and winter. Minimal shadowing occurs during summer. The shadowing during winter includes some shadowing of the adjoining parkland of Fehlberg Park and Hyde Road Park, however it is noted from the diagrams that the shadows are quick moving, meaning, while there is some shadowing of the park in the 4pm illustration, by 5pm, the sun has set.

Refer to *Appendix E – Architectural Plans.*

c) *The proposed development is not integrated with the surrounding area, In this regard it should include:*
   i) *Siting of appropriate development along Cansdale Road and Venner Road to encourage interaction between the development and the surrounding neighbourhood, not just to provide surveillance*

Response: The proposed development has been amended since the initial lodgement with Council on 11 April 2005. The new layout seeks to establish a site layout for the proposal that features a better urban design outcome and responds to the items raised in Council's information request. The site planning is also cognisant of the special needs of the future residents of the development.

The corner of the site at the Venner Road and Cansdale Street intersection includes the establishment of the Aged Care Facility. This location is suitable for this proposed use on the basis that the necessary scale of the development is at more of a residential scale, assisting with the integration of the development with the surrounding residential land uses.

Similarly, the uses on the opposite side of Cansdale Street are currently of an industrial nature. In its present form, the neighbouring industrial development does not enhance the amenity of the proposed development. As such, the siting of the Aged Care Facility, which, while the built form of the use will be consistent with the rest of the development, featuring balconies and architectural articulation and design features, forms a transitional use between the industrial development and the balance residential development proposed for the site.

The Independent Living Units which are sited along the Venner Road and Cansdale Street frontages establish individual addresses to the street. The units that are located at the ground floor include courtyard areas that feature extensive landscaping and contribute to the overall appearance of the development.

The units located above ground floor also include balconies oriented towards the street to ensure that the development provides active and open frontages to the street, creating an attractive appearance for the development and enables passive surveillance of the surrounding areas.

Pedestrian access is provided on both street frontages, providing connections into the development and view sheds into the site, and as such will integrate with the rest of the local area.

Refer *Appendix E – Architectural Plans.*

ii) A clear pedestrian 'address'/entry visible from the Cansdale Road Venner Road intersection.

Response: Clear pedestrian access is available on all boundaries of the site. These access are located adjacent to the vehicle access along Cansdale Street, a separate pedestrian access midway along the Venner Road frontage and two pedestrian accesses midway along the Leyshon Park and Fehlberg Park interfaces.

The main vehicular access to the development is located along Cansdale Street. This access is in the form of a one-way entrance driveway which will be clearly visible from the street.

Pedestrian pathways are included along the Venner Road and Cansdale Street frontages of the development, providing pedestrian connections to the entrance of the development from the intersection of Venner Road and Cansdale Street.

iii) Distinct pedestrian 'addresses' on public streets for various precincts within the development, where this contributes to legibility. For example, the Care Facility may have a clearly distinguishable 'address' that is quite distinct from the 'address' of an independent living block. This would help break down the perceived unity, and therefore scale, of the development.

Response: The proposed development layout has been amended since the initial lodgement in response to the information request provided by Council and as a means of achieving an improved Urban Design outcome for the site.

The proposed layout includes 8 independent living buildings and one Aged Care Facility. These buildings are predominantly located along the boundaries of the site, enabling the establishment of individual addresses for a majority of the buildings within the development. Similarly, in establishing the 8 buildings over the site reduces bulk and increases variety in built form.

The Aged Care Facility includes a separate entrance to the development, with the main access on Venner Road and basement car park also accessed from Venner Road. The Aged Care Facility is intended to operate as an independent development. The building form of the proposed facility features architectural articulation of the façade and design treatments to contribute to the overall appearance of the development. With the siting of this proposed use on the corner of Venner Road and Cansdale Street, it is important that the building form contributes to the overall appearance of the development.

Refer *Appendix E – Architectural Plans.*

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iv) Where gates are absolutely necessary for security, these should be as minimal a feature as possible, to avoid creating the impression of a gated community

Response: Security will be provided permanently at a building level with a potential site security system activating after daylight hours. Low, transparent fencing is necessary for the Aged Care Facility. This fencing will be incorporated into the proposed landscaping for the development and as such will not be a visually dominant feature of the development.

Fencing is necessary for the overall development to provide increased safety and security for the residents of the development who will have special needs and require a higher level of care. This fencing will be primarily used at night time for security purposes gates will remain open during the day.

Refer *Appendix E – Architectural Plans.*

v) Legible, attractive pedestrian accesses to and from the development and along Cansdale Road and Venner Road, particularly to link with parkland and bus stops

Response: The proposal includes pedestrian access to the surrounding areas on all boundaries of the site. Pedestrian access is provided into the Leyshon Park frontage at the centre of the development, adjacent to the reception and community facilities area. This access is connected to the central access driveway and establishes a view shed through the site from the Venner Road frontage through the Leyshon Park.

Another pedestrian connection is provided along the Fehlberg Park interface. The connection includes timber decking and a bridge connection over the drainage culvert which is proposed as part of the hydraulic works associated with the proposal. This provides an attractive connection to the pedestrian and bike path that runs along the boundary of the subject site.

This access is also visible from the Cansdale Street frontage due to the establishment of a clear view shed through the site to the Fehlberg Park frontage. This connection is clearly demonstrated in the Landscape Masterplan prepared by J W Concepts, the proposed building layout prepared by Arkhefield and the hydraulic solution developed by Cardno MBK.

Refer to *Appendix F – Landscape Response.*

vi) Direct access for residents between residential buildings and public streets, where possible

Response: The amended proposal prepared by Arkhefield establishes street addresses for several of the buildings that front either Venner Road or Cansdale Street. The buildings that are located along the northern property boundary have access to the street frontages along the central access way or via direct pedestrian connections through the site. The Circulation Plan prepared by Arkhefield illustrates the pedestrian and vehicle accesses available within the proposal.

Refer to *Appendix E – Architectural Plans.*

vii) Residential buildings offering residents views to parkland (particularly from upper levels) and providing surveillance for park users (in keeping with CPTED principles),

Response: All buildings within the amended proposal enable overlooking of either the adjoining parkland to the north, south and east, the Venner Road frontage and Cansdale Street, along with visibility of the internal street and common areas within the development

The proposal includes balconies on all independent living units, enabling the passive surveillance of the surrounding areas.

Consistent with the principles of CPTED, the architectural design and the proposed landscaping within and around the subject site seek to enhance the visibility and safety for users of both the surrounding parkland and the site itself.

Refer *Appendix E – Architectural Plans.*

viii) Direct access to residential buildings, to activate frontages and provide residents with easy access to parkland and paths, as well as deinstitutionalise the development.

Response: The amended site planning of the proposal incorporates pedestrian permeability of the site to enable direct, equitable access to all buildings within the development. The central access road extends to the centre of the site at the reception building, which enables access from this access road to the buildings to the east.

Similarly, buildings located along the street frontages have direct access from the street to the buildings. Security is however for individual buildings and as such, only residents and their visitors may be able to access the individual buildings. Security gates will be located at the main entrances to the development, however these will only be closed at night for security and will remain open during the day.

The development includes two main access points into Leyshon Park and Fehlberg Park. The Leyshon park access is located in proximity to the reception area at the centre of the site. This access includes a visible link to the Venner Road frontage, increasing the visual connections through the site and to assist with reducing building bulk of the proposal.

The connection to Fehlberg Park is incorporated into the hydraulic and landscape solution along the frontage, by establishing a bridge and timber boardwalk over the proposed drainage culvert. This park access will be established to be an attractive feature of the development with significant landscaping and a visual connection for the full length of the development from the Cansdale Street main access point.

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d) *Amended basement parking as necessary to ensure that large trees can be planted in the site as necessary to balance and soften building bulk, cool the site, contribute to pedestrian comfort, and act as a structural element along circulation routes.*

Response: Deep planting is included in the proposal. The basement carpark is to be designed to generally follow the building footprints and as such enables deep planting both within the development and along the site boundaries.

Refer to *Appendix E– Architectural Plans and Appendix F – Landscape Response.*

e) *In connection with the interface of the proposed development with the parkland:*
   i) *Demonstrate the proposed treatment of the boundary between the application site and Leyshon Park,*

Response: The proposal includes the establishment of three buildings along the Leyshon Park interface. These buildings range in height from 3 to 4 storeys and are setback a minimum of 6 metres from the boundary. The buildings are all oriented towards the parkland with balconies overlooking the area assisting with passive surveillance and providing private open space areas for residents.

The ground level interface with the parkland is treated in order to address the height of the podium, which extends to a height of 7.2m AHD. The treatment of this interface includes the stepping of the levels down from the podium and a ramp to provide equitable access into the parkland. The interface includes a path from the Cansdale Street frontage to the bikeway to the east of the site along with a pathway through feature planting to facilitate maintenance of the landscaping along this interface.

Significant landscaping is proposed on the site, including feature trees and shade trees to create a comfortable and attractive area for residents to use. The landscaping will also potentially include sculptural elements and informal seating at the eastern and western ends of the interface for residents.

Refer to *Appendix E – Architectural Plans and Appendix F – Landscape Response.*

   ii) *Along the southern site boundary, buildings are to have a habitable floor at the ground level of the adjacent streetscape or parkland.*

Response: The proposed development requires the establishment of a podium height of 7.2m AHD in order to achieve a habitable flood level (Q100 flood immunity). Accordingly, the ground floor of the uses fronting the Venner Road boundary of the development are not located at the same level as the parkland on the opposite side of Venner Road.

The buildings located along this frontage are setback approximately 8m from the site boundary. The setbacks facilitate the establishment of deep planting and substantial landscaping to

integrate the proposal with the surrounding parkland and reduce the appearance of the buildings the surrounding areas.

All buildings along this frontage include courtyards at ground level and balconies for the upper levels providing active, outward oriented frontages to the street.

iii) Encourage ground level activity and overlooking of the streetscape and parkland to integrate with the surrounding area, maximise amenity for residents, and accord with CPTED principles.

Response: The proposal presented includes the establishment of a majority of the development adjoining the site boundaries with buildings intended to predominantly double stacked to ensure that the buildings maximise the number of active frontages to orient towards both the external areas beyond the site boundaries and internal areas of the site. Similarly, all units include balconies to assist with the activation of the facades of all buildings of the development.

The centre of the development is to incorporate the establishment of community facilities to be primarily for the use of the residents of the development. These future uses may be in the form of either an indoor swimming pool, a central meeting hall or other recreational facilities along with additional common outdoor recreation areas. These facilities are located within the site to maximise the accessibility of these uses for residents as well as to activate the centre of the site.

The landscaping of the proposal is to be consistent with CPTED principles including:

- Establishment of sufficient lighting of common areas and walkways
- Minimisation of areas that may enable concealment and entrapment
- Establishment of vegetation that is below knee level or above head height to enhance visibility and minimise opportunities for concealment
- Establishment of the residential use adjacent to the parkland to enhance surveillance of the park area.
- Site planning to create a legible and pedestrian friendly development to assist with way-finding through the site.
- Creation of clear sightlines
- Siting of the shared common facilities at the centre of the development to enhance overlooking of areas.
- Double stacking of buildings to minimise blank walls.

iv) *Demonstrate that there are no remediation works proposed outside of the site, whilst some of the above mentioned information may have been provided in the application, it is not readily apparent.*

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Response: The application seeks a Preliminary Approval to Override the Planning Scheme for the Material Change of Use of the subject site. As such, the application does not permit work to commence on the site, or on adjacent land.

It is noted that works will be required to address the local flooding issues for the area, however these works will be conducted during a future stage of the development and will be subject to future development applications. Accordingly, any remediation works required will be documented at the future application stage.

9. *Provide a Landscape Concept Plan for high level approval, as outlined in Information Sheet 1 - Landscape Concept Plan.*

Response: A Landscape Concept Plan has been developed that identifies the Landscaping Intent for the development, details the landscaping treatment of the proposed Hydraulic solution to the existing concrete drain along with proposed edge treatments to assist the proposed development integrate with the existing surrounding community of Yeronga.

The Landscape Concept Plan prepared by JW Concepts includes plans demonstrating the existing conditions of the subject site and its surrounds and a detailed site analysis including prevailing winds and opportunities for viewsheds from the site to be optimised.

Refer to *Appendix F – Landscape Response.*

The proposed landscaping solution for the development incorporates the provision of deep planting within and around the site to assist with a reduction of the bulk of the proposed development. Shared open space areas are created within the site for the enjoyment of future residents. The landscaping solution to the drainage corridor ensures that the hydraulic solution developed by Cardno is a functional solution that improves the local flooding situation for the locality, but also is an aesthetically pleasing solution that adds to the usability of the existing parkland.

The hydraulic solution prepared by Cardno has been developed in accordance with Natural Channel Design principles and was developed in coordination with the project Ecologist from Cardno and the Landscape Architects from JW Concepts to ensure an appropriate outcome was achieved. We believe the concept presented achieves the desired hydraulic outcome for the area as well as providing a positive urban creek asset to the parkland area.

The solution includes the establishment of raised boardwalks or deck areas along adjacent to the drainage corridor and creates an attractive, substantially vegetated corridor. The landscaping solution is cognisant of the areas existing use for passive recreation purposes and as such ensures that accessibility is not impaired by the proposed rehabilitation works.

The landscaping of the drainage area includes the establishment of shade and screening trees in deep planting areas. Feature planting to contribute to the view of the drainage works from the balconies of the proposed buildings in the immediate area is also proposed. The landscaping also includes the establishment of substantial planting of the proposed rock retaining walls to ensure that the batters that form part of the solution are an attractive component of for the development.

Landscaping of the site assists with the treatment of the podium which, by necessity to achieve Q100 flood immunity, is raised to a level of 7.2m AHD. This podium is to be treated with substantial landscaping to ensure that the presentation of the development is not impacted by the height of the podium. Edge landscaping treatments will include the substantial planting of the courtyard areas along the road frontages, establishment of deep planting areas, introduction of hard landscaping including informal seating areas and sculptural elements along the parkland interfaces.

Refer *MP03 Drawing – Appendix F – Landscape Response.*

The landscaping of the Leyshon Park interface includes the establishment of one main pedestrian access point at the centre of the proposed development and with two other additional access points along the site boundary that provides access for residents to informal recreation areas overlooking the parkland area. These areas include informal seating areas and substantial planting to ensure the area contributes to the external appearance of the development. Paths along the frontage are provided to ensure access for maintenance purposes.

The main access to the site is from Cansdale Street. This access includes vehicle and pedestrian access. Where possible deep planting is included in this area to establish an attractive entrance statement into the development. Some parking is provided along this entrance avenue within the site to encourage slower vehicle speeds and provide highly visible visitor parking. The entrance avenue extends east to the centre of the site where the reception and some shared community facilities are located. Additional parking is provided along the rest of the Avenue towards the exit of the development onto Venner Road.

The landscaping treatment of the eastern boundary of the site including the area immediately adjacent to the parkland and the proposed hydraulic solution for the area ensures an attractive outcome for residents overlooking the area and the appearance from areas external to the site. Part of the treatment of this interface includes the proposed establishment of a bowling green and outdoor room along this interface to provide a transitional height between the podium of the development and the land included in the hydraulic solution for the site. This area of the site will not include any habitable rooms on the basis that the area will be located below the Q100 flood line, however is an appropriate location for uses within the site that do not rely on Q100 flood immunity.

The nursing home site will essentially operate separately from the rest of the development with separate entrance and basement car parking facilities. The landscaping of this area is crucial to ensure that the development has an appropriate and aesthetically pleasing appearance from the

Venner Road and Cansdale Street intersection and from the approach to the site from both east and west along Hyde Road. Accordingly, this area includes the establishment of substantial planting including street trees and turfed areas and possible sculptural features one of the most visible corners of the site.

A central community facilities area is proposed adjacent to the main reception area and central access driveway. This area may include a swimming pool and central meeting place for residents of the development. The siting of these uses at the centre of the development assists with activating the centre of the site and providing activity for overlooking by residents of the Independent Living Units. This area is to include attractive and pedestrian friendly landscaping that encourages residents to participate.

The landscaping of this development is considerate of the special needs of the future residents. The landscaping includes provisions for lighting and good visibility for safety and security purposes along with equitable access around the development.

Refer Appendix F – Landscaping Plan.

10. *Provide details of the proposed staging of the development and whether the proposed stages and precincts are interrelated or dependent.*

Response: The staging of the proposed development is considerate of the construction of the development and the basement car parking. The first stage of the development will include the internal road network, commencing at Cansdale Street and the central reception and some of the community facilities along with the first stage of the Independent Living Units. It is intended that the staging will then continue around the site, following the path of the development of the basement.

The Staging Plan has been prepared by Arkhefield and is included in *Appendix E.* This staging plan indicates areas involved within each stage, however the stages are non-sequential.

Refer to Appendix E - Architectural Plans.

11. *Demonstrate that Performance Criteria P4 of the Residential design - Special Needs Code has been met i.e. appropriate access and circulation routes for emergency entry and exit have been highlighted.*

Response: The proposed development involves the establishment of an Aged Care facility and Retirement Village. As such, it is essential that the development be designed to be considerate of the special needs of the residents.

The proposal incorporates a one-way central access road that enters the site at Cansdale Street, extends towards the centre of the site and exits at the Venner Road frontage. This access includes bays for emergency vehicles.

Emergency vehicles can also access all buildings, both at grade and at basement level.

12. *Submit a Vegetation Management Plan (VMP) in the form of scaled plans and supporting documentation that includes at least the following information:*
    - *i) The extent of the VMP is to include evaluation of all areas including, proposed road reserves, external works and development areas;*
    - *ii) The location and description of existing vegetation on and adjacent to the site including species and botanical name plus the height and canopy spread;*
    - *iii) The location and extent of all site works including all proposed infrastructure and areas of earthworks;*
    - *iv) Detail design of all civil works is to be cognisant of environmental values. Alternative solutions may be required in some instances, to protect significant vegetation (eg alternative service alignments, variations to batter slopes and tunnel boring);*
    - *v) The location and description of all vegetation to be retained and that to be removed;*
    - *vi) A description of all measures to be used to protect and enhance vegetation and habitat features to be retained during construction;*
    - *vii) A description of all pruning and tree surgery works (to AS 4373/96) to maintain health and stability of trees and reduce potential hazards for future residents;*
    - *viii) The location and extent of storage and stockpile areas for cleared vegetation and site mulch;*
    - *ix) A description of all methods to salvage and/or reuse cleared vegetation. Generally cleared vegetation is to be mulched for reuse in landscape/ rehabilitation works; and*
    - x) *Details of all measures to protect and recover fauna during clearing operations, including: presence of a qualified wildlife officer during clearing operations, pre clearing inspections, staging and sequence of clearing and recovery procedures.*

Response: As the subject application requires a Preliminary Approval to Override the Planning Scheme and will not authorise the undertaking of works, we do not concede that there is a need to provide a a VMP. Cardno's have undertaken the appropriate assessment and concluded that a condition of approval (refer *Appendix D – Natural Assets Assessment, page 9*) applied to the Preliminary Approval will ensure all vegetation management matters are addressed at future applications.

Refer to *Appendix D – Natural Assets Assessment.*

13. *With regard to traffic and transport issues, there is to be no pedestrian crossing in Hyde Road as shown on the proposal and all street parking is to remain as i.e. Parallel. Please demonstrate how the proposal can meet this requirement.*

Response: In accordance with the requirements of Council, the pedestrian crossing identified within the original proposal has been removed.

Refer to *Appendix E: Architectural Plans.*

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14. *Please provide additional air quality monitoring to determine the effects of the industrial activity in the area, on the proposed Retirement Village;*

Response: The initial report provided as part of the application lodged with Council was based on the information provided by the Environmental Protection Agency (EPA) to the project Noise and Air Quality consultants, Max Winders and Associates. It was noted by Council that this report did not include modelling based on all of the Environmental Licences held by one of the industrial uses, Akzo Nobel, which is a paint manufacturer, located at 115 Hyde Road, situated to the west of the subject site.

The updated report prepared by Max Winders and Associates provides the additional air quality modelling and information requested by Council in relation to this near by use. The report prepared by Max Winders and Associates also discusses the possible acoustic treatments of the buildings in accordance with the amended proposed site layout that forms part of this information request response.

The modelling completed by Max Winders and Associates has guided the building heights of the development, in particular those located in proximity to the Cansdale Street frontage. The modelling obtained has indicated that the maximum height that is achievable that complies with the provisions of the Council air quality requirements is for 3 storeys at the Cansdale Street frontage and extending up to a maximum of 4 storeys approaching the middle of the site from the Cansdale Street end of the site. The Building Envelope Plan prepared by Arkhefield and the Air Quality Report prepared by Max Winders and Associates demonstrate these requirements.

Additionally, the report prepared by Max Winders and Associates provides additional information relating to the potential noise impacts on the development from surrounding uses. The report identifies that the development will not be significantly impacted by surrounding development and as such, no specific acoustic treatments are required for the development. The report identifies that the use of standard residential grade construction and building elements will be sufficient to achieve necessary internal noise amenity levels.

The location of the communal recreation areas are also adequately protected from the possible impacts of the industrial development and other noise emitting uses and accordingly the establishment of particular treatments of these areas is also not required.

Refer to Appendix E – Architectural Plans and Appendix G – Air Quality and Noise Assessment.

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15. *Demonstrate that the proposal meets the Council's fifteen sustainable development principles, including consideration being given to rooftop greening to reduce radiation from the proposed buildings.*

Response: *Appendix H* prepared by PMM Group identifies several initiatives that are to be identified at all stages of the development process for inclusion in the development. These initiatives include:

- Education of the community and residents of the sustainability initiatives that are incorporated in the development – eg. Rainwater tanks
- Development of a Brownfield site, formerly used for industrial purposes that is more consistent with the predominant development in the local area.
- Orientation of buildings to assist with solar design

These initiatives are identified at this Preliminary Approval stage to provide direction for future stages of the development.

As part of the original application documentation, it was identified that 15 principles for sustainable development will be adapted and addressed at detailed planning and design. Enclosed in *Appendix H – Sustainability Initiatives*, is our draft document setting out these principles to be addressed by future applications.

16. *Demonstrate how the proposal can be serviced from with regard to water supply and disposal of sewage, for the various stages and the overall development. The application has been referred to Brisbane Water for comment with regard to water supply and sewerage disposal and their comments will be forwarded to you as soon as they are received.*

Response: BMD Group referred the proposal to Brisbane Water to identify if any requirements for the servicing of the proposed development. Brisbane Water has indicated that no external augmentation of the water supply infrastructure is required.

The Brisbane Water report has identified that in light of the development type proposed on the site, augmentation of the sewerage infrastructure is required. The requirements identified by Brisbane Water include the construction of a 225mm gravity main from the upstream side of the development up to the Fairfield Branch Sewer and then the construction of a 300mm gravity main up to the Fairfield Waste Water Treatment Plant.

Correspondence with Brisbane Water has indicated that the alignment of the necessary gravity mains identified within the Brisbane Water report is conceptual only. The preferred alignment is likely to be directly north adjacent to the existing open stormwater drainage line through Leyshon Park, subject to further investigation, including consideration of any potential environmental issues. This alignment can be determined at the detailed design stage.

Refer to *Appendix I- Servicing Report.*

MATTERS OF INTEREST TO DLGPSR

The Department of Local Government, Planning, Sport and Recreation as third party for the application, raises the following matters of concern:

Concerns are raised with the workability of the proposed code in particular:

- *A number of the acceptable solutions are not precise and therefore self assessment by an applicant and enforcement by council would be difficult;*
- *The location of the Tables of Assessment in the 'design guidelines' which are not a statutory document*
- *The inclusion of Desired Environmental Outcomes (the provisions of s3.1.6 of the IPA do not envisage the inclusion of DEOs – a 3.1.6 PA may only state the level of assessment and the applicable codes for the development).*

Response: The proposal has been amended in response to this Information Request to achieve an improved urban design outcome for the site. Similarly, in response to the issues raised by Council in the information request, the Yeronga Retirement Village Code has been received.

The future applications for development permits will now be assessed against the provisions of the Residential Design – Medium Density Code which has been amended to enable variation on the Gross Floor Areas requirements, plot ratio and building height. These amendments will be included within the conditioning of this Preliminary Approval application and future applications will be required to comply with the provisions of the Preliminary Approval.

A Building Envelope Plan has been prepared by Arkhefield which illustrates the areas of the development site that can be developed to particular heights. This plan is also to be included as part of the Approval package and future applications will be required to comply with the provisions of the plan in relation to building height, setbacks and general building form.

Accordingly, in light of the removal of the Yeronga Retirement Village Design Guidelines and Code, the application complies with the items raised by the DLGPSR in its information request. The acceptable solutions identified for the development are now the provisions of the Residential Design – Medium Density Code and the applicable modifications included within the Preliminary Approval. Similarly, the Desired Environmental Outcomes for the development that were identified in the initial Yeronga Retirement Village Design Guideline have been removed as the future stages of the development will be required to comply with the requirements of *Brisbane City Plan 2000.*

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We note that this response has addressed all items of the information request provided on 21 June 2005. We now ask that Council commence assessment of this proposal, based on the information provided.

We trust this information is sufficient for your purposes, however should you require any further details or clarification, please do not hesitate to contact the writer [redacted]

Yours faithfully
PMM GROUP PTY LTD

[redacted]

Enc
Appendix A – Energex & DMR Response
Appendix B – BCC Code Responses
Appendix C – Hydraulic Analysis
Appendix D – Natural Assets Assessment
Appendix E – Architectural Plans
Appendix F – Landscape Response
Appendix G – Air Quality Assessment
Appendix H – Sustainability Initiatives
Appendix I – Servicing Response

cc [redacted] - Harrison Real Estate Developments
[redacted] - Department of Local Government, Sport and Recreation

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APPENDIX C

Hydraulic Analysis

Prepared by

Cardno

Cardno
Engineering the Future

Yeronga Retirement Village








Hydraulic Analysis

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Document Control

Version	Date	Author		Reviewer	
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Yeronga Retirement Village
Hydraulic Analysis

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1.0 INTRODUCTION

It is proposed to construct a retirement village on a site at the corner of Cansdale Road and Venner Road in Yeronga (the study site). Figure 1 shows the location of the site. The lot is described as Lot 1 on RP150512.

A preliminary investigation into the hydraulic issues associated with the development was carried out by Cardno in March 2005 as part of the initial submission to Council. The analysis identified the hydraulic constraints affecting the site and identified a potential design solution for drainage of the site.

Item 2 of the information request received in relation to the development dated 21 June 2005 relates to flooding of the site:

"2. Demonstrate that the proposal:

(i) complies with section 4.2 P1 of the Stormwater Management Code. Specifically, demonstrate that the proposed stormwater management system or site works do not adversely impact on flooding or drainage of properties that are upstream, downstream or adjacent to the subject site.

(ii) complies with section 4.2 P2 of the Stormwater Management Code. Specifically, demonstrate that the drainage network provides adequate capacity to safely convey stormwater run-off resulting from relevant design storm events taking into account increased run-off from roof drainage.

(iii) Complies with section 4.2 P3 of the Stormwater Management Code. The development design must reduce property damage and, where applicable, ensure public safety by ensuring that the development levels are set above the relevant design flood level or storm surge level.

(iv) Complies with section 4.2 P4 of the Stormwater Management Code. Demonstrate that the channel works, major drainage works and flood mitigation works maintain and/or enhance the environmental values of the waterway corridor or drainage corridor.

In addition, there is an overland flow path through the south-eastern corner of the site, which has been identified in the ***Yeronga Local Stormwater Management Plan.****"*

In response to the information request, detailed modelling of the works required to obtain a satisfactory hydraulic solution has been completed. The proposed works have been developed in consultation with ecologists and landscape architects to ensure that the outcome achieved maximises the environmental values of the waterway corridor. Modelling has considered both the need to cause no adverse impact and the desirability of including the design solution as part of an overall flood mitigation strategy for the catchment.

This report presents the results of the modelling investigations.

2.0 SITE DESCRIPTION

The development site covers an area of approximately 2.79 ha. Ground levels throughout the site are generally between 5 m AHD and 6 m AHD. The site is currently used for industrial purposes. The western half of the site contains sheds and parking areas while the eastern half of the site is predominately grassed with some heavier vegetation such as trees and shrubs along the eastern boundary.

The extent of this flooding assessment is not limited to the development site as described above. Drainage paths considered in this assessment are presented in Figure 2. From this figure it can be seen that the main drainage path within the catchment is located on the eastern boundary of the site. The catchment drains in a northerly direction to the Brisbane River through Leyshon Park and Downs Oval and beneath the Brisbane Corso. The drain takes the form of an excavated channel with a concrete invert.

Smaller tributary flows enter the main channel approximately 80 metres upstream of the southern boundary of the development site. At this location stormwater drainage pipes from the west and the east meet and stormwater continues down the main open channel.

Despite the fact that the channel is not a natural waterway, a Waterway Corridor has been defined that affects the site (refer Figure 2). The corridor has been defined 30 metres either side of the low flow invert of the channel. As the centreline of the waterway is about eight metres inside the eastern boundary of the site, the corridor affects about a 38 metre width of the site.

3.0 PREVIOUS STUDIES

A flood study of the area was conducted by Brisbane City Council in June 2003 (*Yeronga Local Stormwater Management Plan (LSMP) June 2003*). This report has been referenced as part of the current assessment. In addition, Council made available the models developed for the LSMP for the current investigation. The models provided base information for use in the detailed modelling undertaken for this investigation.

The major storm event considered for the local stormwater management plan had a recurrence interval of 50 years. This is considered appropriate given that the drain can be classified as a designed open channel, for which the major storm event for the specification of fill and floor levels is the 50 year event according to Table B2.2.1 of the *Subdivision and Development Guidelines* (2000). Consequently, the 50 year event was considered for the analysis of local catchment flooding when investigating the drainage requirements for the proposed development.

As shown in Figure 6, the flood mitigation measures proposed in the *Yeronga Local Stormwater Management Plan* include retaining the existing concrete invert of the channel and increasing the width of the grassed base of the channel by 12 metres (p30 and Appendix L) along the eastern boundary of the site and downstream (north) of the site. A Mannings n value of 0.04, which corresponds to grass, was adopted for the channel to maximise its flow carrying capacity.

The works envisaged for the area also include the excavation of channels to convey the runoff from the eastern and western portions of the catchment to the main drain on the eastern boundary of the site. The proposed base width of the eastern and western channels is 10 metres and 8 to 12 metres respectively. As for the main channel, grass lined channels with a Mannings n value of 0.04 was envisaged. Bank slopes of 1 in 4 were adopted for the channel.

Based on the dimensions indicated in the LSMP and existing ground levels in the vicinity of the drain, the main drain following the completion of channel works would have a top width of about 39 metres. The western drain would have a top width of between 36 and 40 metres and the eastern drain a top width of about 30 metres.

The channel design presented in the LSMP is preliminary. It is likely that Council will give consideration to obtaining a design more conscious of environmental and safety issues if the flood mitigation works are implemented. However, such a design would necessitate the construction of a wider channel to provide for flatter bank slopes and the reduced flow capacity associated with a level of vegetation higher than grass. If the bank slopes were to be flattened to improve safety (as proposed for the development at the request of Council), the top width of the channels could need to increase by as much as 13 metres (a top width of 52 metres) as a worst case.

Further, it is also important to note that the proposed location of the main channel and western channel in the LSMP affect private property (i.e. the proposed site) and would require the resumption of a significant area in order to be constructed. The existing drain is not contained within an easement and therefore Council has no current right to modify the drain without the consent of the owner of the property.

4.0 GOVERNING FLOOD LEVELS

Based on a flood report obtained from Council and the *Yeronga Local Stormwater Management Plan* (City Design June 2003), the applicable flood levels to the site are listed in Table 1. Table 1 also lists the peak flood levels calculated by the current study (refer Section 6).

Table 1 Defined Flood Levels

Event	Brisbane River Flooding (mAHD)	Local Flooding (mAHD)			
		Yeronga LSMP		Current Modelling	
		Existing	Post Mitigation	Existing	Post Mitigation
100 Year	6.7	-	-	-	-
50 Year	5.5	3.70 – 4.35	3.70 – 3.74	3.89 – 4.38	3.62 – 3.65
20 Year	3.7	-	-	-	-
10 Year	-	3.25 – 4.27	3.10 – 3.24	3.51 – 4.18	3.20 – 3.22
2 Year	-	3.00 – 4.23	2.80 – 2.97	3.03 – 3.69	2.72 – 2.74

The figures quoted in Table 1 for local flooding include the levels predicted for the site following the completion of proposed flood mitigation works. The proposed mitigation works that affect the site are shown in Figure 6 and described in Section 3.

Based on Table B2.2.1 of the *Subdivision and Development Guidelines* (2000), the design levels applicable to the development are listed in Table 2.

Table 2 Design Levels for Development

Case	Brisbane River		Local Flooding		Governing Level (mAHD)
	Design Level	Level (mAHD)	Design Level	Level (mAHD)	
Allotment fill	100y ARI + 0.3m	7.0	50y ARI + 0.3m	4.68	**7.0**
Habitable Floor	100y ARI + 0.5m	7.2	50y ARI + 0.5m	4.88	**7.2**
Non-Habitable Areas	100y ARI + 0.3m	7.0	50y ARI + 0.3m	4.68	**7.0**
Carparking*	20y ARI	3.7	50y ARI	4.38 existing 3.65 mitigated	**4.38 existing 3.65 mitigated**

Note: Basement car parks can be set below the nominated level provided that suitably waterproofed perimeter walls, air vents, and entry/exit ramps at the car park entrance are above the 100 year ARI flood levels for all sources including the Brisbane River (i.e. 6.7 m AHD).

A basement car park (floor level 4.1 m AHD) is proposed for the development. As the entry/ exit to the basement car park will be from the podium level (7.0 m AHD minimum), the Council requirements with respect to basement car park immunity will be achieved.

Although the majority of the site will be set at a minimum level of 7 m AHD, it is proposed to site a bowling green and associated entertainment area at a level of 4.1 m AHD in the north eastern corner of the site. This level is proposed in order to achieve a superior architectural outcome given the existing levels at the boundary of the site. Although the level is lower than the governing Brisbane River flood level, it is considered to be acceptable given that the level is above that produced by local flooding.

5.0 FLOOD MODELLING

5.1 Overview

The existing stormwater drainage system in the area consists of a series of overland flow paths, stormwater pipes and open channels. Given this interaction between surface and underground drainage, XP-STORM was considered the most suitable package for modelling the investigation area. Version 8.5 of XP-STORM was used for the analysis.

XP-STORM is capable of modelling hydrology and hydraulics in a single model, and includes the algorithms used in RAFTS. It was therefore possible to import the Council RAFTS model of the catchment to the XP-STORM model to derive inflow hydrographs for the hydraulic layer of the XP-STORM model that were consistent with those obtained by Council.

The following sections of the report discuss the various components of the XP-STORM model and the modelling procedures adopted for this assessment. A schematic of the XP-STORM model developed for the site is provided in Figure 3.

5.2 XP Storm Hydrology

As part of the preparation of the *Yeronga Local Stormwater Management Plan* (2003) Brisbane City Council developed a RAFTS model to represent the hydrology of the East Yeronga catchment. The data from the RAFTS model was transferred to the hydrology layer of the XP-STORM model. Table 3 summarises the parameters adopted for each sub-catchment. Sub-catchment boundaries are shown on Figure 4.

Table 3 Sub-Catchment Details

Sub-Catchment	Area (ha)	Fraction Impervious (%)	Slope (m/m)	Manning's Roughness
AB	22.30	44	0.045	0.035
CDE	10.50	65	0.048	0.025
F	3.66	81	0.040	0.025
G	13.23	36	0.020	0.033
HM	42.57	50	0.016	0.025
N	2.95	90	0.045	0.025
O	3.40	29	0.016	0.033
P	3.95	3.4	0.070	0.025
Q	9.90	47	0.012	0.025
R	8.80	33	0.010	0.040
Main1	2.20	30	0.040	0.037
Main4	1.96	20	0.020	0.040
Main7 (D2)*	2.17	20	0.020	0.040
Main12	4.22	15	0.020	0.036
Main17	3.42	23	0.010	0.039
Main22	4.33	23	0.010	0.039
Main26	1.50	20	0.010	0.037

* Node Main7 is labelled D2 in the developed case model.

XP-STORM allows the specification of configuration parameters which apply globally to the model. One of the configuration parameters that can be set is the value of the storage multiplier B_x, which is directly analogous to the B_x factor in RAFTS. In order to achieve calibration for the Yeronga LSMP, a B_x factor of 1.75 was adopted for the RAFTS model. This storage coefficient was applied as a configuration parameter (BX=1.75) to the XP-STORM model. A configuration parameter was also set to specify that runoff routing was to be completed in accordance with the algorithms used in RAFTS.

Three detention basins were included in the Council RAFTS model of the catchment and were thus duplicated in the XP-STORM model. The first basin is formed between the Gold Coast Railway line and the Yeronga TAFE (Node AB). The second basin, which is smaller than the first, is formed between Fairfield Road and the Gold Coast Railway Line (Node CDE). The third detention basin is located towards the downstream end of the main channel, and discharges just upstream of the Brisbane Corso (Node Q). This basin is formed in the residential streets to the east of the main channel. Table 4 reports the storage information, drawn from the Council model, used to model each of these detention zones. In this table the depth of storage reported is relative to the invert of the node to which the storage is assigned.

Table 4 Detention Basin Details

Basin 1 (Node AB)		Basin 2 (Node CDE)		Basin 3 (Node Q)	
Node Invert = 4.20 mAHD		Node Invert = 1.96 mAHD		Node Invert = 2.00 mAHD	
Depth* (m)	Area (m²)	Depth* (m)	Area (m²)	Depth* (m)	Area (m²)
0	0	0	0	0	0
1.1	5	0.5	2	1.2	61
1.8	16	1.0	2	1.3	1800
2	30	1.2	10	1.4	2010
2.2	55	1.4	20	1.5	3710
2.3	100	1.5	80	1.6	5620
2.4	170	1.6	320	1.7	8030
2.5	310	1.6	800	1.8	10200
2.6	480	1.7	1080	1.9	12400
2.7	620	1.8	1760	2	13930
2.8	770	1.9	2550	2.1	16820
3.1	1120	2.0	3250		
3.3	1440	2.2	2820		
3.5	1600	2.5	1667		
4.3	1904				
5.3	2477				
5.8	3190				
6.3	3966				

** Depth is relative to the invert of the node to which the storage is assigned.*

Rainfall losses were set to match those adopted by Council, namely 15 mm of initial loss followed by a continuing loss rate of 2.5 mm per hour.

Rainfall intensities were taken from the Brisbane Intensity Frequency Duration curve provided in the BCC Supplement to QUDM (Appendix A to Section 6 of the Brisbane City Council *Subdivision and Development Guidelines* (2000)).

To be consistent with the Yeronga LSMP, events with recurrence intervals of 2, 10, and 50 years were modelled. Storm durations ranging from 30 minutes to 2 hours were considered for the analysis. A storm with a duration of 60 minutes was found to produce peak flow rates in the vicinity of the site.

The peak flows predicted by the hydrology layer of XP-STORM are presented in Table 5. The table also reports the corresponding (Council) RAFTS discharge. It can be seen from these results that the peak flows predicted by the XP-STORM model closely agree with the discharges determined for the Yeronga LSMP. Given this close agreement, it was considered that the hydrology component of the XP-STORM model was providing satisfactory results.

Table 5 XP-STORM Hydrology Results - 60 Minute Duration Storm

Sub-Catchment	2 year ARI Discharge (m^3/s)		10 year ARI Discharge (m^3/s)		50 year ARI Discharge (m^3/s)	
	STORM	RAFTS	STORM	RAFTS	STORM	RAFTS
AB	4.97	4.79	8.79	8.55	12.06	12.01
CDE	3.43	3.35	5.33	5.24	6.96	6.95
F	1.30	1.29	1.98	1.95	2.55	2.55
G	2.47	2.72	4.14	3.95	5.94	5.81
HM	7.63	7.37	13.47	13.00	19.29	19.08
N	1.07	1.06	1.61	1.59	2.07	2.06
O	0.64	0.61	1.12	1.09	1.61	1.58
P	1.16	1.14	1.83	1.79	2.40	2.39
Q	1.98	1.91	3.48	3.31	4.98	4.88
R	1.10	1.05	2.04	1.93	3.05	2.94

Note: STORM refers to results from XP-STORM, RAFTS to results from Council model

5.3 XP Storm Hydraulics

5.3.1 Overview of Hydraulic Model

Detailed survey was collected for the region downstream (north) of approximately Hyde Road to the Brisbane River. The survey, completed by PMM Group (Drawing 7203-2a) included spot levels and cross sections through the existing drain. This information was augmented by design data for pipes and culverts in the vicinity of the study area.

Based on discussions with Council [redacted] it is understood that the survey upon which the Council hydraulic model is based was taken from aerial (helicopter) survey and that the levels obtained from the aerial photogrammetry are quite variable in the channel.

Therefore, in addition to potential variations associated with the different models used for the Yeronga LSMP (MIKE-11 and HEC-RAS) and the current investigation (XP-STORM), the fact that detailed survey was used for the current investigation will produce calculated flood levels which differ from those obtained by Council. As the model is based on detailed survey rather than aerial photogrammetry, it is considered that the results obtained from the new modelling will be more reliable than those presented in the Yeronga LSMP.

5.3.2 Cross section Information

As noted in Section 5.3.1, cross sectional information was obtained from the detailed survey of the site. A total of 28 cross sections were used to define the water courses within the model area in the developed case (one additional cross section was included in the existing case model). The location of each of these cross sections is shown in Figure 5.

Manning's n roughness coefficients were applied to the centre, left and right banks of each cross section. The value of the Manning's coefficients adopted for the model varied from 0.03 to 0.08, similar to the values adopted for the Yeronga LSMP. Downstream of the development site the channel is well maintained with mowed grassed slopes and a concrete invert. Therefore the roughness along this section of the model was generally set at 0.03 for the entire width of the cross section.

Roughness values were increased within the western and eastern overland flow paths due to the presence of more significant vegetation along these watercourses. These roughness estimations were based on aerial photography and site inspection.

Roughness values for the proposed new channel (refer Figure 7) were based on advice regarding vegetation densities from JW Concepts (landscape architects for the project). An n value of 0.10 was assumed on the bank closest to the site, decreasing to 0.03 in the rock lined bed of the channel, and increasing to 0.05 (generally grass) on the bank adjacent to the park.

5.3.3 Structures

The detailed survey indicated stormwater pipes under the western and eastern overland flow paths. These pipes convey runoff from catchments upstream of the site and discharge it to the main channel approximately 40 metres north of Venner Road. The details of these pipes are presented in Table 6.

Table 6 Stormwater Pipe Dimensions (Existing)

Line	Dimensions	Number of pipes	Total Length (m)
Fairfield Rd to Main Drain	1200& RCPC	2	137
Fairfield Rd to Main Drain	1200H x 1800W Oval	2	277
Hyde Rd to Main Drain	1650& RCPC	1	170

Brisbane Corso crosses the main channel at the downstream end of the model, just upstream of the Brisbane River. A bank of culverts allows runoff to pass under the road. The details of these culverts are presented in Table 7. Invert levels at the inlet of the culvert indicate that there is a significant drop in bed level from the main channel to the culvert invert.

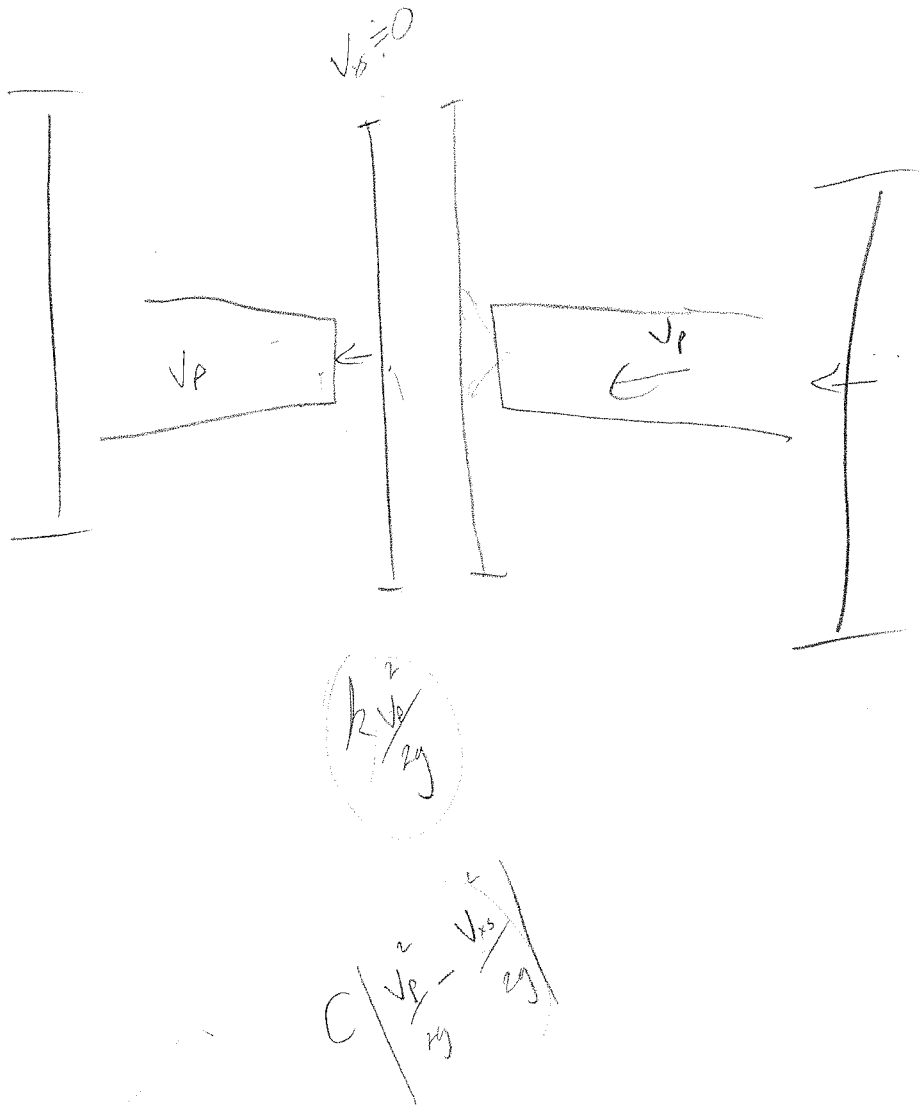

$V_b = 0$
V_p
V_p
$k \frac{V_p^2}{2g}$
$C \left(\frac{\tilde{V}_p^2}{2g} - \frac{V_{ps}^2}{2g} \right)$

Table 7 Brisbane Corso Culvert Details

XP-STORM Link Location	Geometry	No. of culverts	Length (m)	Upstream Invert (mAHD)	Downstream Invert (mAHD)
Main23-24	1650& RCPC	4	27.3	-0.45	-0.80

5.3.4 Boundary Conditions and Simulation Details

Previous modelling for the Yeronga LSMP (Brisbane City Council June 2003) was based upon a constant tailwater level of 1.2 m AHD in the Brisbane River, which is equivalent to the Mean High Water Springs tide level. The same boundary condition was adopted for the current modelling at the downstream end of the model (node Main26) with the model reverting to normal depth if required.

The XP-STORM model was run for a period of 24 hours at 5 second time steps.

5.4 Proposed Mitigation Option

5.4.1 Overview of Proposed Council Mitigation Scheme

As part of the Brisbane City Council Yeronga LSMP, mitigation options were investigated to relieve some of the flooding pressures already experienced by residents within the catchment. The final proposed relief configuration included the following components (from the *Yeronga Local Stormwater Management Plan* (June 2003)):

- Widening of the western overland flow path from Hyde Road, through Venner Road to the confluence with the main drain. In the existing case this flow path is poorly defined. Under the proposed relief conditions the base of this channel would be increased to between 8 metres and 12 metres.
- Widening of the eastern overland flow path from Fairfield Road, through Fehlberg Park to the confluence with the main drain. As with the western flow path, this channel is poorly defined under existing conditions. The proposed mitigation solution indicates a widening of the base of this channel to approximately 10 metres with 1v:4h batter slopes.
- Widening of the main channel downstream of the confluence with the eastern and western overland flow paths. The proposed mitigation option indicates that the concrete lined channel invert should be maintained with the channel widened by 12 metres. This widening may occur as 6 metres either side of the concrete invert or 12 metres to one side depending on the location of other elements within the floodplain such as houses. In the vicinity of the site, this would produce a channel with a top width of about 39 metres assuming 1 in 4 bank slopes.
- Diversion of part of the piped stormwater from sub-catchment G to the piped system of sub-catchment O. Under existing conditions, the pipe infrastructure at the outlet of sub-catchment G is not sufficient to convey the 2 year ARI discharge. Sub-catchment runoff in addition to the capacity of the pipe in the 2 year event will be diverted to sub-catchment O.

A number of other mitigation measures were recommended involving upgrading and replacing pipe drainage infrastructure throughout the catchment. The measures relevant to the currently proposed development only have been mentioned here. Figure 6 presents the proposed mitigation solution diagrammatically and is drawn from Appendix L of the LSMP.

5.4.2 Proposed Mitigation Solution

The extent to which the site is flooded for the 50 year local flooding event (refer Figure 2) is limited to within about 15 to 20 metres of the boundary of the site. Based purely on hydraulic grounds, the development could proceed to the limit of inundation (i.e. to within 15 to 20 metres of the eastern boundary of the site) without impacting on existing flooding.

However, the situation is complicated by the following factors:

- **Waterway corridor**

  A waterway corridor has been defined based on a nominal 30 metre offset from the centre of the drain (refer Figure 2). A width of between 38 metres and 57 metres on the eastern boundary of the site is within the defined waterway corridor.

  Performance Criteria P3 of the Filling and Excavation Code of City Plan requires that filling or excavation must not cause any increase in flooding or drainage problems. Acceptable Solution 3.1 to the performance criteria is to ensure that no filling or excavation is located within a waterway corridor. Compliance to the acceptable solution would quarantine a significant area without providing any hydraulic benefit. As an alternate solution, as noted above the site could be filled to the existing flood line (i.e. 15 to 20 metres from the property boundary) without adversely impacting on flood levels.

- **Flood Mitigation Works**

  The Yeronga LSMP (refer Section 3 and Section 5.4.1) notes the need for flood mitigation works to occur to reduce the incidence of flooding in areas upstream of the site.

  With reference to Figure 6, the mitigation solution recommended in the Yeronga LSMP significantly encroaches on the proposed development site. As no easement exists on the site for drainage, Council would either need to obtain permission from the land owner for works to be completed on the land or purchase the land for drainage purposes.

  Further, the proposed works will affect land that is presently free from inundation rather than being sited within the parkland to the east that is subject to inundation.

  Given the above, the logical location for the mitigation works is within the Council controlled open area to the east of the site rather than within the site.

Based upon the above considerations, a flood solution has been developed which it is considered provides a satisfactory outcome for both Council and the developer. Figure 7 shows the proposed mitigation solution. Key points relating to the mitigation option are as follows:

- The construction of a channel in the unformed section of Venner Road along the south eastern boundary of the site to collect runoff from the western part of the catchment upstream of the road (refer Section 2). The channel will continue along the eastern boundary of the site, collecting runoff from the eastern part of the catchment. This drain will be located both within the site and on Council land. On the western and northern sides of the channel (i.e. within the development), a terraced bank is proposed. On the eastern and southern banks of the channel, a bank slope of 1 in 6 from the existing ground level has been adopted to facilitate egress from the channel. The base of the channel would be composed of rock and have a width of about six metres. The average grade of the channel is

approximately 0.2 percent to match the existing invert level of the existing pipes discharging to the channel and the invert level of the existing channel downstream of the site.

- The ability to construct a channel at the north eastern corner of the site is constrained by the presence of an existing cricket oval. Based on discussions with the South Brisbane District Cricket Club Incorporated who lease the area from Council, it is not possible to relocate or reduce the size of the oval. Consequently, it is proposed to construct culverts under the north eastern corner of development site. The culverts will discharge to the existing channel through Leyshon Park. Table 8 summarises the details of these culverts.

Table 8 Mitigation Option - Culvert Details

Geometry	Number of Culverts	Length (m)	Upstream Invert (mAHD)	Downstream Invert (mAHD)
3300 x 2100 RCBC	3	52	1.18	1.13

When considering the performance of the proposed works, the following scenarios were considered:

- proposed works in isolation; and
- proposed works with following components of Yeronga LSMP flood mitigation scheme:
  - Widening of the main channel downstream of the site. The concrete invert was preserved and the bed of the channel widened to a total of 12 metres (i.e. 6 metres either side of the invert and 1v:100h gradient). The channel was widened from node D2 to node Main18 (refer to Figure 3 for node locations). Full details of each of the cross sections used in the developed case model are reported in Appendix A.
  - Widening and excavation of the eastern overland flow path. Again these works were modelled as recommended in the Yeronga LSMP. The width of the channel bed was increased to approximately 10 metres from Fairfield Road to the confluence with the new drain. Appendix A provides details of these cross sections. It was assumed that the existing pipes within this section were removed.

It can be noted that the proposed diversion of flow from subcatchment G (refer Section 5.4.1) was not included in the modelled mitigation measures. This will conservatively increase the modelled flow in the eastern tributary of the drain.

6.0 MODELLING RESULTS

6.1 General

Modelling was completed to determine peak flood levels and flows for the following scenarios:

- Existing situation.
- Developed case with proposed channel.
- Developed case with proposed channel and mitigation works in the vicinity of the site as recommended in the Yeronga LSMP (refer Section 5.4).

As noted in Section 5.3.1, the flood levels predicted by the XP-STORM modelling of the catchment differ from those calculated using MIKE-11 and HEC-RAS for the Yeronga LSMP. This can be attributed to the use of different hydraulic models for the two studies and, more significantly, the use of cross sections based on detailed survey for the current investigation.

When quantifying the performance of the proposed works, comparisons were made between the flood level estimates obtained from the current modelling and those presented in the Yeronga LSMP.

Peak flow rates and velocities calculated for each scenario are provided in Appendix B.

6.2 Existing Situation

The peak flood levels calculated for the existing situation are presented in Table 9 also presents the peak flood levels reported in the Yeronga LSMP at cross sections in close proximity to nodes in the XP-STORM model.

In the western tributary upstream of the site, the flood level predicted by the XP-STORM model is less than that presented in the Yeronga LSMP by between 570 mm and 140 mm for the 2 and 50 year events respectively. In the eastern tributary upstream of the site, the flood levels predicted by the XP-STORM model are generally less than those presented in the Yeronga LSMP by up to 130 mm. The Council model predicts a level up to 100 mm lower than that obtained from the current model immediately upstream of the site.

Within the main channel in the vicinity of the site, the XP-STORM model predicted levels up to 200 mm higher than those presented in the Yeronga LSMP. In the vicinity of the Brisbane Corso the difference in flood level is greater, with the XP-STORM model predicting that the Corso will control levels upstream to a greater extent than calculated in the Yeronga LSMP modelling.

From the results presented above it was concluded that the current modelling provided a satisfactory prediction of flood levels within the catchment despite not exactly matching the results previously reported. However, this is to be expected given the differences in modelling and base data for the XP-STORM and Yeronga LSMP models (refer Section 6.1).

Table 9 Existing Case Results

		2 Year Event Peak Levels			10 Year Event Peak Levels			50 Year Event Peak Levels		
Council Cross Section	XP-STORM Node	LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
Western Tributary										
	HM	-	4.46	-	-	4.59	-	-	4.67	-
	Trib A	-	4.05	-	-	4.19	-	-	4.38	-
Y2020	Trib B	4.27	3.70	-0.57	4.39	4.18	-0.21	4.52	4.38	-0.14
Y2010	TribC	4.23	3.69	-0.54	4.27	4.18	-0.09	4.35	4.38	0.03
Eastern Tributary										
	AB	-	4.69	-	-	4.90	-	-	5.15	-
	CDE	-	3.79	-	-	3.94	-	-	4.09	-
	FRd	-	3.79	-	-	3.94	-	-	4.08	-
	F	-	3.72	-	-	3.90	-	-	4.04	-
	G	-	3.60	-	-	3.78	-	-	3.93	-
Y140	Main1	3.85	3.72	-0.13	4.03	3.90	-0.13	4.17	4.04	-0.13
Y130	Main2	3.78	3.68	-0.10	3.95	3.86	-0.09	4.11	4.01	-0.10
Y120	Main3	3.71	3.63	-0.08	3.86	3.81	-0.05	4.07	3.95	-0.12
Y110	Main4	3.68	3.60	-0.08	3.83	3.78	-0.05	4.05	3.93	-0.12
Y100	Main5	3.65	3.56	-0.09	3.79	3.74	-0.05	4.02	3.93	-0.09
Y79	Main6	3.39	3.49	0.10	3.61	3.69	0.08	3.96	3.92	-0.04
Main Channel										
	Main 7	-	3.15	-	-	3.55	-	-	3.91	-
	Main 8	-	3.09	-	-	3.53	-	-	3.90	-
	Main 9	-	3.06	-	-	3.52	-	-	3.90	-
Y75	Main 10	2.98	3.03	0.05	3.24	3.51	0.27	3.69	3.89	0.20
	Main 11	-	3.00	-	-	3.50	-	-	3.88	-
Y70	Main 12	3.05	2.99	-0.06	3.34	3.49	0.15	3.79	3.88	0.09
	Main 13	-	2.98	-	-	3.49	-	-	3.87	-
	Main 14	-	2.97	-	-	3.48	-	-	3.87	-
Y60	Main 15	2.95	2.94	-0.01	3.23	3.47	0.24	3.72	3.87	0.15
	Main 16	-	2.92	-	-	3.46	-	-	3.86	-
Y50	Main 17	2.87	2.89	0.02	3.12	3.45	0.33	3.67	3.85	0.18
	Main 18	-	2.88	-	-	3.45	-	-	3.85	-
Y40	Main 19	2.59	2.86	0.27	2.79	3.43	0.64	3.56	3.84	0.28
	Main 20	-	2.83	-	-	3.42	-	-	3.83	-
	Main 21	-	2.80	-	-	3.41	-	-	3.83	-
Y30	Main22	2.03	2.79	0.76	2.48	3.41	0.93	3.5	3.82	0.32
u/s Corso	Main23	1.75	2.77	1.02	2.5	3.40	0.90	3.52	3.82	0.30
d/s Corso	Main24	1.4	2.61	1.21	1.63	3.08	1.45	1.9	3.31	1.41
	Main 25	-	2.60	-	-	3.07	-	-	3.30	-
	Main 26	-	2.44	-	-	2.91	-	-	3.14	-

Council Cross Section	XP-STORM Node	2 Year Event Peak Levels			10 Year Event Peak Levels			50 Year Event Peak Levels		
		LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)	LSMP (mAHD)	Current (mAHD)	Diff. (m)
Nodes off Main Channel										
	O	-	2.99	-	-	3.49	-	-	3.88	-
	P	-	2.89	-	-	3.45	-	-	3.85	-
	Q	-	2.79	-	-	3.41	-	-	3.82	-
	R	-	6.09	-	-	6.13	-	-	6.16	-
	N	-	2.99	-	-	3.49	-	-	3.88	-

Note *Nodes on eastern boundary of site shaded*
Refer to Figure 3 and Figure 5 for node locations
Council cross sections column specifies section at or near XP-Storm node location

6.3 Developed Case with Proposed Channel

The results reported in Table 9, for the existing case, were adopted as the base case for the assessment of the impact of the proposed channel alignment (refer Figure 7). The calculated flood levels with the proposed channel in place (without any other Council mitigation works) are presented in Table 10. From these results it can be seen that the construction of the drain alone is expected to decrease flood levels along the entire system. The development and its associated works will therefore not produce any adverse flooding impact.

In the western tributary, the development produces a reduction in flood level of 700 mm for the 2 year event and 480 mm for the 50 year event. For the eastern tributary, the reduction in flood level is 210 mm for the 2 year event and 30 mm for the 50 year event. In the main channel downstream of the site, the calculated flood level reduction is of the order of 90 mm for the 2 year event and 40 mm for the 50 year event.

The slight increase in flood level was obtained at Node AB on the eastern tributary for the two year event. Given that the site is at the upstream extremity of the model and a decrease is reported downstream of the node, it is considered that the increase can be attributed to model variations rather than being a true increase in level.

Table 10 Developed Case with Proposed Channel Results

Council Cross Section	XP-STORM Node	2 Year Event Peak Levels			10 Year Event Peak Levels			50 Year Event Peak Levels		
		Existing (mAHD)	Devel. (mAHD)	Inc. (m)	Existing (mAHD)	Devel. (mAHD)	Inc. (m)	Existing (mAHD)	Devel. (mAHD)	Inc. (m)
Western Tributary										
	HM	4.46	4.46	0	4.59	4.59	0	4.67	4.67	0
	Trib A	4.05	4.01	-0.04	4.19	4.13	-0.06	4.38	4.18	-0.20
Y2020	Trib B	3.70	2.99	-0.71	4.18	3.48	-0.70	4.38	3.90	-0.48
Y2010	D1	3.69	2.99	-0.70	4.18	3.48	-0.70	4.38	3.90	-0.48
Eastern Tributary										
	AB	4.69	4.70	0.01	4.90	4.89	-0.01	5.15	5.15	0
	CDE	3.79	3.78	-0.01	3.94	3.93	-0.01	4.09	4.07	-0.02

		2 Year Event Peak Levels			10 Year Event Peak Levels			50 Year Event Peak Levels		
Council Cross Section	XP-STORM Node	Existing (mAHD)	Devel. (mAHD)	Inc. (m)	Existing (mAHD)	Devel. (mAHD)	Inc. (m)	Existing (mAHD)	Devel. (mAHD)	Inc. (m)
	FRd	3.79	3.78	-0.01	3.94	3.93	-0.01	4.08	4.07	-0.01
	F	3.72	3.68	-0.04	3.90	3.88	-0.02	4.04	4.02	-0.02
	G	3.60	3.49	-0.11	3.78	3.68	-0.10	3.93	3.92	-0.01
Y140	Main1	3.72	3.68	-0.04	3.90	3.88	-0.02	4.04	4.02	-0.02
Y130	Main2	3.68	3.64	-0.04	3.86	3.83	-0.03	4.01	3.97	-0.04
Y120	Main3	3.63	3.56	-0.07	3.81	3.74	-0.07	3.95	3.93	-0.02
Y110	Main4	3.60	3.49	-0.11	3.78	3.68	-0.10	3.93	3.91	-0.02
Y100	Main5	3.56	3.35	-0.21	3.74	3.53	-0.21	3.93	3.90	-0.03
Main Channel										
	D2	3.15	2.99	-0.16	3.55	3.48	-0.07	3.91	3.90	-0.01
	D3	3.09	2.99	-0.10	3.53	3.48	-0.05	3.90	3.90	0
	D4	3.06	2.99	-0.07	3.52	3.48	-0.04	3.90	3.90	0
Y75	D5	3.03	2.97	-0.06	3.51	3.45	-0.06	3.89	3.85	-0.04
	Main 11	3.00	2.93	-0.07	3.50	3.44	-0.06	3.88	3.84	-0.04
Y70	Main 12	2.99	2.91	-0.08	3.49	3.43	-0.06	3.88	3.83	-0.05
	Main 13	2.98	2.89	-0.09	3.49	3.43	-0.06	3.87	3.83	-0.04
	Main 14	2.97	2.88	-0.09	3.48	3.42	-0.06	3.87	3.83	-0.04
Y60	Main 15	2.94	2.85	-0.09	3.47	3.41	-0.06	3.87	3.82	-0.05
	Main 16	2.92	2.83	-0.09	3.46	3.40	-0.06	3.86	3.82	-0.04
Y50	Main 17	2.89	2.80	-0.09	3.45	3.39	-0.06	3.85	3.81	-0.04
	Main 18	2.88	2.79	-0.09	3.45	3.38	-0.07	3.85	3.80	-0.05
Y40	Main 19	2.86	2.76	-0.10	3.43	3.37	-0.06	3.84	3.79	-0.05
	Main 20	2.83	2.74	-0.09	3.42	3.36	-0.06	3.83	3.79	-0.04
	Main 21	2.80	2.71	-0.09	3.41	3.35	-0.06	3.83	3.78	-0.05
Y30	Main22	2.79	2.69	-0.10	3.41	3.34	-0.07	3.82	3.78	-0.04
u/s Corso	Main23	2.77	2.67	-0.10	3.40	3.34	-0.06	3.82	3.78	-0.04
d/s Corso	Main24	2.61	2.53	-0.08	3.08	3.03	-0.05	3.31	3.29	-0.02
	Main 25	2.60	2.53	-0.07	3.07	3.02	-0.05	3.30	3.28	-0.02
	Main 26	2.44	2.36	-0.08	2.91	2.86	-0.05	3.14	3.12	-0.02
Nodes off Main Channel										
	O	2.99	2.91	-0.08	3.49	3.43	-0.06	3.88	3.83	-0.05
	P	2.89	2.80	-0.09	3.45	3.39	-0.06	3.85	3.81	-0.04
	Q	2.79	2.69	-0.10	3.41	3.34	-0.07	3.82	3.78	-0.04
	R	6.09	6.09	0	6.13	6.13	0	6.16	6.16	0
	N	2.99	2.92	-0.07	3.49	3.44	-0.05	3.88	3.83	-0.05

Note *Nodes on eastern boundary of site shaded*
Refer to Figure 3 and Figure 5 for node locations
Council cross sections column specifies section at or near XP-Storm node location

6.4 Developed Case with Proposed Works and Council Mitigation Measures

The peak flood levels calculated for the case of the proposed works and the Council mitigation measures in the vicinity of the site (refer Section 5.4.2) in place are presented in Table 11.

With reference to Table 11, the addition of other Council mitigation measures was found to enhance the flood level reduction afforded by the proposed works. In the western tributary, the proposed works and mitigation measures produce a reduction in flood level of 950 mm for the 2 year event and 730 mm for the 50 year event. For the eastern tributary, the reduction in flood level is 820 mm for the 2 year event and 280 mm for the 50 year event. In the main channel downstream of the site, the calculated flood level reduction is of the order of 250 mm for the 2 year event and 270 mm for the 50 year event.

As for the proposed channel case, a slight increase in level is reported at node AB on the eastern tributary for the 2 year event. Given that the site is at the upstream extremity of the model and a significant decrease is reported downstream of the node, it is considered that the increase can be attributed to model variations rather than being a true increase in level.

Table 11 Developed Case with Proposed Works and Council Mitigation Measures Results

		2 Year Event Peak Levels			10 Year Event Peak Levels			50 Year Event Peak Levels		
Council Cross Section	XP-STORM Node	Existing (mAHD)	Devel. (mAHD)	Inc. (m)	Existing (mAHD)	Devel. (mAHD)	Inc. (m)	Existing (mAHD)	Devel. (mAHD)	Inc. (m)
Western Tributary										
	HM	4.46	4.46	0	4.59	4.59	0	4.67	4.67	0
	Trib A	4.05	4.02	-0.03	4.19	4.13	-0.06	4.38	4.18	-0.20
Y2020	Trib B	3.70	2.74	-0.96	4.18	3.23	-0.95	4.38	3.65	-0.73
Y2010	D1	3.69	2.74	-0.95	4.18	3.22	-0.96	4.38	3.65	-0.73
Eastern Tributary										
	AB	4.69	4.71	0.02	4.90	4.90	0	5.15	5.04	-0.11
	CDE	3.79	2.77	-1.02	3.94	3.26	-0.68	4.09	3.79	-0.30
	FRd	3.79	2.77	-1.02	3.94	3.26	-0.68	4.08	3.79	-0.29
	F	3.72	2.76	-0.96	3.90	3.23	-0.67	4.04	3.66	-0.38
	G	3.60	2.75	-0.85	3.78	3.23	-0.55	3.93	3.65	-0.28
Y140	Main1	3.72	2.76	-0.96	3.90	3.23	-0.67	4.04	3.66	-0.38
Y130	Main2	3.68	2.75	-0.93	3.86	3.23	-0.63	4.01	3.65	-0.36
Y120	Main3	3.63	2.75	-0.88	3.81	3.23	-0.58	3.95	3.65	-0.30
Y110	Main4	3.60	2.75	-0.85	3.78	3.22	-0.56	3.93	3.65	-0.28
Y100	Main5	3.56	2.74	-0.82	3.74	3.22	-0.52	3.93	3.65	-0.28
Main Channel										
	D2	3.15	2.74	-0.41	3.55	3.22	-0.33	3.91	3.64	-0.27
	D3	3.09	2.74	-0.35	3.53	3.22	-0.31	3.90	3.64	-0.26
	D4	3.06	2.74	-0.32	3.52	3.22	-0.30	3.90	3.64	-0.26
Y75	D5	3.03	2.72	-0.31	3.51	3.20	-0.31	3.89	3.62	-0.27

Council Cross Section	XP-STORM Node	2 Year Event Peak Levels			10 Year Event Peak Levels			50 Year Event Peak Levels		
		Existing (mAHD)	Devel. (mAHD)	Inc. (m)	Existing (mAHD)	Devel. (mAHD)	Inc. (m)	Existing (mAHD)	Devel. (mAHD)	Inc. (m)
	Main11	3.00	2.71	-0.29	3.50	3.19	-0.31	3.88	3.61	-0.27
Y70	Main12	2.99	2.71	-0.28	3.49	3.19	-0.30	3.88	3.61	-0.27
	Main13	2.98	2.70	-0.28	3.49	3.19	-0.30	3.87	3.61	-0.26
	Main14	2.97	2.70	-0.27	3.48	3.19	-0.29	3.87	3.60	-0.27
Y60	Main15	2.94	2.70	-0.24	3.47	3.18	-0.29	3.87	3.60	-0.27
	Main16	2.92	2.69	-0.23	3.46	3.18	-0.28	3.86	3.60	-0.26
Y50	Main17	2.89	2.69	-0.20	3.45	3.18	-0.27	3.85	3.60	-0.25
	Main18	2.88	2.69	-0.19	3.45	3.18	-0.27	3.85	3.60	-0.25
Y40	Main19	2.86	2.66	-0.20	3.43	3.16	-0.27	3.84	3.59	-0.25
	Main20	2.83	2.64	-0.19	3.42	3.15	-0.27	3.83	3.58	-0.25
	Main21	2.80	2.60	-0.20	3.41	3.13	-0.28	3.83	3.57	-0.26
Y30	Main22	2.79	2.59	-0.20	3.41	3.12	-0.29	3.82	3.56	-0.26
u/s Corso	Main23	2.77	2.57	-0.20	3.40	3.11	-0.29	3.82	3.56	-0.26
d/s Corso	Main24	2.61	2.45	-0.16	3.08	2.86	-0.22	3.31	3.17	-0.24
	Main25	2.60	2.45	-0.15	3.07	2.85	-0.22	3.30	3.16	-0.14
	Main26	2.44	2.28	-0.16	2.91	2.69	-0.22	3.14	3.00	-0.14
Nodes off Main Channel										
	O	2.99	2.71	-0.28	3.49	3.20	-0.29	3.88	3.61	-0.27
	P	2.89	2.69	-0.20	3.45	3.18	-0.27	3.85	3.60	-0.25
	Q	2.79	2.59	-0.20	3.41	3.12	-0.29	3.82	3.56	-0.26
	R	6.09	6.09	0	6.13	6.13	0	6.16	6.16	0
	N	2.99	2.71	-0.28	3.49	3.19	-0.30	3.88	3.61	-0.27

Note *Nodes on eastern boundary of site shaded*
Refer to Figure 3 and Figure 5 for node locations
Council cross sections column specifies section at or near XP-Storm node location

Comparisons between the flood level reduction afforded by the relief drainage according to the Yeronga LSMP and that obtained by the proposed works are problematic due to the reasons outlined in Section 6.1. The most straightforward means of confirming that the proposed works can be completed as part of an overall scheme that will achieve the same or better flood level reduction as presented in the Yeronga LSMP is to compare the difference in flood level between points upstream and downstream of the site.

The difference in calculated flood level upstream and downstream of the site for both the western and eastern tributaries (which drain to the main channel) is presented in Table 12.

As shown in Table 12, the rise in flood level across the site following the completion of the proposed works is lower than that predicted over the same area following the completion of Council's relief drainage works. It is therefore considered that the proposed works will result in a flood level reduction no worse and probably greater than achieved by the Council measures. In turn, this will allow Council to complete the remainder of the relief drainage works proposed in the Yeronga LSMP and provide flood level reductions at least equal to those presented in the LSMP.

Table 12 Comparison of head loss across the drain

Event	Yeronga LSMP with Relief Drainage			Proposed Works and Mitigation Measures		
Eastern Tributary						
	Peak Level Downstream (Section Y75) (mAHD)	Peak Level Upstream (Section Y100) (mAHD)	Change in Level Across Site (mm)	Peak Level Downstream (Node D5) (mAHD)	Peak Level Upstream (Node Main5) (mAHD)	Change in Level Across Site (mm)
2 Year	2.79	2.99	200	2.72	2.74	20
10 Year	3.07	3.28	210	3.20	3.22	20
50 Year	3.68	3.76	80	3.62	3.65	30
Western Tributary						
	Peak Level Downstream (Section Y75) (mAHD)	Peak Level Upstream (Section Y2020) (mAHD)	Change in Level Across Site (mm)	Peak Level Downstream (Node D5) (mAHD)	Peak Level Upstream (Node TribB) (mAHD)	Change in Level Across Site (mm)
2 Year	2.79	2.97	180	2.72	2.74	20
10 Year	3.07	3.26	190	3.20	3.23	30
50 Year	3.68	3.77	90	3.62	3.65	30

Note: Refer to Figure 3 and Figure 7 for location of nodes

6.5 Channel Velocities and Safety Issues

The peak velocities calculated within the proposed works are presented in Table 13. The table lists the depth of flow calculated at each node and the velocity calculated in the links joining the nodes. The table presents the results obtained for the existing case, the developed case with proposed works, and the developed case with proposed works and Council mitigation measures in place.

Peak velocities calculated throughout the model are presented in Appendix B.

The results presented for the link Drain5 represent the velocity calculated in the culverts proposed at the northern end of the site.

With reference to Table 13, it can be noted that the proposed works will result in a reduction in flow depth and a significant reduction in flow velocity compared to the existing case. Therefore, the proposed works will provide an improvement in safety. This will be enhanced by the adoption of relatively flat batters on the park side of the drain to facilitate evacuation of the channel.

Overall, it is considered that the velocities are low and quite acceptable for flow in channels.

Table 13 Flow Depths and Velocities

Node Name or *Link Name*	Existing Case			Developed Case with Proposed Works			Developed Case with Proposed Works and Council Mitigation	
	Invert Level (mAHD)	Depth of Flow (m)	Velocity (m/s)	Invert Level (mAHD)	Depth of Flow (m)	Velocity (m/s)	Depth of Flow (m)	Velocity (m/s)
2 Year Event								
TribB	1.60	2.10		1.60	1.39		1.14	
TribB-C/ Drain1			*0.50*			*0.60*		*0.61*
TribC/ D1	1.44	2.25		1.48	1.51		1.26	
TribC-Mn7/ Drain2			*(all Pipe)*			*0.48*		*0.57*
Main7/ D2	1.31	1.84		1.38	1.62		1.37	
Main7-8/ Drain3			*1.1*			*0.66*		*0.65*
Main8/ D3	1.25	1.84		1.29	1.71		1.46	
Main8-9/ Drain4			*1.0*			*0.50*		*0.47*
Main9/ D4	1.21	1.85		1.18	1.81		1.56	
Main9-10/ Drain5			*1.1*			*0.55*		*0.71*
Main10/ D5	1.16	1.88		1.13	1.84		1.59	
10 Year Event								
TribB	1.60	2.58		1.60	1.88		1.63	
TribB-C/ Drain1			*0.54*			*0.64*		*0.63*
TribC/ D1	1.44	2.74		1.48	2.00		1.74	
TribC-Mn7/ Drain2			*-0.03*			*0.50*		*0.60*
Main7/ D2	1.31	2.24		1.38	2.11		1.85	
Main7-8/ Drain3			*1.12*			*0.69*		*0.71*
Main8/ D3	1.25	2.28		1.29	2.20		1.94	
Main8-9/ Drain4			*1.18*			*0.53*		*0.52*
Main9/ D4	1.21	2.31		1.18	2.30		2.04	
Main9-10/ Drain5			*1.25*			*0.84*		*0.91*
Main10/ D5	1.16	2.36		1.13	2.32		2.07	
50 Year Event								
TribB	1.60	2.78		1.60	2.30		2.05	
TribB-C/ Drain1			*0.57*			*0.67*		*0.66*
TribC/ D1	1.44	2.94		1.48	2.42		2.17	
TribC-Mn7/ Drain2			*-0.12*			*0.53*		*0.62*
Main7/ D2	1.31	2.60		1.38	2.53		2.27	
Main7-8/ Drain3			*1.13*			*0.71*		*0.75*
Main8/ D3	1.25	2.65		1.29	2.62		2.36	
Main8-9/ Drain4			*1.29*			*0.53*		*0.54*
Main9/ D4	1.21	2.69		1.18	2.72		2.46	
Main9-10/ Drain5			*1.34*			*1.10*		*1.05*
Main10/ D5	1.16	2.74		1.13	2.72		2.49	

Note: Node and link names given for existing case/ developed case
Refer to Figure 3 and Figure 7 fro location of nodes and links
Velocities reported for link Drain5 are culvert velocities

7.0 SPECIFIC INFORMATION REQUEST RESPONSES

7.1 Item 2, Issue (i)

Item 2 (i) of the information request requires that it be demonstrated that the proposal:

"complies with section 4.2 P1 of the Stormwater Management Code. Specifically, demonstrate that the proposed stormwater management system or site works do not adversely impact on flooding or drainage of properties that are upstream, downstream or adjacent to the subject site."

Detailed modelling of the site and proposed channel has indicated that the proposed development will produce a reduction in flood level for local flooding. It is predicted that the development will have no impact on the higher regional flood levels produced by flooding in the Brisbane River. It is therefore considered that the development is acceptable with respect to Performance Criteria P1 of Section 4.2 of the Stormwater Management Code.

7.2 Item 2, Issue (ii)

Item 2 (ii) of the information request requires that it be demonstrated that the proposal:

"complies with section 4.2 P2 of the Stormwater Management Code. Specifically, demonstrate that the drainage network provides adequate capacity to safely convey stormwater run-off resulting from relevant design storm events taking into account increased run-off from roof drainage."

Detailed modelling of the site and proposed channel has indicated that the development can proceed and adequately convey local stormwater runoff assuming full catchment urbanisation according to the *Yeronga Local Stormwater Management Plan* (2003). It is therefore considered that the proposal complies with Performance Criteria P2 of Section 4.2 of the Stormwater Management Code.

7.3 Item 2, Issue (iii)

Item 2 (iii) of the information request requires that it be demonstrated that the proposal:

"Complies with section 4.2 P3 of the Stormwater Management Code. The development design must reduce property damage and, where applicable, ensure public safety by ensuring that the development levels are set above the relevant design flood level or storm surge level."

The proposed design achieves a general reduction in flood level for local flood events and will not impact upon the flood level produced by regional flooding in the Brisbane River. As Brisbane River flooding produces levels higher than those produced by local flooding and storm surge, levels proposed for the site have been set relative to the regional flood level in accordance with Table B2.2.1 of the *Subdivision and Development Guidelines* (2000) (refer Section 2) except for the bowling green area proposed in the north eastern corner of the site. A level of 4.1 m AHD, which is above the local flood level but lower than the governing Brisbane River level is proposed for this area. It is considered that the immunity of the area will be acceptable.

It is therefore considered that the proposal complies with Performance Criteria P3 of Section 4.2 of the Stormwater Management Code.

7.4 Item 2, Issue (iv)

Item 2 (iii) of the information request requires that it be demonstrated that the proposal:

"complies with section 4.2 P4 of the Stormwater Management Code. Demonstrate that the channel works, major drainage works and flood mitigation works maintain and/or enhance the environmental values of the waterway corridor or drainage corridor."

It is considered that the proposed channel design (refer Figure 7) significantly improves the environmental values of the waterway corridor compared to the existing linear excavated open channel.

It is therefore considered that the proposal complies with Performance Criteria P4 of Section 4.2 of the Stormwater Management Code.

7.5 Item 2, Additional Comment

Item 2 of the information request includes the following comment:

*In addition, there is an overland flow path through the south-eastern corner of the site, which has been identified in the **Yeronga Local Stormwater Management Plan**."*

The proposed drainage scheme for the site has been developed in response to the flood mitigation scheme proposed in the *Yeronga Local Stormwater Management Plan* (2003).

8.0 CONCLUSION

It is proposed to construct a retirement village on a site at the corner of Cansdale Road and Venner Road in Yeronga (the study site). Figure 1 shows the location of the site.

Development of the site is constrained by the presence of a waterway corridor that affects the eastern part of the site (refer Figure 2) and flood mitigation measures proposed in the *Yeronga Local Stormwater Management Plan* (June 2003) (refer Figure 6).

To offset the impact of development, it is proposed to construct a channel along the southern and eastern boundaries of the site (refer Figure 7). Detailed modelling of the proposed works has indicated that the works will offset the impact of development and provide a reduction in flood level that is consistent with and likely to be greater than that envisaged in the *Yeronga Local Stormwater Management Plan.*

FIGURES

Figure 1 Locality Plan

Figure 2 Drainage Paths

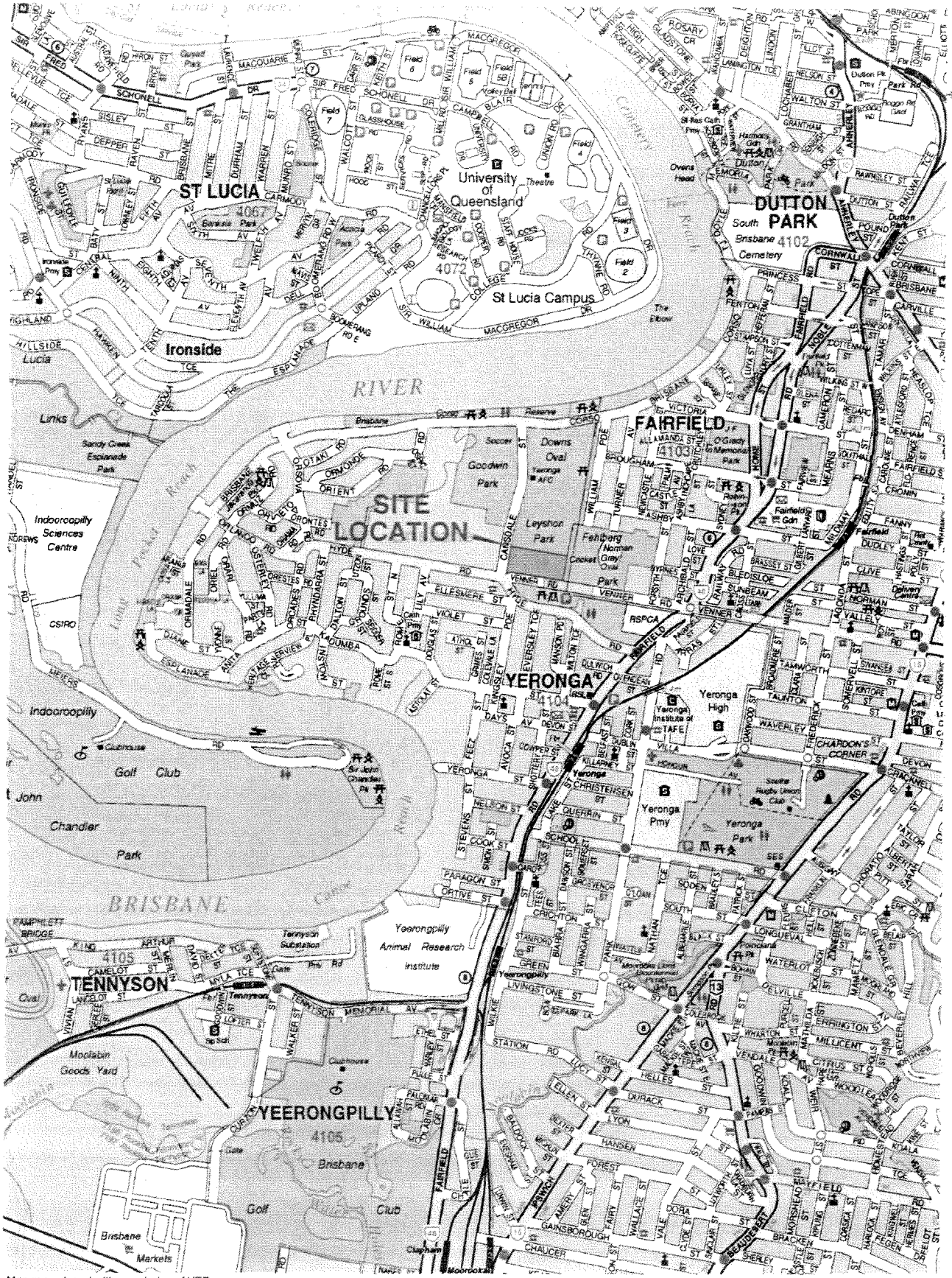
Figure 3 XP-STORM Model Layout

Figure 4 Catchment Boundaries

Figure 5 Cross section Locations

Figure 6 Previous Proposed Mitigation Option

Figure 7 Proposed Drainage Works


ST LUCIA
4067
University of Queensland
St Lucia Campus
4072
DUTTON PARK
South Brisbane 4102
Cemetery
Ironside
RIVER
FAIRFIELD
4103
SITE LOCATION
YERONGA
4104
Yeronga High
Yeronga Pmy
Yeronga Park
Yeerongpilly Animal Research Institute
TENNYSON
4105
YEERONGPILLY
4105
Indooroopilly Golf Club
Indooroopilly Sciences Centre
CSIRO
Sir John Chandler Park
Tennyson Substation
Moolabin Goods Yard
Brisbane Markets
Golf Club
Goodwin Park
Downs Oval
Leyshon Park
Fehlberg Norman Gray Cricket Oval
Sandy Creek Esplanade Park
Links
Brisbane
Golf Club
Yeronga Institute of TAFE
RSPCA
Fairfield Gdn
Dutton Pk Pmy
Dutton Park
Ironside Pmy
St Lucia Pmy
Sir Fred Schonell
Sir William MacGregor
Sir John Chandler Pk
Yeronga
Brisbane
Brisbane
Brisbane

Cardno



N

LEGEND

- SITE BOUNDARY
- DRAINAGE PATH
- WATERWAY CORRIDORS
- Q50 Existing Inundation (Yeronga LSMP)

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50 0 50 100 150 200 250m
1:5000

Scale 1:5000 (A3)

FIGURE 2
DRAINAGE PATHS

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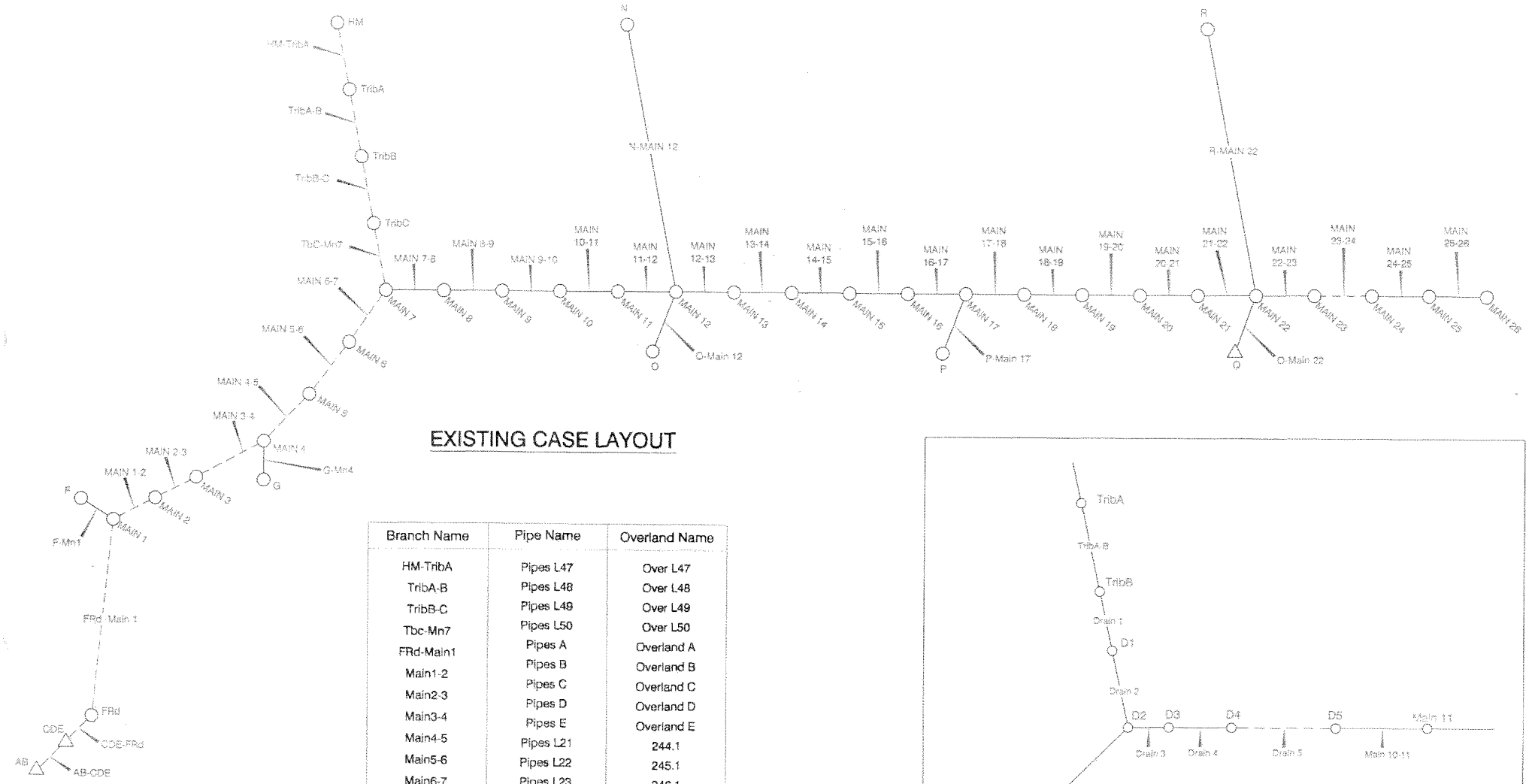
Project No.: 3500/34



EXISTING CASE LAYOUT

Branch Name	Pipe Name	Overland Name
HM-TribA	Pipes L47	Over L47
TribA-B	Pipes L48	Over L48
TribB-C	Pipes L49	Over L49
Tbc-Mn7	Pipes L50	Over L50
FRd-Main1	Pipes A	Overland A
Main1-2	Pipes B	Overland B
Main2-3	Pipes C	Overland C
Main3-4	Pipes D	Overland D
Main4-5	Pipes E	Overland E
Main5-6	Pipes L21	244.1
Main6-7	Pipes L22	245.1
Main23-24	Pipes L23	246.1
Drain 5	Corso Pipes	Weir
	Pipes D5	-

LEGEND

MULITI LINKS

DEVELOPED CASE LAYOUT

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N.T.S.

FIGURE 3
XP-STORM MODEL LAYOUT

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A1.1
A1.2
A1.3
A2.1
A2.2
A3.1
A3.2
A3.3
A4.1
A4.2
A4.3
A5.1
A5.2
A5.3
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A12.3
A13.1
A13.2
A13.3
A14.1
A14.2
A14.3
A15.1
A15.2
A15.3

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FIGURE 5

CROSS SECTION LOCATIONS

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40 0 40 80 120 160 200m
1:4000

Scale 1:4000 (A3)

FIGURE 6

PREVIOUS PROPOSED MITIGATION OPTIONS

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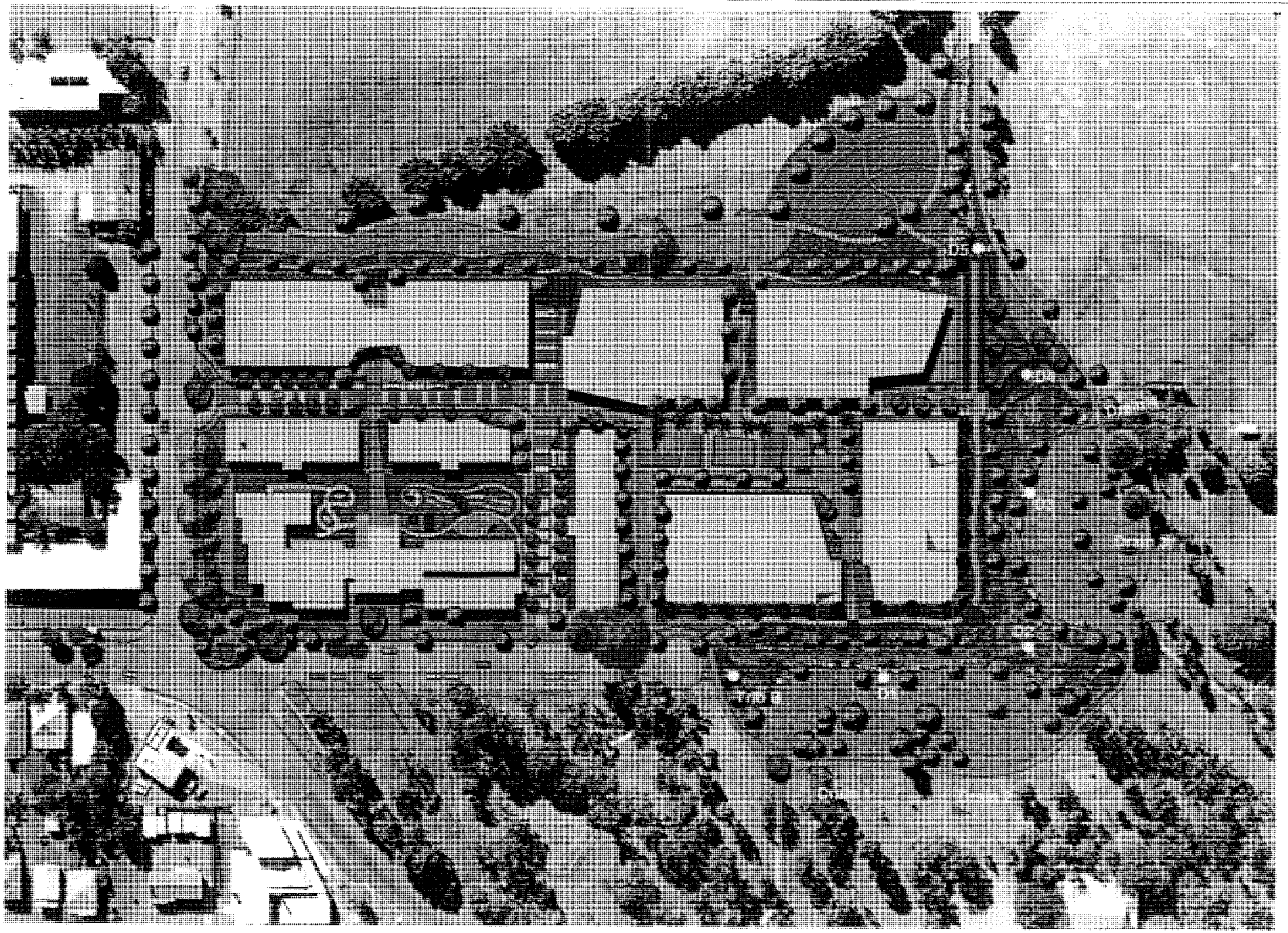



Underground pipe at N/W corner

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N.T.S.

FIGURE 7

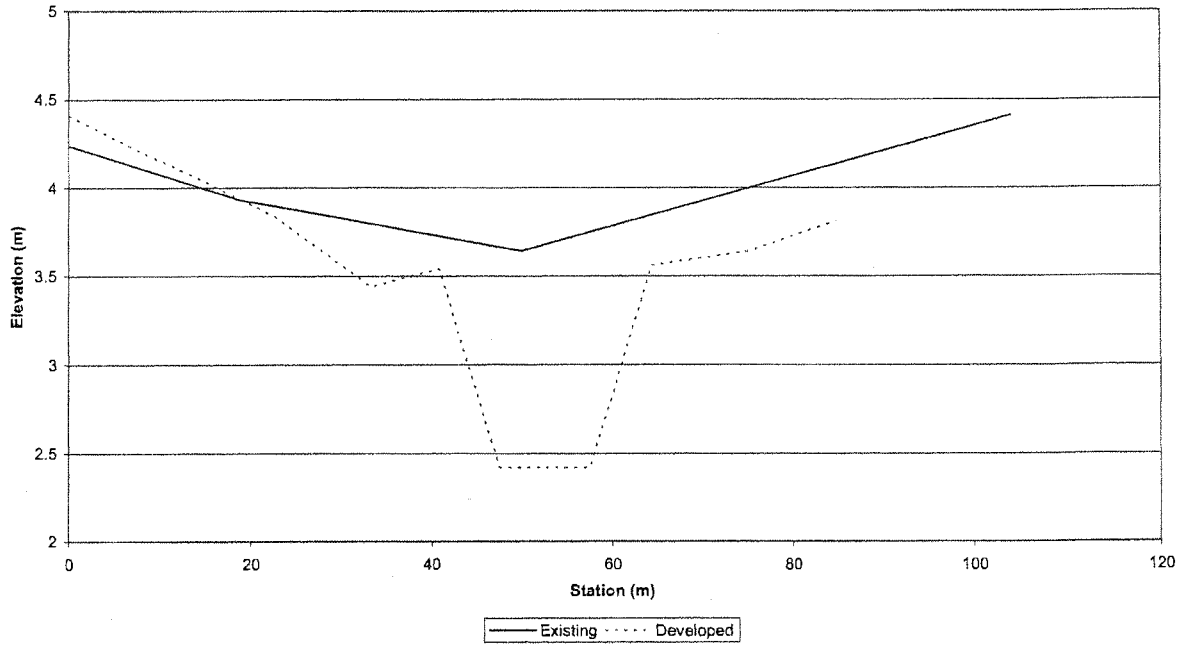
PROPOSED DRAIN OPTIONS

Project No.: 3500/34

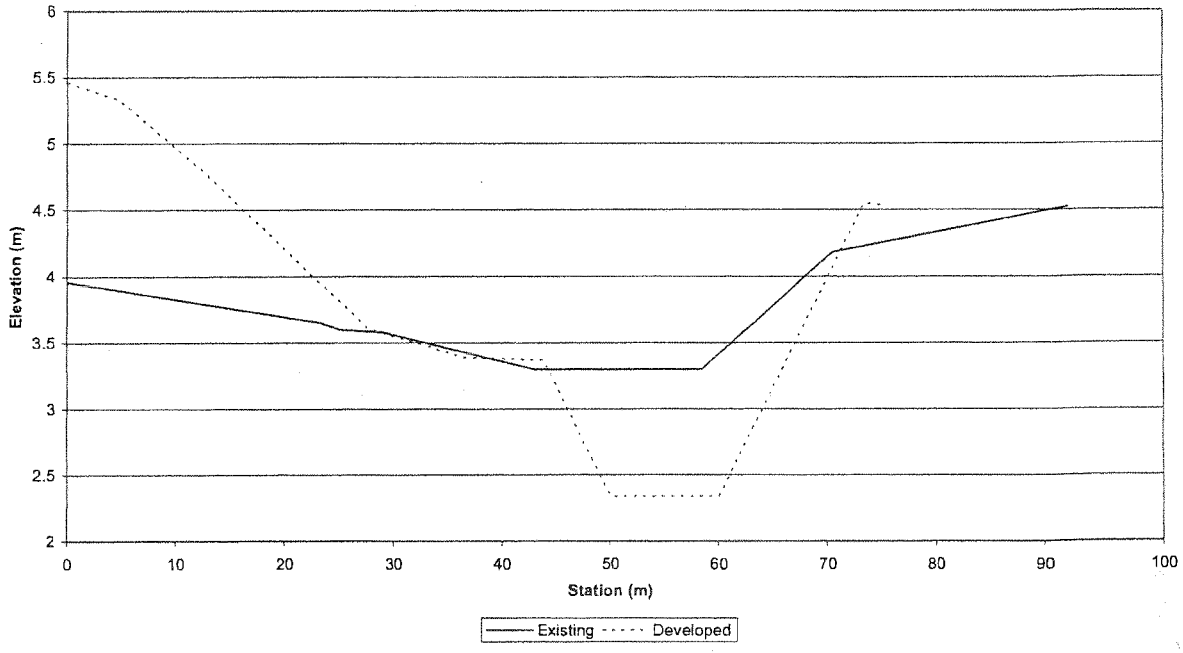
APPENDIX A

Developed Case Cross Sections

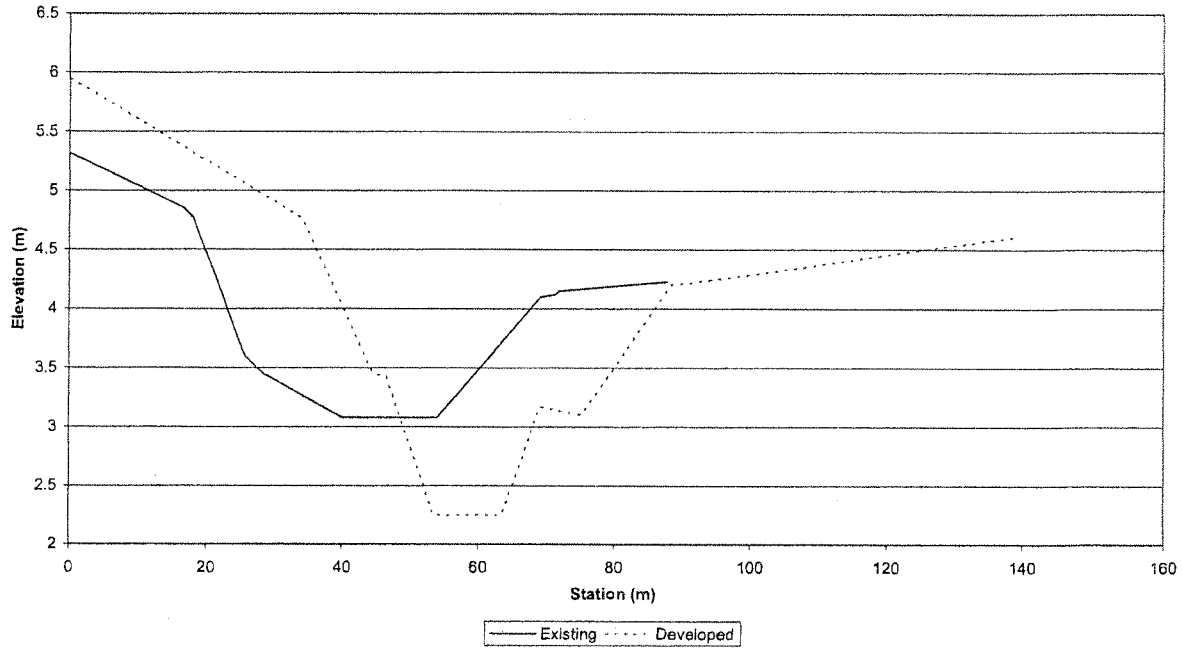
Cross Section FRd-Main1



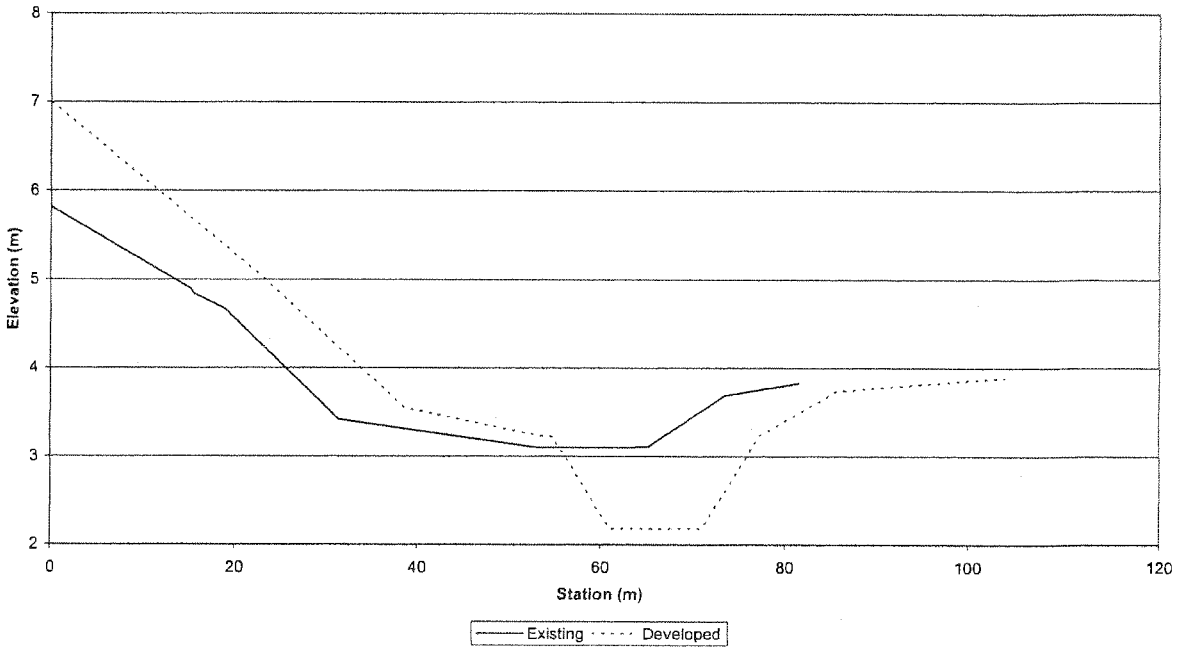
Cross Section Main1-2



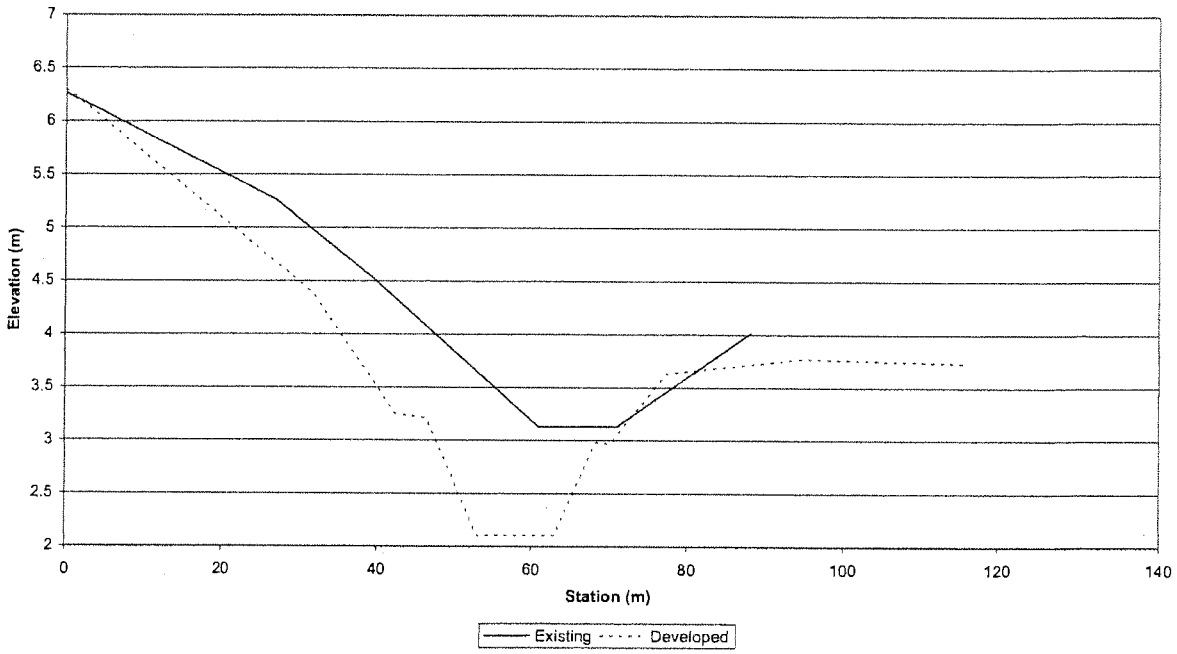
Cross Section Main2-3



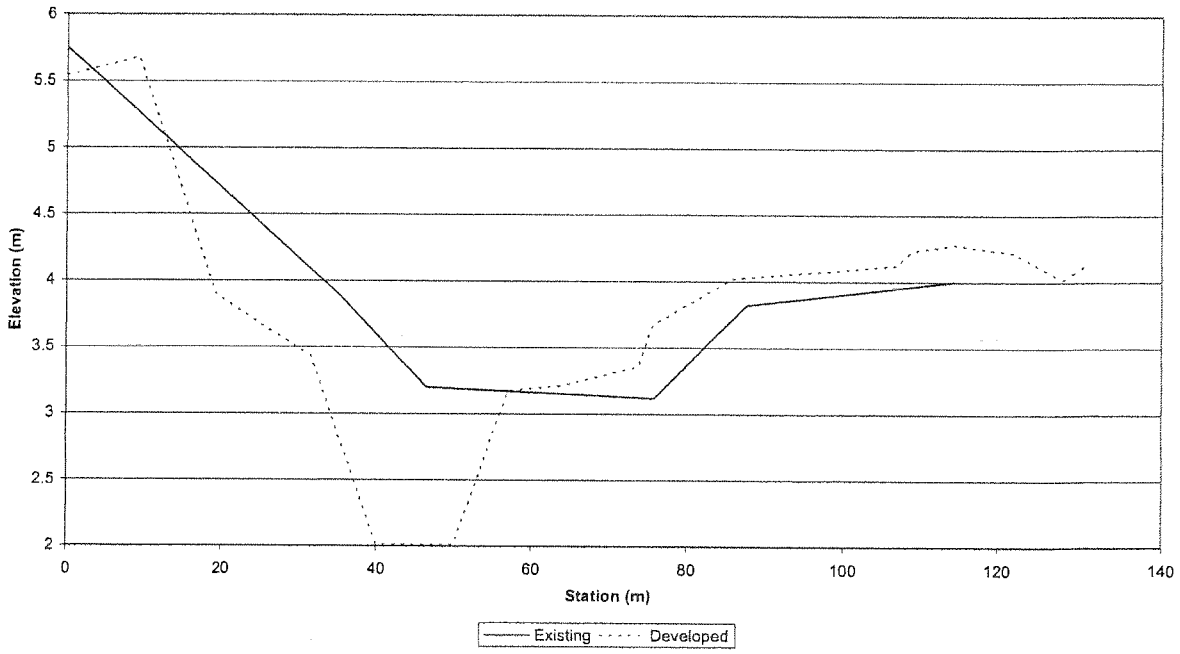
Cross Section Main3-4



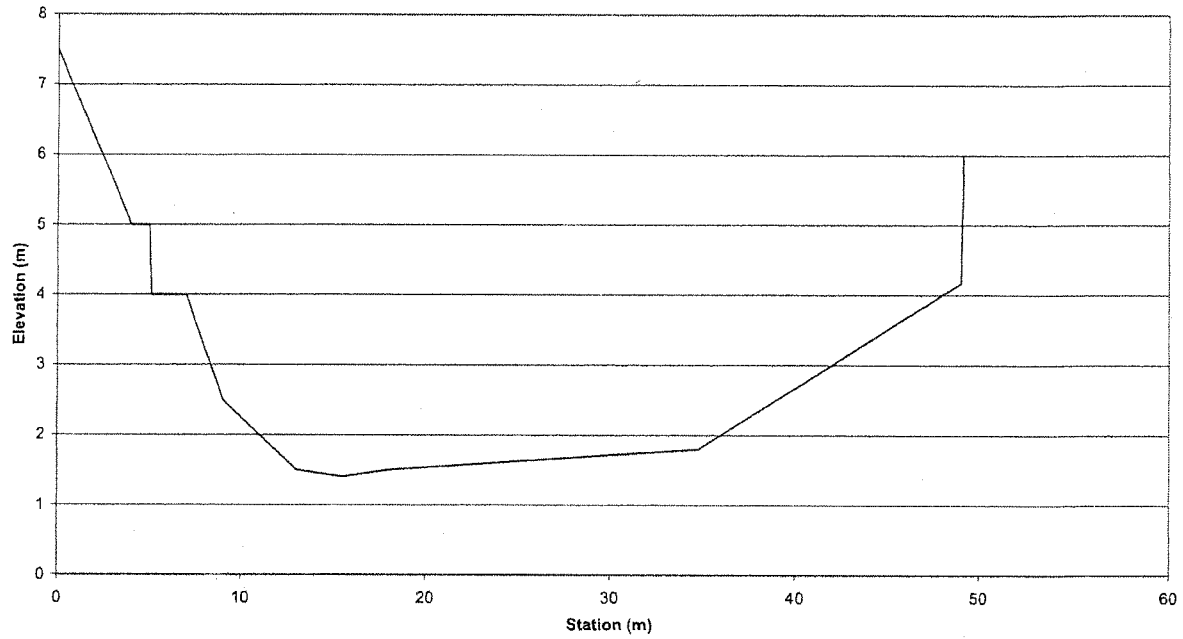
Cross Section Main4-5



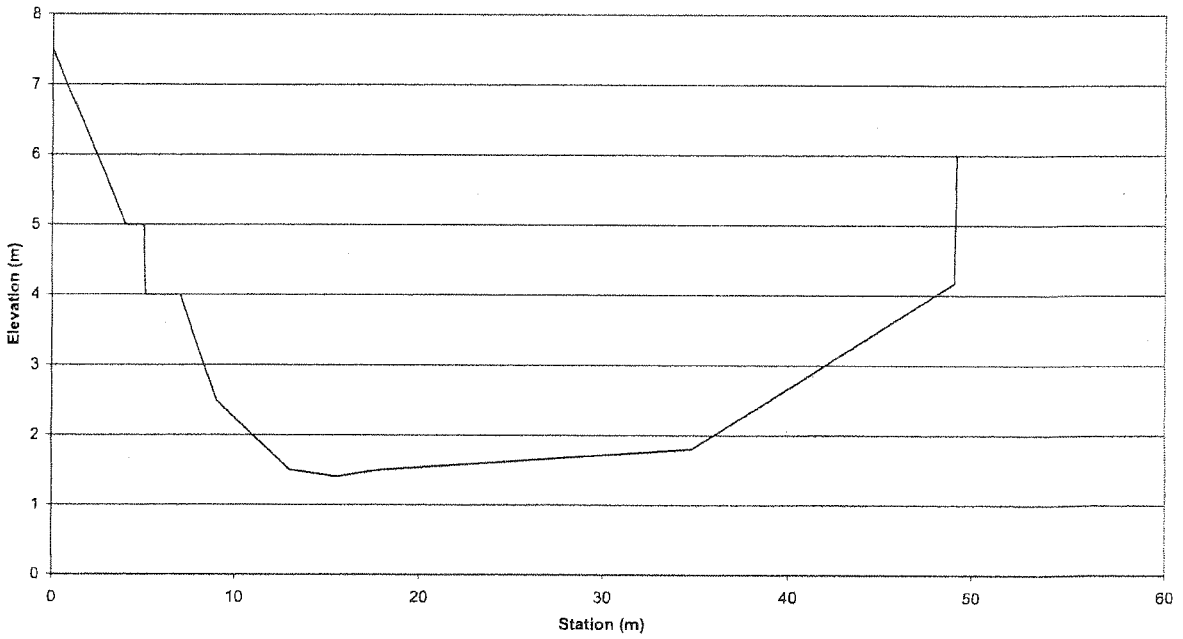
Cross Section Main5-D2



Drain Cross Section D1



Drain Cross Section D2



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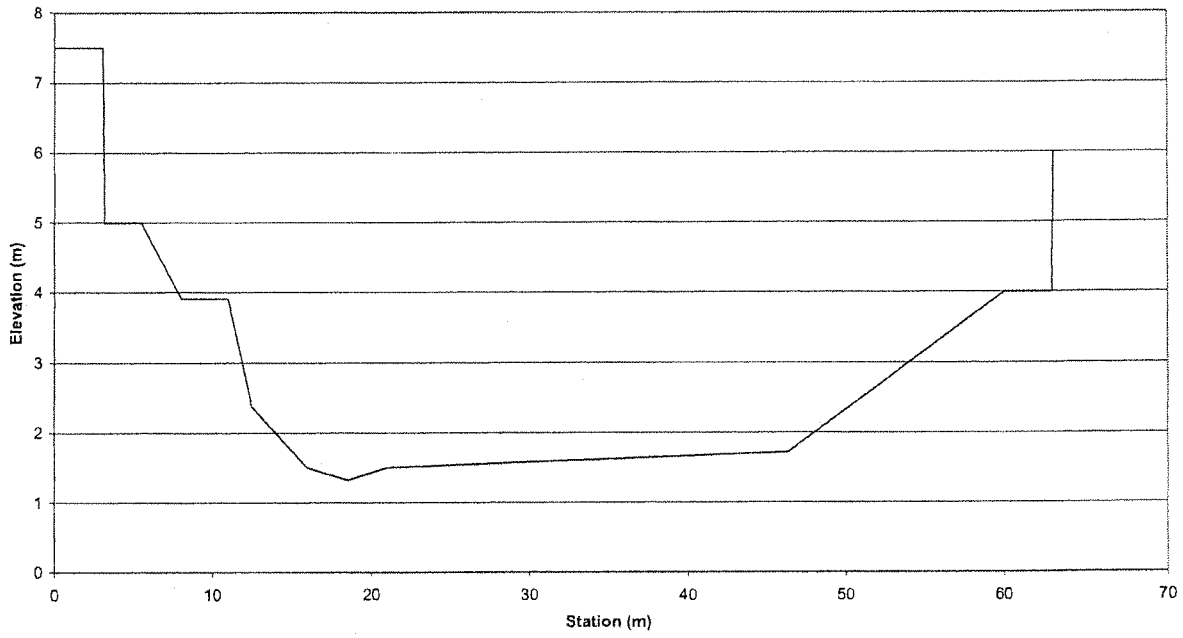

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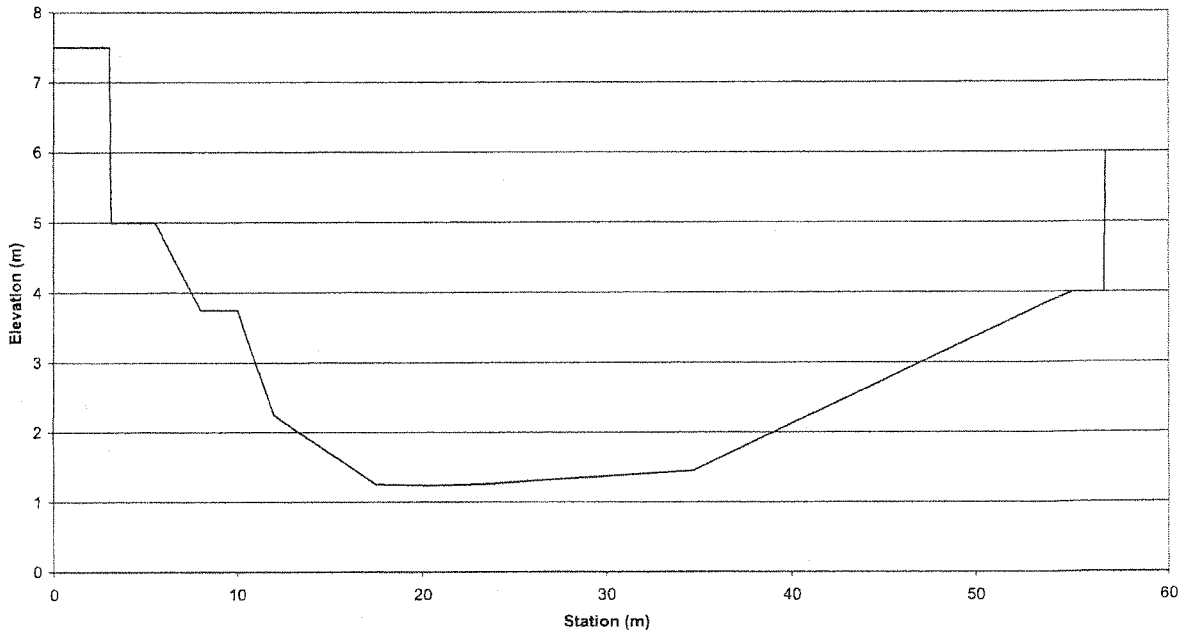


APPENDIX B

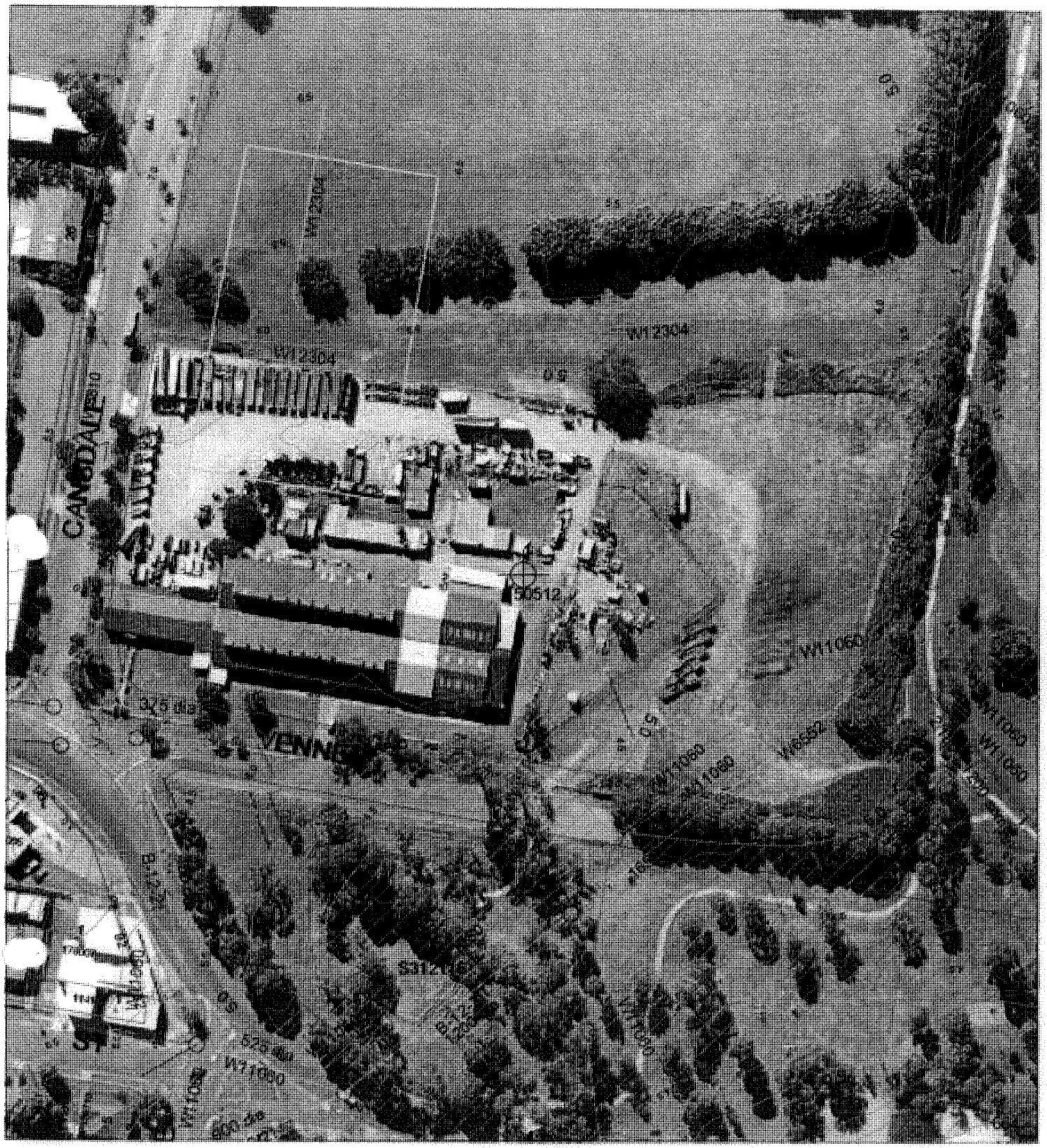
Peak Flows and Velocities

	Existing Case Peak Velocities (m/s)			Drain Only Case Peak Velocities (m/s)			Developed Case Peak Velocities (m/s)		
Node	Q50	Q10	Q2	Q50	Q10	Q2	Q50	Q10	Q2
G-Main4	0.60	0.29	0.17	0.42	0.30	0.17	0.69	0.64	0.53
O-Main12	0.25	0.65	0.22	0.25	0.27	0.46	0.24	0.55	0.57
P-Main17	0.25	0.25	0.24	0.22	0.25	0.19	0.25	0.25	0.21
F-Main1	0.29	0.31	0.25	0.29	0.31	0.25	0.76	0.67	0.62
R-Main22	0.15	0.12	0.09	0.17	0.14	0.10	0.19	0.15	0.11
N-Main12	0.20	0.20	0.19	0.19	0.18	0.22	0.23	0.20	0.27
Main22-23	1.61	1.61	1.52	1.53	1.48	1.37	1.48	1.45	1.42
Main24-25	-0.38	-0.36	-0.29	-0.39	-0.35	-0.25	-0.38	-0.33	-0.25
Main25-26	0.74	0.74	0.73	0.74	0.74	0.71	0.74	0.74	0.70
Main17-18	0.99	1.00	1.01	0.83	0.83	0.76	0.49	0.45	0.36
Main18-19	0.87	0.86	0.81	0.92	0.92	0.81	1.00	0.95	0.81
Main19-20	-0.84	-0.85	-0.85	-0.77	-0.84	-0.80	-0.83	-0.82	-0.82
Main20-21	1.05	1.03	1.03	0.85	0.94	0.92	1.00	1.03	0.97
Main21-22	1.00	0.99	1.01	0.77	0.83	0.86	0.85	0.93	0.91
Main12-13	0.90	0.88	0.85	0.85	0.85	0.76	0.97	0.93	0.92
Main13-14	1.09	1.08	1.04	1.08	1.05	0.96	0.69	0.63	0.54
Main14-15	1.20	1.19	1.15	1.19	1.14	1.04	0.77	0.71	0.67
Main15-16	0.99	0.99	0.95	1.00	0.96	0.88	0.71	0.62	0.54
Main16-17	-0.91	-0.89	-0.88	-0.82	-0.85	-0.77	-0.49	-0.49	-0.43
Drain4	-	-	-	0.53	0.53	0.50	0.54	0.52	0.47
Main10-11	1.00	0.99	1.01	1.14	1.02	0.82	1.00	0.94	0.86
Main11-12	0.71	0.68	0.64	0.87	0.79	0.62	0.84	0.80	0.77
Drain3	-	-	-	0.71	0.69	0.66	0.75	0.71	0.65
Drain1	-	-	-	0.67	0.64	0.60	0.66	0.63	0.61

	Existing Case Peak Velocities (m/s)			Drain Only Case Peak Velocities (m/s)			Developed Case Peak Velocities (m/s)		
Drain2	-	-	-	0.53	0.50	0.48	0.62	0.60	0.57
AB-CDE	0.82	0.77	0.70	0.82	0.78	0.71	0.98	0.76	0.63
CDE-FRd	0.39	0.34	0.30	0.39	0.34	0.30	0.96	0.89	0.83
Q-Main22	0.65	0.56	0.40	0.65	0.56	0.40	0.68	0.57	0.41
244.1	1.00	0.83	0.66	1.27	1.10	0.82	-	-	-
PipesL21	1.14	1.15	1.20	1.78	1.78	1.70	-	-	-
CorsoPipes	2.33	1.86	1.33	2.28	1.81	1.21	2.04	1.65	1.10
PipesD5	-	-	-	1.10	0.84	0.55	1.05	0.91	0.71
OverlandC	0.34	0.29	0.23	0.36	0.30	0.24	-	-	-
PipesC	1.10	1.06	0.99	1.13	1.10	1.08	-	-	-
OverlandD	0.45	0.38	0.47	0.50	0.42	0.31	-	-	-
PipesD	0.93	0.89	0.87	1.14	1.15	1.05	-	-	-
OverlandE	-0.33	-0.27	-0.17	-0.41	-0.34	-0.20	-	-	-
PipesE	0.97	0.99	0.91	1.11	1.11	1.05	-	-	-
OverlandA	0.39	0.34	0.23	0.41	0.36	0.23	-	-	-
PipesA	1.33	1.31	1.21	1.40	1.38	1.30	-	-	-
OverL47	0.64	0.54	0.41	0.64	0.55	0.39	0.64	0.55	0.40
PipesL47	2.09	2.07	2.08	2.10	2.21	2.38	2.13	2.35	2.41
OverL48	0.57	0.47	0.27	0.96	0.74	0.39	0.93	0.74	0.44
PipesL48	2.35	2.32	2.25	3.73	3.68	3.58	3.74	3.70	3.61
OverM5D2	-	-	-	0.89	0.80	0.51	-	-	-
PipesM5D2	-	-	-	2.23	2.08	1.79	-	-	-
Weir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FREE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

	Existing Case Peak Discharges (m^3/s)			Drain Only Case Peak Discharges (m^3/s)			Developed Case Peak Discharges (m^3/s)		
Node	Q50	Q10	Q2	Q50	Q10	Q2	Q50	Q10	Q2
G-Main4	8.45	4.03	2.27	5.90	4.16	2.22	5.70	3.95	2.24
O-Main12	2.24	5.87	2.00	2.26	2.46	4.13	2.09	4.93	5.15
P-Main17	3.44	3.55	3.40	3.10	3.48	2.69	3.40	3.56	2.69
F-Main1	3.89	3.41	3.12	2.43	2.91	2.33	2.36	1.84	1.31
R-Main22	3.04	2.03	1.10	3.04	2.04	1.10	3.04	2.04	1.10
N-Main12	2.38	2.46	2.24	2.27	2.15	2.68	2.31	2.22	3.24
Main22-23	20.31	16.12	11.42	19.83	15.87	10.46	17.74	14.32	9.46
Main24-25	-17.07	-13.28	-8.79	-16.71	-12.77	-6.82	-14.98	-11.50	-6.68
Main25-26	20.13	15.99	11.39	19.66	15.55	10.43	17.59	14.23	9.42
Main17-18	20.03	15.25	10.28	20.34	16.02	9.77	15.81	13.77	8.63
Main18-19	19.11	14.99	10.18	19.17	15.11	9.55	15.13	12.46	8.17
Main19-20	-16.87	-12.09	-7.86	-16.85	-11.91	-6.06	-12.59	-10.42	-6.06
Main20-21	18.50	14.61	10.07	17.36	14.18	9.25	14.47	11.76	7.79
Main21-22	18.21	14.45	10.05	17.00	14.02	9.14	14.49	11.81	7.75
Main12-13	22.83	16.66	10.46	23.63	17.81	10.13	19.80	15.35	9.57
Main13-14	21.61	15.85	10.22	21.79	16.75	9.82	18.05	14.31	9.08
Main14-15	21.00	15.54	10.16	21.01	16.45	9.74	17.27	13.77	8.93
Main15-16	20.25	15.27	10.08	20.32	16.03	9.66	16.49	13.20	8.58
Main16-17	-17.61	-12.21	-7.82	-17.76	-12.49	-6.13	-13.42	-11.06	-6.31
Drain4	-	-	-	26.23	18.40	10.12	20.77	15.03	9.96
Main10-11	23.35	16.53	10.16	24.24	17.27	9.68	18.81	13.53	8.92
Main11-12	21.97	16.12	10.03	22.68	16.64	9.50	17.80	12.77	8.54
Drain3	-	-	-	28.13	19.34	10.54	22.45	16.53	10.85
Drain1	-	-	-	17.62	12.16	6.69	18.16	12.61	6.99

	Existing Case Peak Discharges (m^3/s)			Drain Only Case Peak Discharges (m^3/s)			Developed Case Peak Discharges (m^3/s)		
Drain2	-	-	-	15.08	10.39	5.73	16.54	11.22	6.35
AB-CDE	11.12	8.02	6.61	11.12	8.02	6.72	11.69	8.49	4.89
CDE-FRd	14.88	10.04	5.36	14.97	9.99	5.26	14.49	11.20	6.55
Q-Main22	4.88	3.48	1.98	4.98	3.48	1.98	4.98	3.48	1.98
244.1	14.61	9.23	4.36	14.53	8.75	3.24	-	-	-
PipesL21	1.08	1.09	1.14	1.69	1.69	1.61	-	-	-
CorsoPipes	5.04	4.00	2.85	4.92	3.90	2.61	4.40	3.56	2.36
PipesD5	-	-	-	8.34	5.90	3.27	6.52	4.72	3.11
OverlandC	10.51	6.67	3.15	10.79	6.67	2.88	-	-	-
PipesC	1.09	0.99	0.94	1.23	1.22	1.11	-	-	-
OverlandD	10.04	6.33	2.89	10.40	6.43	2.55	-	-	-
PipesD	0.84	0.84	0.82	1.06	1.07	0.99	-	-	-
OverlandE	-8.01	-4.50	-1.31	-8.39	-4.68	-0.75	-	-	-
PipesE	0.92	0.93	0.86	1.05	1.04	0.99	-	-	-
OverlandA	11.39	7.47	3.00	11.50	7.35	2.67	-	-	-
PipesA	1.51	1.48	1.37	1.58	1.56	1.48	-	-	-
OverL47	14.95	9.23	3.53	14.82	9.13	2.99	14.84	9.13	3.14
PipesL47	4.56	4.52	4.48	4.59	4.82	5.21	4.59	5.13	5.26
OverL48	17.23	10.10	2.70	13.40	6.24	0.70	11.90	6.32	0.98
PipesL48	5.13	5.08	4.92	7.18	7.05	6.59	7.20	7.03	6.45
OverM5D2	-	-	-	14.43	9.06	2.40	-	-	-
PipesM5D2	-	-	-	2.02	1.93	1.69	-	-	-
Weir	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00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LSMP O'land Flow
Cadastre
Flood Creek Cells
Flood Creek Q100
Contour 02 (1m)
Contour 02 (0.5m)
Aerial Photo 2001

Location:

15 CANSDALE ST, YERONGA

Disclaimer:

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Quality System
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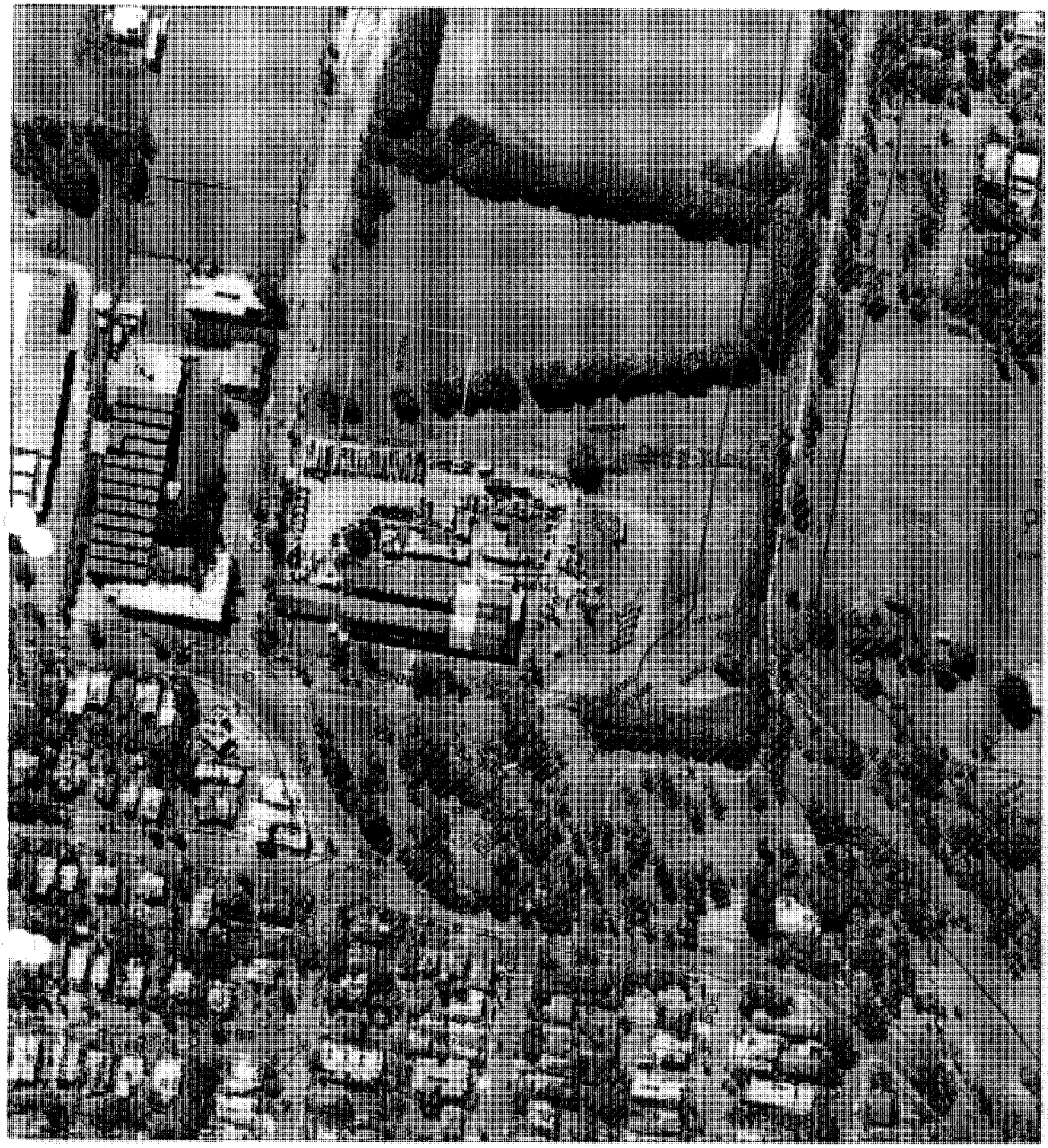
webmap



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LSMP O'land Flow
Cadastre
Flood Creek Cells
Flood Creek Q100
Contour 02 (1m)
Contour 02 (0.5m)
Aerial Photo 2001
CP Waterways

Location:

15 CANSDALE ST, YERONGA

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Quality Endorsed Company
webmap



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Scale: 1:1500

Location:
15 CANSDALE ST, YERONGA

Themes:
Storm Water
LSMP O'land Flow
Cadastre
Flood Creek Cells
Flood Creek Q100
Contour 02 (1m)
Contour 02 (0.5m)

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GDA

webmap

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APPENDIX D

Natural Assets Assessment

Prepared by

Cardno

Cardno
Engineering the Future

CANSDALE STREET, YERONGA



REPORT

Natural Assets Assessment

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Document Control

Version	Date	Author		Reviewer	
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1	27 September 2005	[redacted]		[redacted]	

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CANSDALE STREET, YERONGA
Natural Assets Assessment

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1. INTRODUCTION

This Natural Assets Assessment has been conducted by Cardno on behalf of M E Harrison Investment Co Pty Ltd in regard to Lot 1 on RP150512, Cansdale Street, Yeronga ("the site"). The site locality is illustrated in Figure 1 and an aerial photograph of the site locality is presented in Figure 2. The proposed plan of development for the site is for the construction of a retirement village. The layout of the proposed plan of development is presented in Figure 3.

This report has been prepared in partial response to an Information Request issued by the Department of Local Government, Planning, Sport and Recreation, dated 21 June 2005, in respect of the proposed development. Specifically this report addresses the issued raised by the Brisbane City Council (Council) concerning the potential impact of the development upon the biodiversity values of the site locality.

In respect of the above this report considers:

- the natural values of the site and a description of the existing values and functions of the mapped waterway corridor on and adjacent to the site;
- a description of the proposed plan of development with a particular focus on the nature of works proposed within the mapped waterway corridor, including details of the existing values and functions of the waterway corridor that would be affected by the proposed plan of development; and
- the degree of compliance that the proposed plan of development achieves with the performance requirements of the Waterway Code and Biodiversity Code of the City Plan.

This report is based on field surveys, examination of aerial photography and a review of relevant literature sources.

2. DESCRIPTION OF THE SITE AND PROPOSED DEVELOPMENT

The development site covers an area of approximately 2.79 ha. Ground levels throughout the site are generally between 5 m AHD and 6 m AHD. The site is currently used for industrial purposes as illustrated in the aerial photograph presented in Figure 2. The western half of the site contains sheds and parking areas with some scattered trees while the eastern half of the site is predominately grassed with some exotic weed species. Surrounding the site to the north, east and south are grassed parks and playing fields and to the west of the site is an industrial area.

Along the eastern sector of the site there is a concreted drainage channel that runs parallel to the site's boundary. Under the Planning Scheme Maps of the City Plan, this drainage channel is mapped as a waterway with the associated waterway corridor extending into the eastern sector of the site. The vegetation lining the drainage channel is dominated by grasses and exotic weeds. Under the Planning Scheme Maps, to the north of the site is an area designated as land subject to wetlands.

The layout of the proposed plan of development for the site is illustrated in Figure 3. One important aspect of the proposed plan of development that is of particular relevance to this assessment concerns the works that are proposed to obtain a satisfactory hydraulic solution, including the need to cause no adverse impact and the desirability of including the design solution as part of an overall flood mitigation strategy for the waterway catchment. Details concerning the rationale behind the proposed hydraulic solution, which will involve disturbance to the existing waterway corridor, are provided in Hydraulic Analysis Report prepared by Cardno. It is noted that the proposed works are not solely for the benefit of the proposed development of the site but address a need for flood mitigation works in the site locality that has been identified by Council.

In addition to the issue of obtaining an appropriate hydraulic solution the proponent has also considered the requirement to achieve appropriate ecological and landscape outcomes as part of the flood mitigation/drainage works. In this respect the Landscape Concept Plan, prepared by JW Concepts, for the proposed development also considers the modified landscape that would be created as part of the flood mitigation/drainage works.

In summary the proposed flood mitigation/drainage works and associated landscaping schemes would result in:

- the partial replacement of existing underground stormwater drainage pipes and concrete lined drainage channels, with an open drainage system that has been designed based on Natural Channel Design principles;
- the removal of approximately 48 mature trees of which 64.6% are non-native and 41.7% of which are recognised by Council as environmental weeds; and
- the landscaping of the new drainage system using a diversity of native plant species that will, once established, result in an improvement in the ecological and landscape values of the subject area.

3. ECOLOGICAL VALUES

A desktop review of aerial photography of the site and adjoining areas was initially completed to determine the pattern of vegetative coverage that exists on the site and on adjoining land.

Surveys of the site were carried out in August and September 2005 to identify the vegetation communities and flora species on the site, with particular attention given to the vegetation within the waterway corridor and the mapped wetland area to the north of the site.

The vegetation lining the constructed drainage channel is degraded and dominated by exotic weeds and grasses as illustrated in Plate 1. The weed species include, Glycine (*Neonotonia wightii*), Blue billygoat weed (*Ageratum houstonianum*), Paddys lucerne (*Sida rhombifolia*), Ribwort (*Plantago lanceolata*), exotic grasses, Mile-a minute (*Ipomoea cairica*), Castor oil plant (*Ricinus communis*), a small Broad-leaved pepper tree (*Schinus terebinthifolia*), Lantana (*Lantana camara*), Cobblers peg (*Bidens pilosa*) and *Solanum* sp. with a patch of Singapore daisy (*Sphagneticola trilobata*) on the northern boundary. The vegetation consists of groundcovers and herbaceous weeds with no trees occurring along the drainage channel. The area also appears to have been recently slashed. Adjacent to the eastern side of the drainage line is a concrete bicycle path and mown grass.



Plate 1: Photograph of constructed drainage channel

The mapped wetland area to the north of the site has been incorrectly classified on the Planning Scheme Maps as there is no evidence of any wetland or wetland associated vegetation. This area is characterised by mown grass and exotic weeds as illustrated in Plate 2.



Plate 2: Photograph of mapped wetland area

The vegetation across the eastern sector of the site is characterised by grasses with some exotic weed species such as Ribwort (*Plantago lanceolata*), Glycine (Neonotonia wightii), *Solanum* sp., Castor oil plant (*Ricinus communis*) and Rhodes grass (*Chloris gayana*). In the south-eastern corner, a row of Cadaghi (*Corymbia torelliana*) occurs within the site's boundaries. These trees are classified as an environmental weed pursuant to the Natural Assets Local Law of the Brisbane City Council. To the south and east of the site is grassed parkland with some scattered trees as illustrated in Figure 2. Within this parkland there are two small areas of planted vegetation which consist of immature native trees and shrubs. South of the site, close to the site boundary, the weeds Madeira vine (*Anredera cordifolia*) and Easter cassia (*Senna pendular*) are common.

Significant weed species, pursuant to the Natural Assets Local Law, that occur on the site and close to the site on the adjacent property to the south are listed in Table 1.

TABLE 1 Significant weed species recorded on the site and on the adjacent property to the south.

Common Name	Species Name	Status
Broad-leaved pepper tree	*Schinus terebinthifolia*	Environmental Weed
Cadaghi	*Eucalyptus torelliana*	Environmental Weed
Caster oil plant	*Ricimus communis*	Noxious Weed
Cocos palm	*Syagrus romanzoffiana*	Environmental Weed
Easter cassia	*Senna pendular*	Environmental Weed
Lantana	*Lantana camara*	Noxious Weed/ Environmental Weed
Madeira vine	*Anredera cordifolia*	Environmental Weed
Mile-a-minute	*Ipomoea cairica*	Environmental Weed
Singapore daisy	*Sphagneticola trilobata*	Environmental Weed

A detailed tree survey of the site and adjacent sectors of parkland to the south-east of the site has been carried out. The results of this tree survey are presented in Appendix A, which contains:

- a plan of the site locality indicating the position of individual tree, which were given a unique numerical identifier, relative to the site boundaries and areas that would be affected by the proposed development; and

- a tree schedule that provides information concerning the common name, botanical name, hight, canopy spread and stem diameter of each tree, in addition to details concerning whether each individual tree would be retained or removed as a consequence of the proposed development

There are no areas of remnant vegetation, as defined under the *Vegetation Management Act*, or marine vegetation, as defined under the *Fisheries Act*, on the site or which the adjacent waterway corridor and parkland.

3.1 Natural Asset Values

The Brisbane City Council's plan for future developments and desired outcomes are presented in the City Plan 2000. This plan contains assessment guidelines for development to ensure that ecological values are protected whilst allowing for the orderly development of the City. A component of the City Plan is the *Natural Assets Planning Scheme Policy* ("the Natural Assets Policy"). Included in this policy are Schedules 1 to 5, detailing the biodiversity values that are recognised by the Plan. The ecological values of the site have been analysed in relation to these Schedules and are summarised below. Schedule 1 is considered last as this aspect of the policy contains, in part, elements of Schedules 2 to 5. The Natural Assets Policy along with the listed Schedules are designed to be used in conjunction with the development assessment Codes of the City Plan. The presence of any significant feature on the site will act as a trigger to assess the development application against the relevant Codes. These Codes are discussed in further detail in Section 4.0.

3.1.1 Schedule 2 - Significant Sites

The site is not located in an area or adjacent to an area considered to be a significant site under Schedule 2 of the Natural Assets Policy.

3.1.2 Schedule 3 - Significant Flora Species

The site does not contain any significant flora species as listed under Schedule 3 of the Natural Assets Policy. However, the adjacent land to the east contains two specimens of Narrow-leaved red gum (*Eucalyptus seeana*) which is classified as significant under the Natural Assets Policy as it has a restricted distribution within the Brisbane City. The proposed flood mitigation/drainage works associated with the proposed development would result in the loss of one of these trees.

3.1.3 Schedule 4 - Significant Fauna Species

The site does not contain any habitat suitable for the significant fauna species listed under Schedule 4 of the Natural Assets Policy.

3.1.4 Schedule 5 - Significant Vegetation Communities

The site does not contain any significant vegetation communities as listed in Schedule 5 of the Natural Assets Policy.

3.1.5 Schedule 1 - Valuable Ecological Features

Schedule 1, *Valuable Ecological Features*, incorporates areas, species, communities and ecological processes that are considered to have conservation significance under the Natural Assets Policy. Due to the fact that a waterway, identified on the Planning Scheme Maps, traverses the eastern sector of the site, three aspects of this Schedule are of some relevance to the site:

- A11 - *Areas of ecosystem diversity, including wetlands, waterways and coasts.*
- A21 - *Areas identified as Waterway Corridors or Wetlands in the Waterway Code or Wetland Code and as indicated on the Planning Scheme Maps, and the flora and fauna species/communities and ecological processes supported by these areas.*
- B1 - *Hydrological and riparian processes of wetlands, waterways and coasts.*

4. COMPLIANCE ASSESSMENT

Under the Brisbane City Plan 2000, the Planning Scheme Maps for Waterway Corridors and Wetlands indicates that a waterway and the associated corridor traverse the eastern sector of the site. As a consequence of this listing, the Waterway Code and Biodiversity Code, will be triggered in respect to the proposed development of the site. An area subject to wetlands has also been mapped on the adjacent property to the north of the site. This area is outside of the site's boundaries and does not have any characteristics of a wetland or associated vegetation, and the development would not imp[act upon this area. As a result, the Wetland Code is not be triggered by the proposed development of the site.

4.1 Waterway Code

The general purpose of the Waterway Code is to:

- *keep waterway corridors clear of development wherever possible; and*
- *protect and enhance the water flow, water quality, ecology and open space, and recreational and amenity values of the City's waterways and the Brisbane River and their corridors in an ecologically sustainable way.*

The Waterway Code of the City Plan is applicable when an assessment is made where there is "*a waterway corridor or the Brisbane River Corridor, as defined, or as indicated on the Planning Scheme Maps*".

The following performance criteria of the Waterway Code are of relevance to the site.

P1 The natural functions of waterways as landscape and environmental corridors must be preserved.

P2 Waterfront land must be preserved for public use where relevant.

P3 The proposal must provide for ongoing maintenance of any works or planting required to ensure that impacts on the ecology of waterways or the Brisbane River, or on riparian vegetation, are minimised both during and after construction.

P4 Where a site includes degraded land identified for rehabilitation in a Catchment Management Plan, SMP, WMP or a rehabilitation plan approved by Council, it must be implemented and maintained at the landowner's expense.

4.4 Biodiversity - All development in a waterway corridor or the Brisbane River Corridor must comply with the requirements of the Biodiversity Code in relation to biodiversity.

The performance criteria, acceptable solutions and an assessment of the degree of compliance that the proposal achieves with this development assessment code are detailed in Appendix B. Therein it is demonstrated that the development of the site achieves compliance with the relevant performance criteria of the Waterway Code. This is due to the facts that:

1. the mapped waterway corridor that traverses the eastern sector of the site is a constructed drainage channel with highly disturbed vegetation that is dominated by weeds;

2. this constructed drainage channel does not represent a functional environmental corridor and has limited ecological values; and

3. the flood mitigation/drainage works and associated landscaping scheme that are proposed as part of the development have been specifically designed to enhance the limited functional ecological values that this existing drainage system possesses.

In the above respects, the proposed plan of development is consistent with the purpose of the Waterway Code in that it provides for the enhancement of the *water flow, water quality, ecology and open space, and recreational and amenity values* of the waterway.

4.2 Biodiversity Code

The purpose of this Code is to ensure that the ecological features and processes that underpin the biological, social, cultural and economic wellbeing of the City are protected and managed to ensure their long term viability.

The Biodiversity Code of the City Plan is applied when "*assessing a material change of use and/or building work and/or reconfiguring a lot, where the proposed development site, or a significant natural ecological feature or process that the site supports, is within or adjacent to:*

- a site or valuable ecological feature in Schedules 1 or 2 of the Natural Assets Planning Scheme Policy;

- a site containing a Wetland or Waterway or within a Waterway Corridor".

The following performance criteria of the Biodiversity Code are of relevance to the site.

P1 Ecological features and processes on or adjacent to the site, including those identified in the Natural Assets Planning Scheme Policy, must be protected, managed and restored, where necessary, to ensure their long term viability.

P2 Ecological corridors within or adjacent to the site must be identified and retained to create, maintain and/or improve connectivity between habitat areas and to allow wildlife movement between habitat areas.

P4 The design and management of the proposal must ensure that significant biodiversity areas will be provided with ongoing protection.

P5 Ecological features and processes associated with waterways and wetlands must not be significantly and adversely impacted by changes in hydrological regimes, including wet/dry regimes.

P6 Ecological assessment information accompanying applications must be comprehensive, competent and adequate.

The performance criteria, acceptable solutions and an assessment of the degree of compliance that the proposal achieves with this development assessment code are detailed in Appendix C. Therein it is demonstrated that the development of the site achieves compliance with the Biodiversity Code. This is due to the following facts and circumstances:

1. the site is highly disturbed and has limited ecological values with no areas or features of biodiversity significance;

2. the constructed, concreted drainage channel, that would be affected by the proposed development, is degraded and dominated by exotic weeds and grasses; and

3. the operational works associated with the development will create an alternative drainage system based on Natural Channel Design principals, including the use of appropriate native plant species in the landscaping of the subject area.

In the above respects, the proposed plan of development is consistent with the purpose of the Biodiversity Code in that it has been designed to *ensure that the ecological features and processes that underpin the biological, social, cultural and economic wellbeing of the City are protected and managed to ensure their long term viability.* In this respect the minor short term biodiversity impacts that would be associated with the loss of some native trees would be more than offset by the resultant flood mitigation benefits to the community and the establishment of an appropriately landscaped open drainage system which will possess superior ecological values to the one that exists at present.

5. VEGETATION MANAGEMENT

As part of the Information Request, Council requested the preparation and submission of a Vegetation Management Plan (VMP) in respect of the proposed development. In this respect it is noted that the current application is for a Preliminary Approval for Material Change of Use (Multiple Dwelling Units - Retirement Village and Shop not greater than 250m^2). As such some of the detailed civil design specifications that are typically provided in support of an Operational Works application, and which are developed in co-ordination with the preparation of a meaningful VMP, are not currently available.

Given the above facts and circumstances and to ensure that the proposed plan of development achieves the intended ecological benefits associated with the proposed modifications to the existing drainage system it would be relevant for Council to specify the following Condition as part of an approval of the current application.

Protect and enhance existing vegetation, fauna and habitat features in accordance with the specifications of a Vegetation Management Plan (VMP) that is to be submitted to Council for approval prior to or concurrently with any other operational works application The VMP is to be in the form of scaled plans and supporting documentation that includes at least the following information:

1. *The extent of the VMP is to include evaluation of all areas including, proposed road reserves, external works and development areas.*

   (Note: This information is contained in this Natural Assets Assessment.)

2. *The location and description of existing vegetation including species and botanical name plus the height and canopy spread.*

   (Note: This information is provided in Appendix A of this Natural Assets Assessment.)

3. *The location and extent of all site works including all proposed infrastructure and areas of earthworks.*

   (Note: This Natural Assets Assessment and other reports present to Council provide details concerning the general location, nature and extent of proposed works. Further detailed information would be provided in support of subsequent Operational Works applications.)

4. *Detail design of all civil works is to be cognisant of environmental values. Alternative solutions may be required in some instances, to protect significant vegetation (eg alternative service alignments, variations to batter slopes and tunnel boring).*

   (Note: Detailed Operational Works plans will be prepared in accordance with this requirement.)

5. *The location and description of all vegetation to be retained and that to be removed.*

   (Note: Details concerning the location and a description of all vegetation to be retained and that to be removed as a consequence of the proposed development is

provided herein. The detailed VMP submitted in support of Operational Works applications would confirm same.)

6. *A description of all measures to be used to protect vegetation and habitat features to be retained during construction.*

   (Note: The detailed Operational Works plans, including the VMP, will provide specific measures that are to be taken to protect vegetation identified for retention and to ensure that the proposed development would not have an adverse impact on the ecology of adjacent areas.)

7. *A description of all pruning and tree surgery works (to AS 4373/96) to maintain health and stability of trees and reduce potential hazards for future residents.*

   (Note: A qualified arborist would be engaged to assess the health and stability of trees identified for retention and to undertake any works required to maintain the health and stability of trees and reduce potential hazards to the public. *)*

8. *The location and extent of storage and stockpile areas for cleared vegetation and site mulch.*

   (Noted:)

9. *A description of all methods to salvage and/or re-use cleared vegetation. Generally cleared vegetation is to be mulched for reuse in landscape/rehabilitation works.*

   (Noted)

10. *Details of all measures to protect and recover fauna during clearing operations, including; presence of a qualified wildlife officer during clearing operations, preclearing inspections, staging and sequence of clearing and recovery procedures.*

    (Note: The vegetation to be cleared as a consequence of the proposed development is limited in extent and does not support either a high abundance or diversity of native fauna. Nevertheless appropriate arrangements would be made to ensure that vegetation clearance works do not result in avoidable injury or ham to native fauna.)

11. *A description of proposed waterway rehabilitation works, including:*

    a. *details of the proposed rehabilitation schedule, including staging, plant species names, stock size, quantities, locations;*
    b. *a maintenance and monitoring program for all rehabilitation works;*
    c. *stabilisation methods for all areas of exposed soil surface;*
    d. *details of special habitat features to be provided for the enhancement/restoration of habitat values (e.g. fauna nesting boxes);*
    e. *specification notes on planting methods, mulching and soil preparation; and*
    f. *finished levels of works, particularly riparian areas.*

    (Note: The general nature of the waterway rehabilitation/landscaping concepts that are proposed as part of the development are indicated herein and in the Landscape Concept Plan prepared by JW Concepts. The detailed specifications that will allow these concepts to be realised would be submitted to Council for approval as part of the requisite Operational Works applications.)

6. CONCLUSION

The subject site for this Natural Assets Assessment is Lot 1 on RP150512, Cansdale Street, Yeronga. The site is currently used for industrial purposes with sheds, bitumen and some scattered trees on the western half and a grassed area with exotic weeds occurring on the eastern half of the site. The site is designated as a 'Light Industry' area pursuant to the City Plan 2000.

A mapped waterway and associated corridor traverses the eastern sector of the site. This waterway is a constructed drainage channel and the vegetation associated with this drainage line is degraded and dominated by exotic grasses and weeds. As the Planning Scheme has the drainage channel mapped as a waterway corridor, the development will trigger assessment against the Waterway Code and Biodiversity Code.

The proposed plan of development for the site involves the establishment of a retirement village and the implementation of flood mitigation and drainage works within the site and adjacent parkland areas. The proposed flood mitigation/drainage works are not solely for the benefit of the proposed development of the site but address a need for flood mitigation works in the site locality that has been identified by Council. In addition to obtaining an appropriate hydraulic solution the proponent has also considered the requirement to achieve appropriate ecological and landscape outcomes as part of the flood mitigation/drainage works. In this respect the Landscape Concept Plan, prepared by JW Concepts, for the proposed development also considers the modified landscape that would be created as part of the flood mitigation/drainage works. In summary the proposed flood mitigation/drainage works and associated landscaping schemes would result in:

- the partial replacement of existing underground stormwater drainage pipes and concrete lined drainage channels, with an open drainage system that has been designed based on Natural Channel Design principals;
- the removal of approximately 48 mature tress of which 64.6% are non-native and 41.7% of which are recognised by Council as environmental weeds; and
- the landscaping of the new drainage system using a diversity of native plant species that will, once established, result in an improvement in the ecological and landscape values of the subject area.

The proposed plan of is consistent with the purposes of the:

- Waterway Code in that it provides for the enhancement of the *water flow, water quality, ecology and open space, and recreational and amenity values* of the waterway; and
- Biodiversity Code in that it has been designed to *ensure that the ecological features and processes that underpin the biological, social, cultural and economic wellbeing of the City are protected and managed to ensure their long term viability.*

Any minor short term biodiversity impacts associated with the loss of some native trees would be more than offset by the resultant flood mitigation benefits to the community and the establishment of an appropriately landscaped open drainage system which will possess superior ecological values to the one that exists at present.

To ensure that the proposed plan of development achieves the intended ecological benefits associated with the proposed modifications to the existing drainage system, it would be reasonable and relevant for Council to require that a detailed Vegetation Management Plan be prepared and submitted for approval prior to or concurrently with any other operational works application.

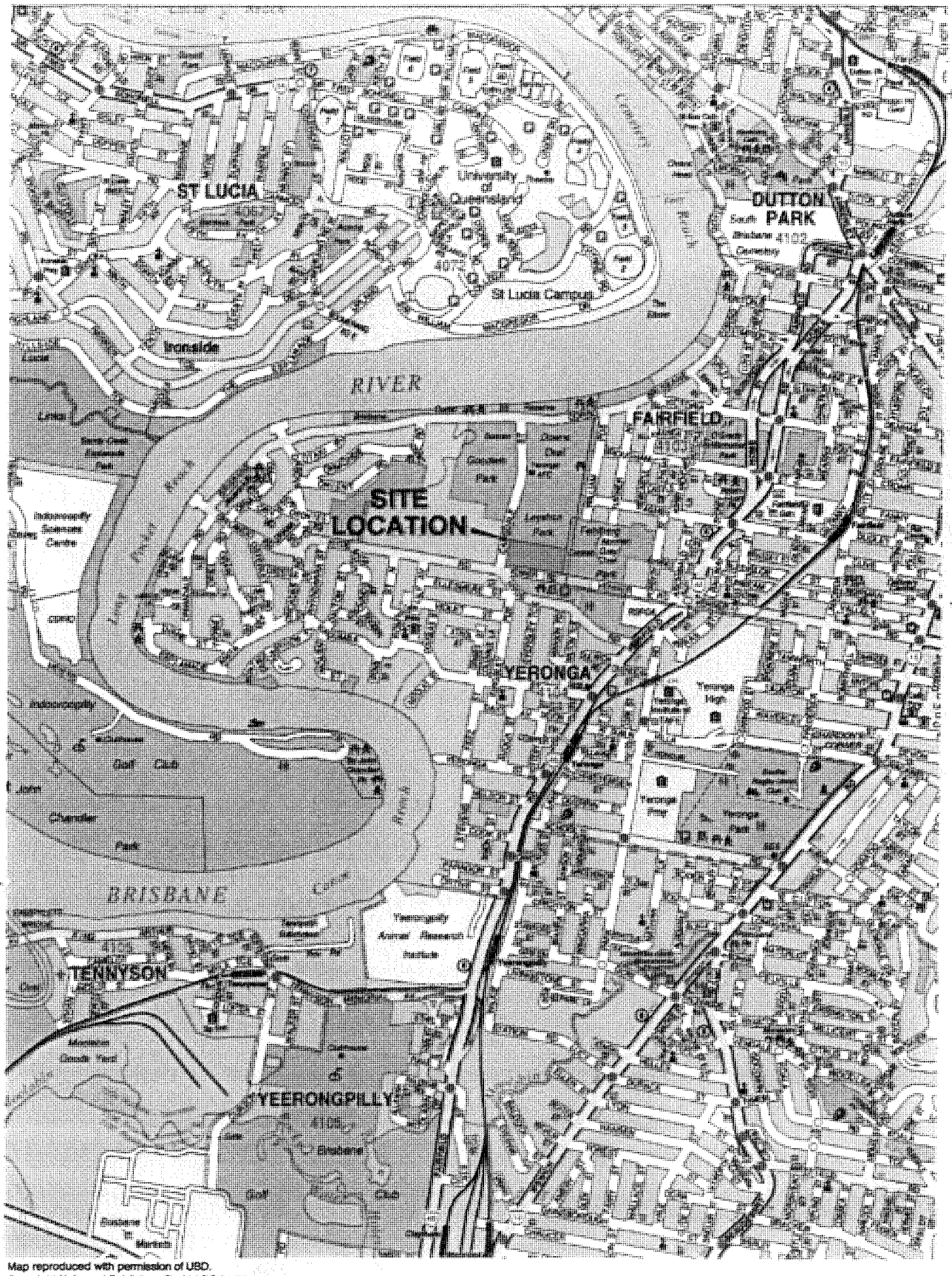
FIGURES

Figure 1 **Locality Plan**

Figure 2 **Aerial Photograph**

Figure 3 **Proposed Plan of Development**

Cardno



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N.T.S.

FIGURE 1
SITE LOCALITY PLAN

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Project No.: 3500/34

Harrisons Real Estate Development

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LEGEND

- Site Boundary
- Drainage Path
- Waterway Corridors

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50 0 50 100 150 200 250m
1:5000

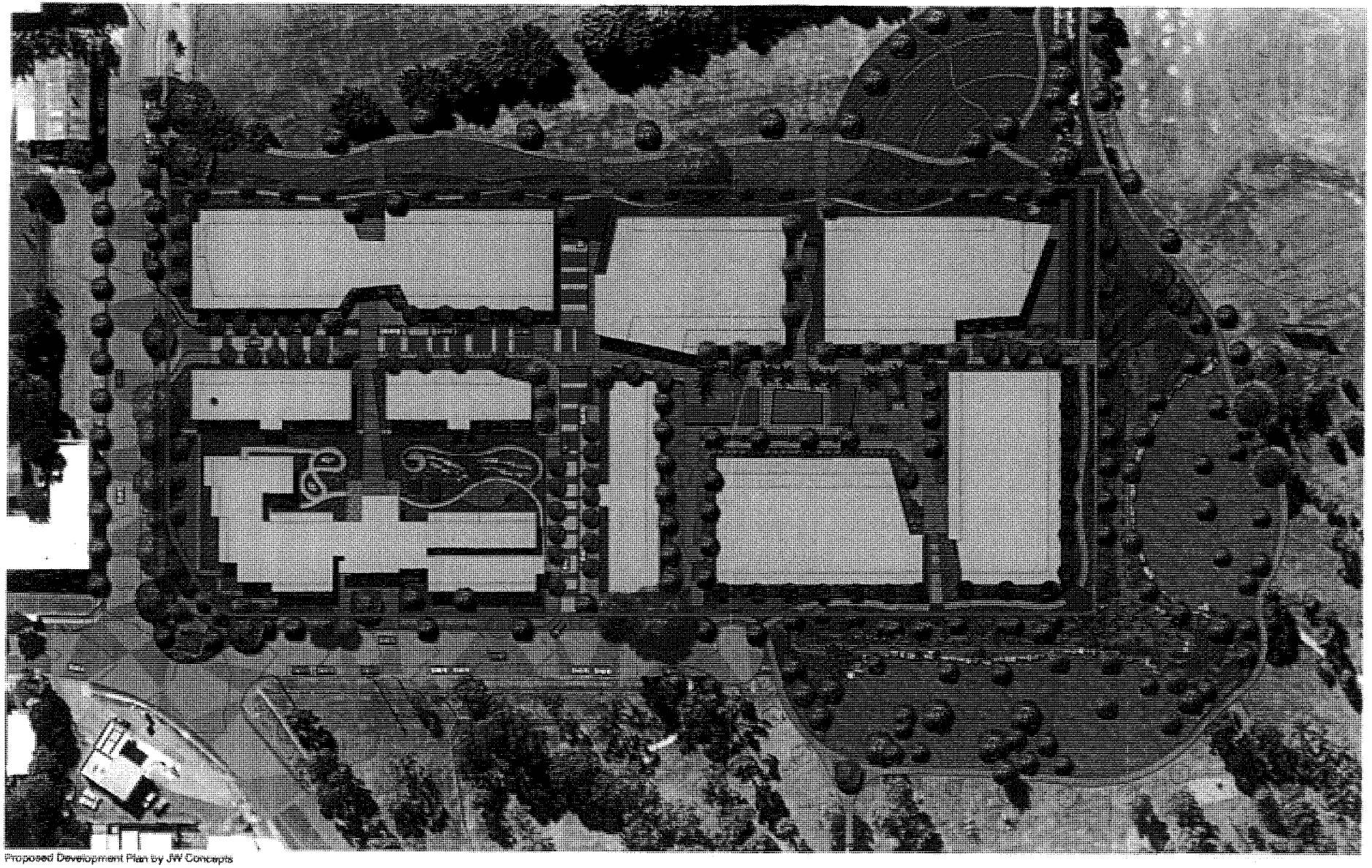
Scale 1:5000 (A3)

FIGURE 2
AERIAL PHOTOGRAPH

Rev: Orig Date: 21 September 2005

Harrisons Real Estate Development

Project No.: 3500/34



Proposed Development Plan by JW Concepts

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10 0 10 20 30 40 50m
1:1000

Scale 1:1000 (A3)

FIGURE 3

PROPOSED PLAN OF DEVELOPMENT

Project No.: 3500/34

APPENDIX A

Tree Survey Plan and Schedule

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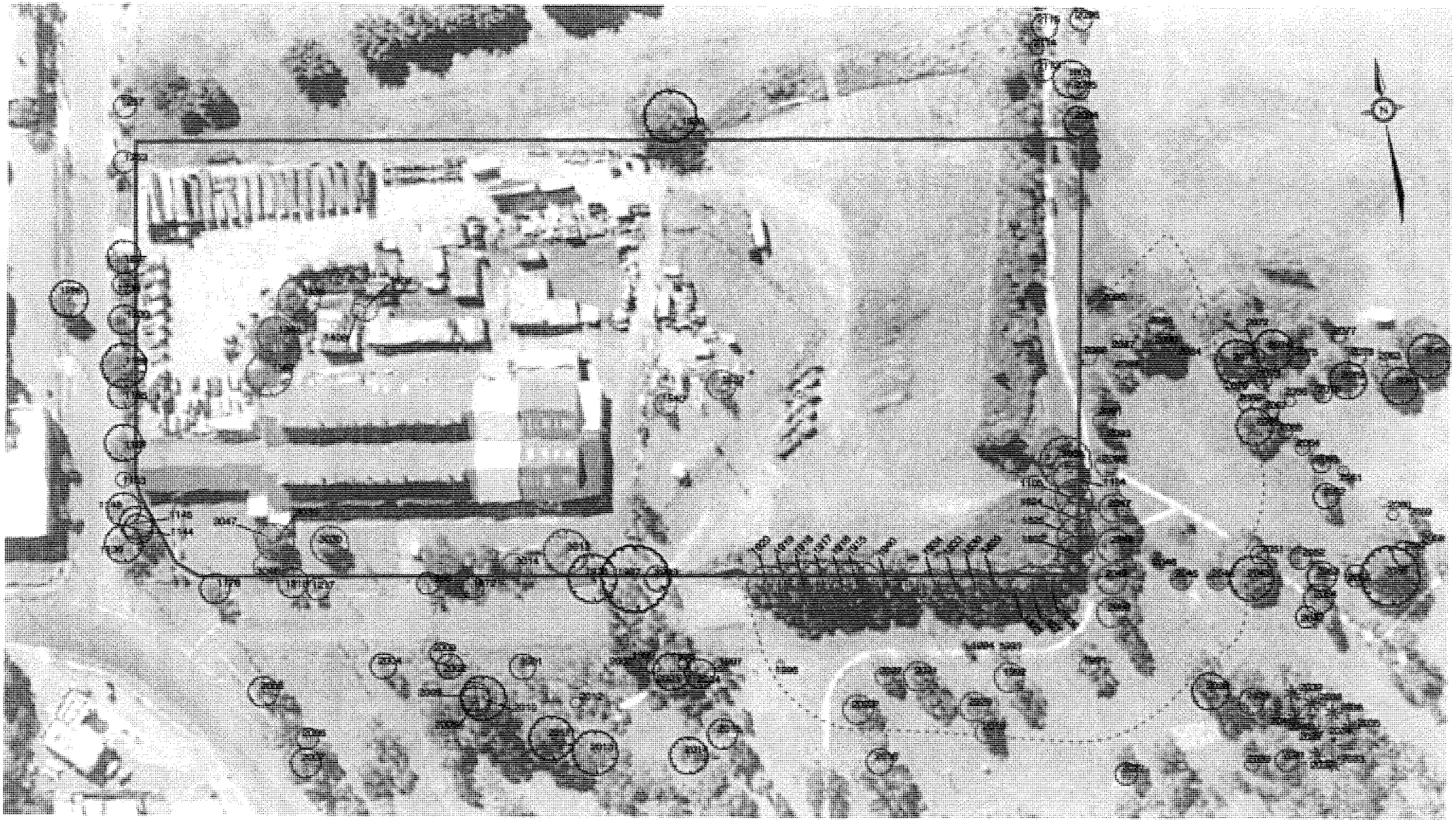

LEGEND

Trees to be Retained

Trees to be Removed

Extent of Waterway Modification Earthworks

10 0 10 20 30 40 50m
1:1000

Scale 1:1000 (A3)

APPENDIX A (Sheet 1)
TREE SURVEY PLAN

Project No.: 3500/34

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ID	Common Name	Botanical Name	Diameter	Spread	Height	Origin	Status
1006	Cadaghi	*Corymbia torelliana*	0.6	14.0	12.0	Environmental Weed	Removed
1104	Cadaghi	*Corymbia torelliana*	0.3	10.0	12.0	Environmental Weed	Removed
1105	Cadaghi	*Corymbia torelliana*	0.3	10.0	10.0	Environmental Weed	Removed
1136	Leopard Tree	*Caesalpinia ferrea*	0.3	10.0	7.0	Non-Native	Retained
1144	Cypress pine	*Callitris columellaris*	0.7	8.0	8.0	Native	Retained
1145	Hickory wattle	*Acacia disparrima*	0.5	9.0	7.0	Native	Retained
1146	Leopard Tree	*Caesalpinia ferrea*	0.3	9.0	8.0	Non-Native	Retained
1153	Leopard Tree	*Caesalpinia ferrea*	0.15	4.0	5.0	Non-Native	Retained
1161	Leopard Tree	*Caesalpinia ferrea*	0.3	10.0	8.0	Non-Native	Retained
1165	Leopard Tree	*Caesalpinia ferrea*	0.25	8.0	6.0	Non-Native	Retained
1169	Leopard Tree	*Caesalpinia ferrea*	0.4	12.0	8.0	Non-Native	Retained
1176	Leopard Tree	*Caesalpinia ferrea*	0.3	8.0	8.0	Non-Native	Retained
1215	Leopard Tree	*Caesalpinia ferrea*	0.25	8.0	5.0	Non-Native	Retained
1217	Leopard Tree	*Caesalpinia ferrea*	0.3	6.0	5.0	Non-Native	Retained
1230	Leopard Tree	*Caesalpinia ferrea*	0.3	8.0	7.0	Non-Native	Retained
1236	Leopard Tree	*Caesalpinia ferrea*	0.25	6.0	6.0	Non-Native	Retained
1237	Leopard Tree	*Caesalpinia ferrea*	0.3	9.0	8.0	Non-Native	Retained
1253	Leopard Tree	*Caesalpinia ferrea*	0.25	6.0	5.0	Non-Native	Retained
1257	Leopard Tree	*Caesalpinia ferrea*	0.25	6.0	5.0	Non-Native	Retained
1285	Leopard Tree	*Caesalpinia ferrea*	0.4	10.0	8.0	Non-Native	Retained
1336	Benjamin fig	*Ficus benjamina*	0.5	11.0	7.0	Non-Native	Removed
1367	Poinciana	*Delonix regia*	0.5	12.0	6.0	Non-Native	Removed
1368	Benjamin fig	*Ficus benjamina*	0.8	10.0	7.0	Non-Native	Removed
1406	Alexander palm	*Archontophoenix alexandrae*	0.3	4.0	4.0	Native	Removed
1407	Alexander palm	*Archontophoenix alexandrae*	0.3	7.0	8.0	Native	Removed
1520	Siris	*Albizia lebbeck*	1	14.0	10.0	Non-Native	Retained
1537	Queensland blue gum	*Eucalyptus tereticornis*	0.5	8.0	12.0	Native	Removed
1540	Queensland blue gum	*Eucalyptus tereticornis*	0.4	8.0	10.0	Native	Removed
1602	Cadaghi	*Corymbia torelliana*	0.65	10.0	15.0	Environmental Weed	Removed
1803	Grey ironbark	*Eucalyptus siderophloia*	0.4	10.0	10.0	Native	Retained
1824	Cadaghi	*Corymbia torelliana*	0.4	8.0	9.0	Environmental Weed	Removed
1825	Cadaghi	*Corymbia torelliana*	0.5	10.0	15.0	Environmental Weed	Removed
1826	Cadaghi	*Corymbia torelliana*	0.3	10.0	8.0	Environmental Weed	Removed
1827	Cadaghi	*Corymbia torelliana*	0.5	12.0	9.0	Environmental Weed	Removed
1828	Cadaghi	*Corymbia torelliana*	0.4	10.0	10.0	Environmental Weed	Removed
1829	Cadaghi	*Corymbia torelliana*	0.5	8.0	12.0	Environmental Weed	Removed
1830	Cadaghi	*Corymbia torelliana*	0.5	10.0	13.0	Environmental Weed	Removed
1833	Cadaghi	*Corymbia torelliana*	0.5	10.0	10.0	Environmental Weed	Removed
1834	Cadaghi	*Corymbia torelliana*	0.5	10.0	10.0	Environmental Weed	Removed
1840	Cadaghi	*Corymbia torelliana*	0.6	10.0	12.0	Environmental Weed	Removed
1915	Cadaghi	*Corymbia torelliana*	0.5	14.0	13.0	Environmental Weed	Removed
1916	Cadaghi	*Corymbia torelliana*	0.5	14.0	13.0	Environmental Weed	Removed
1917	Cadaghi	*Corymbia torelliana*	0.6	14.0	15.0	Environmental Weed	Removed
1918	Cadaghi	*Corymbia torelliana*	0.6	14.0	14.0	Environmental Weed	Removed
1919	Cadaghi	*Corymbia torelliana*	0.6	12.0	14.0	Environmental Weed	Removed
1920	Cadaghi	*Corymbia torelliana*	0.4	11.0	9.0	Environmental Weed	Removed
1958	Cocos palm	*Syagrus romanzoffiana*	0.5	6.0	8.0	Environmental Weed	Retained
1972	Leopard Tree	*Caesalpinia ferrea*	0.25	6.0	5.0	Non-Native	Retained
1976	Queensland blue gum	*Eucalyptus tereticornis*	1.4	13.0	20.0	Native	Retained
1987	Queensland blue gum	*Eucalyptus tereticornis*	1.3	18.0	20.0	Native	Retained
1991	Pink bloodwood	*Corymbia intermedia*	0.4	6.0	12.0	Native	Removed
1992	Queensland blue gum	*Eucalyptus tereticornis*	0.4	8.0	14.0	Native	Removed
1993	Flame tree	*Brachychiton acerifolius*	0.2	2.0	4.0	Native	Removed
1994	Flame tree	*Brachychiton acerifolius*	0.3	2.0	4.0	Native	Removed
1996	Flame tree	*Brachychiton acerifolius*	0.2	2.0	2.0	Native	Removed
1997	Flame tree	*Brachychiton acerifolius*	0.2	3.0	5.0	Native	Retained
1998	Flame tree	*Brachychiton acerifolius*	0.3	3.0	7.0	Native	Retained
1999	Flame tree	*Brachychiton acerifolius*	0.4	4.0	7.0	Native	Retained
2000	Flame tree	*Brachychiton acerifolius*	0.3	4.0	7.0	Native	Retained
2001	Pink bloodwood	*Corymbia intermedia*	0.3	7.0	11.0	Native	Retained
2002	Grey ironbark	*Eucalyptus siderophloia*	0.3	7.0	14.0	Native	Retained
2003	Red stringybark	*Eucalyptus resinifera*	0.5	6.0	14.0	Native	Retained
2004	Queensland blue gum	*Eucalyptus tereticornis*	0.2	7.0	9.0	Native	Retained
2005	Small fruited grey gum	*Eucalyptus propinqua*	0.4	8.0	14.0	Native	Retained
2006	Small fruited grey gum	*Eucalyptus propinqua*	0.2	6.0	9.0	Native	Retained
2007	Small fruited grey gum	*Eucalyptus propinqua*	0.4	8.0	22.0	Native	Retained
2008	Queensland blue gum	*Eucalyptus tereticornis*	0.4	8.0	20.0	Native	Retained
2009	Queensland blue gum	*Eucalyptus tereticornis*	0.5	8.0	18.0	Native	Retained
2010	Queensland blue gum	*Eucalyptus tereticornis*	0.5	12.0	22.0	Native	Retained
2011	Cadaghi	*Corymbia torelliana*	0.5	12.0	20.0	Environmental Weed	Retained
2012	Queensland blue gum	*Eucalyptus tereticornis*	0.1	3.0	5.0	Native	Retained
2013	Queensland blue gum	*Eucalyptus tereticornis*	0.8	12.0	20.0	Native	Retained
2014	Small fruited grey gum	*Eucalyptus propinqua*	0.4	10.0	16.0	Native	Retained
2015	Queensland blue gum	*Eucalyptus tereticornis*	0.5	8.0	18.0	Native	Retained
2016	Pink bloodwood	*Corymbia intermedia*	0.3	7.0	11.0	Native	Retained
2019	Weeping paperbark	*Melaleuca leucadendra*	0.4	6.0	9.0	Native	Removed
2020	Queensland blue gum	*Eucalyptus tereticornis*	0.3	8.0	12.0	Native	Removed
2021	Queensland blue gum	*Eucalyptus tereticornis*	0.3	8.0	10.0	Native	Removed
2022	Pink bloodwood	*Corymbia intermedia*	0.2	5.0	7.0	Native	Removed
2023	Queensland blue gum	*Eucalyptus tereticornis*	0.4	8.0	12.0	Native	Removed
2024	Ironbark	*Eucalyptus spp.*	0.6	8.0	18.0	Native	Retained

ID	Common Name	Botanical Name	Diameter	Spread	Height	Origin	Status
2025	Queensland blue gum	*Eucalyptus tereticornis*	0.5	10.0	20.0	Native	Retained
2027	Small fruited grey gum	*Eucalyptus propinqua*	0.3	6.0	12.0	Native	Retained
2028	Small fruited grey gum	*Eucalyptus propinqua*	0.6	10.0	18.0	Native	Retained
2029	Stringybark	*Eucalyptus spp.*	0.4	7.0	11.0	Native	Retained
2030	Silky oak	*Grevillea robusta*	0.3	4.0	16.0	Native	Retained
2031	Silky oak	*Grevillea robusta*	0.3	6.0	18.0	Native	Retained
2032	Cocos palm	*Syagrus romanzoffiana*	0.2	5.0	7.0	Environmental Weed	Retained
2033	Cocos palm	*Syagrus romanzoffiana*	0.2	5.0	7.0	Environmental Weed	Retained
2034	Cocos palm	*Syagrus romanzoffiana*	0.2	2.0	7.0	Environmental Weed	Retained
2035	Cocos palm	*Syagrus romanzoffiana*	0.2	5.0	7.0	Environmental Weed	Retained
2036	Cocos palm	*Syagrus romanzoffiana*	0.2	5.0	7.0	Environmental Weed	Retained
2037	Cocos palm	*Syagrus romanzoffiana*	0.2	5.0	7.0	Environmental Weed	Retained
2038	Cocos palm	*Syagrus romanzoffiana*	0.2	5.0	7.0	Environmental Weed	Retained
2039	Cocos palm	*Syagrus romanzoffiana*	0.2	5.0	7.0	Environmental Weed	Retained
2040	Cocos palm	*Syagrus romanzoffiana*	0.2	5.0	7.0	Environmental Weed	Retained
2041	Cocos palm	*Syagrus romanzoffiana*	0.2	5.0	7.0	Environmental Weed	Retained
2042	Narrow-leaved red gum	*Eucalyptus seeana**	0.3	6.0	8.0	Native	Retained
2043	Pink trumpet tree	*Tabebuia rosea*	0.5	12.0	10.0	Non-Native	Retained
2044	Pink trumpet tree	*Tabebuia rosea*	0.2	6.0	7.0	Non-Native	Removed
2045	Pink trumpet tree	*Tabebuia rosea*	0.2	6.0	7.0	Non-Native	Removed
2046	Pink trumpet tree	*Tabebuia rosea*	0.2	4.0	6.0	Non-Native	Removed
2047	Moreton Bay ash	*Corymbia tessellaris*	0.4	8.0	18.0	Native	Removed
2048	Moreton Bay ash	*Corymbia tessellaris*	0.9	9.0	22.0	Native	Removed
2049	Moreton Bay ash	*Corymbia tessellaris*	0.4	8.0	20.0	Native	Removed
2050	Moreton Bay ash	*Corymbia tessellaris*	0.4	8.0	22.0	Native	Removed
2051	Brush box	*Lophostemon confertus*	0.3	5.0	15.0	Native	Retained
2052	Pink trumpet tree	*Tabebuia rosea*	0.2	6.0	6.0	Non-Native	Retained
2053	Pink trumpet tree	*Tabebuia rosea*	0.3	8.0	8.0	Non-Native	Retained
2054	Brush box	*Lophostemon confertus*	0.4	8.0	12.0	Native	Retained
2055	Pink trumpet tree	*Tabebuia rosea*	0.2	6.0	6.0	Non-Native	Retained
2056	Siris	*Albizia lebbeck*	0.7	16.0	16.0	Non-Native	Retained
2057	Pink trumpet tree	*Tabebuia rosea*	0.3	7.0	10.0	Non-Native	Retained
2058	Flame tree	*Brachychiton acerifolius*	0.2	4.0	7.0	Native	Retained
2059	Flame tree	*Brachychiton acerifolius*	0.1	2.0	4.0	Native	Retained
2060	Flame tree	*Brachychiton acerifolius*	0.2	3.0	4.0	Native	Retained
2061	Flame tree	*Brachychiton acerifolius*	0.2	3.0	5.0	Native	Retained
2062	Narrow leaved red ironbark	*Eucalyptus crebra*	0.4	7.0	12.0	Native	Retained
2063	Flame tree	*Brachychiton acerifolius*	0.3	5.0	5.0	Native	Retained
2065	Flame tree	*Brachychiton acerifolius*	0.3	4.0	6.0	Native	Retained
2066	Flame tree	*Brachychiton acerifolius*	0.2	3.0	5.0	Native	Retained
2067	Flame tree	*Brachychiton acerifolius*	0.3	5.0	5.0	Native	Retained
2068	Narrow leaved red ironbark	*Eucalyptus crebra*	0.4	10.0	13.0	Native	Retained
2069	Flame tree	*Brachychiton acerifolius*	0.3	4.0	6.0	Native	Retained
2070	Flame tree	*Brachychiton acerifolius*	0.3	4.0	7.0	Native	Removed
2071	Jacaranda	*Jacaranda mimosifolia*	0.4	12.0	10.0	Non-Native	Retained
2072	Flame tree	*Brachychiton acerifolius*	0.3	4.0	8.0	Native	Retained
2073	Flame tree	*Brachychiton acerifolius*	0.3	5.0	9.0	Native	Retained
2074	Siris	*Albizia lebbeck*	0.4	11.0	9.0	Non-Native	Retained
2075	Flame tree	*Brachychiton acerifolius*	0.4	5.0	8.0	Native	Retained
2076	Flame tree	*Brachychiton acerifolius*	0.3	5.0	7.0	Native	Retained
2077	Flame tree	*Brachychiton acerifolius*	0.3	4.0	7.0	Native	Retained
2078	Flame tree	*Brachychiton acerifolius*	0.3	5.0	7.0	Native	Retained
2079	Jacaranda	*Jacaranda mimosifolia*	0.3	10.0	7.0	Non-Native	Retained
2081	Jacaranda	*Jacaranda mimosifolia*	0.3	10.0	8.0	Non-Native	Retained
2082	Jacaranda	*Jacaranda mimosifolia*	0.4	12.0	9.0	Non-Native	Retained
2083	Flame tree	*Brachychiton acerifolius*	0.2	2.0	3.0	Native	Retained
2084	Pink trumpet tree	*Tabebuia rosea*	0.1	2.0	4.0	Non-Native	Removed
2085	Pink trumpet tree	*Tabebuia rosea*	0.2	5.0	7.0	Non-Native	Removed
2086	Pink trumpet tree	*Tabebuia rosea*	0.2	5.0	8.0	Non-Native	Removed
2087	Pink trumpet tree	*Tabebuia rosea*	0.1	3.0	3.0	Non-Native	Removed
2088	Pink trumpet tree	*Tabebuia rosea*	0.1	5.0	5.0	Non-Native	Removed
2089	Golden trumpet tree	*Tabebuia chrysanthea*	0.3	5.0	9.0	Non-Native	Removed
2090	Jacaranda	*Jacaranda mimosifolia*	0.4	7.0	7.0	Non-Native	Removed
2091	Moreton Bay ash	*Corymbia tessellaris*	0.6	8.0	15.0	Native	Removed
2092	Narrow leaved red gum	*Eucalyptus seeana*	0.3	8.0	7.0	Native	Removed
2093	Pink trumpet tree	*Tabebuia rosea*	0.2	5.0	8.0	Non-Native	Removed
2095	Grey ironbark	*Eucalyptus siderophloia*	0.3	6.0	16.0	Native	Retained
2096	Queensland blue gum	*Eucalyptus tereticornis*	0.3	6.0	9.0	Native	Retained
2097	Grey ironbark	*Eucalyptus siderophloia*	0.3	8.0	8.0	Native	Retained
2098	Stringybark	*Eucalyptus spp.*	0.2	5.0	7.0	Native	Retained
2099	Lemon scented gum	*Corymbia citriodora*	0.5	7.0	15.0	Native	Retained
2113	Hickory wattle	*Acacia disparrima*	0.1	8.0	6.0	Native	Retained
2114	Leucaena	*Leucaena leucocephala*	0.1	4.0	3.0	Non-Native	Retained
2115	Hickory wattle	*Acacia disparrima*	0.2	7.0	8.0	Native	Retained
2116	Hickory wattle	*Acacia disparrima*	0.2	4.0	5.0	Native	Retained
2117	Hickory wattle	*Acacia disparrima*	0.3	6.0	6.0	Native	Retained
2993	Queensland blue gum	*Eucalyptus tereticornis*	0.5	7.0	9.0	Native	
3013	Poinciana	*Delonix regia*	0.6	12.0	6.0	Non-Native	Removed
3014	Benjamin fig	*Ficus benjamina*	0.5	7.0	6.0	Non-Native	Removed
3030	Benjamin fig	*Ficus benjamina*	0.4	10.0	9.0	Non-Native	Removed
3035	Benjamin fig	*Ficus benjamina*	0.41	10.0	9.0	Non-Native	Removed
3047	Weeping paperbark	*Melaleuca leucadendra*	0.5	7.0	9.0	Native	Removed
3048	Siris	*Albizia lebbeck*	0.4	8.0	7.0	Non-Native	Removed

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APPENDIX A (Sheet 2)
TREE SCHEDULE

Rev: Orig. Date: 21 September 2005

Harrisons Real Estate Development

Project No.: 3500/34

APPENDIX B

Waterway Code – Compliance Assessment

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
General				
P1 The natural functions of Waterways as landscape and environmental corridors must be preserved.	**A1** No vegetation is disturbed on land: • in the Green Space Areas • covered by a Vegetation Protection Order or Voluntary Conservation Agreement • designated in the Local Plan as being an area subject to environmental and scenic constraint • identified in the Natural Assets Planning Scheme Policy	A/S	• The proposal involves the clearance of some existing vegetation within a mapped waterway the majority of this vegetation is comprised of non-native species and environmental weeds. In addition the subject waterway corridor is comprised of a constructed drainage channel and piped drain age system that has limited ecological values and is not effective as an environmental corridor. • The proposed works within the mapped waterway corridor, including the landscaping works, have been designed to enhance the functional ecological values of the subject area. • Given the above, it is submitted that the proposal will enhance, rather than detract, from the capacity of the subject section of mapped waterway to function as a landscape and environmental corridor.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
P2 Waterfront land must be preserved for public use where relevant	**A2** Land in a Waterway Corridor or Brisbane River Corridor is transferred into public ownership in accordance with the relevant Contributions Planning Scheme Policies, where that land is required for ecological, open space or recreational functions, including: • public use • access for maintenance • linking core and remnant habitat areas • protecting water quality and ecological processes • other public benefits	✓	• The area where works will be undertaken outside of the site's boundaries, including area within the waterway corridor, will be landscaped in accordance with the current usage of the area. This land will remain as parkland for public use.	
P3 The proposal must provide for ongoing maintenance of any works or planting required to ensure that impacts on the ecology of waterways or the Brisbane River, or on riparian vegetation, are minimised both during and after construction.	**A3.1** A maintenance program is approved by Council and implemented. **A3.2** A performance bond and agreement is lodged with Council to ensure the approved maintenance program is implemented.	✓	• The waterway enhancement and landscaping works would be the subject of an appropriate on-maintenance period to be specified by Council as a Condition of Development Approval.	
P4 Where a site includes degraded land identified for rehabilitation in a Catchment Management Plan, SMP, WMP or a rehabilitation plan approved by Council, it must be implemented and maintained at the landowner's expense	**A4.1** A rehabilitation plan is approved by Council and implemented **A4.2** A performance bond and agreement is lodged with Council to ensure the ongoing maintenance of rehabilitation works	✓	• Council has identified the need for flood mitigation works in this locality and the proposed works within the mapped waterway corridor have been designed to achieve Council's desire flood mitigation outcomes. • The general nature of the landscaping works to be carried out as part of the flood mitigation works are detailed in the Landscape Concept	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
			Plans prepared by JW Concepts. • It would be appropriate for Council to require, in support of requisite applications for Operational Works approval, the submission of a detailed landscaping (rehabilitation) plan that specified appropriate maintenance requirements .	
Open Space/ recreation/ riparian amenity				
P1 Where a development site has frontage to a Waterway or the Brisbane River or contains a Waterway, land required by Council for open space/recreation (community land) or public access, must focus on that Waterway or the Brisbane River where applicable.	**A1** No acceptable solution is prescribed.	NA		
P2 Open space/ recreation areas must contribute positively to managing flooding impacts, protecting water quality, preserving or enhancing ecological processes and maintaining/enhancing amenity.	**A2** No acceptable solution is prescribed.	✓	• The proposal provides for works within a mapped waterway corridor that contribute positively to managing flooding impacts, protecting water quality, preserving or enhancing ecological processes and maintaining/enhancing amenity.	
4.6 Riparian landscape				
P1 Valued habitats, remnant riparian vegetation and mature examples of appropriate planted tree species must be conserved and protected	**A1** Native vegetation within the Brisbane River or waterway corridor is incorporated as part of any development proposal and landscaping involves the sustainable removal of weed species	✓	• No valued habitats, remnant vegetation or tree species exist within the waterway corridor on the eastern sector of the site. • The trees within the waterway corridor outside of the site's boundaries will be retained where	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	Note: *This may be demonstrated by the submission of a landscape plan as detailed in the* ***Brisbane River Corridor Planning Scheme Policy***		possible as illustrated in Figure 3. Where the removal of trees has been unavoidable, landscaping after the completion of the works will serve to rehabilitate the area where operational works have occurred. • The declared weed species that occur within the development area will be removed.	
P2 Reshaping of the landform (e.g. to create terraced areas, steps and ramps) must minimise the extent of earthworks required, minimise removal/clearing of native and riparian vegetation and be consistent with the desired character of the Precinct in which the site is located	**A2** Landscaping or site works proposed on land wholly or partly within the Brisbane River Corridor or a waterway corridor, which is intended to create terraces stepping down to the water, do not occur: • within 30m horizontal distance from high water mark for land in the Environmental Protection or Rural Areas OR • within 20m horizontal distance from high water mark for other land	✓	• The extents of earthworks and vegetation clearance proposed within and adjacent to the mapped waterway corridor have been minimized as far as is practicable whilst allowing for the desired flood mitigation outcomes to be achieved.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

APPENDIX C

Biodiversity Code – Compliance Assessment

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
General				
P1 Ecological features and processes on or adjacent to the site, including those identified in the **Natural Assets Planning Scheme Policy**, must be protected, managed and restored, where necessary, to ensure their long term viability. *Note: **Brisbane City Council Ecological Guidelines 1998** provides guidance on demonstrating compliance with this part of the Code.*	**A1.1** Ecological features and processes likely to be affected by the proposal are identified, evaluated and protected. Local knowledge is accessed where available **A1.2** Potential impacts, including edge effects, on ecological features and processes are identified, assessed and protected **A1.3** Development layout and planning retains, protects and manages the ecological features and processes identified on or adjacent to the site, such as fauna and flora habitat areas, ecological corridors, habitat trees, waterways (in-stream habitats), riparian zones and wetlands	✓	The proposal is consistent with P1 in that: • The waterway is a constructed, concreted drainage channel. The associated waterway corridor that occurs within the site is degraded and dominated by exotic weeds and grasses. • The mapped wetland area to the north of the site is incorrectly classified and does not have any characteristics of a wetland or the associated vegetation. This area consists of mown grass and exotic weeds species. • The area where works will be undertaken outside of the site's boundaries, including the area within the waterway corridor, will be landscaped to restore/enhance its ecological functions.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	A1.4 Disturbed significant habitat areas are rehabilitated through revegetation and restoration that assists in maintaining and improving biodiversity values. A rehabilitation plan is prepared and implemented, consistent with the format and principles contained in the **Brisbane City Council Ecological Assessment Guidelines** **A1.5** The proposal meets the management intent for any Significant Flora Species, Significant Fauna Species or Significant Vegetation Communities, as defined in the **Natural Assets Planning Scheme Policy**, or in any existing Council Conservation Action Statements, Natural Area Management Plans or other relevant conservation or management plans			

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
P2 Ecological corridors within or adjacent to the site must be identified and retained to create, maintain and/or improve connectivity between habitat areas and to allow wildlife movement between habitat areas	**A2** The design and management of ecological corridors is consistent with the principles contained in the **Brisbane City Council Ecological Assessment Guidelines**	✓	• The site, including the mapped waterway corridor, does not contain any functional ecological corridors. • The proposed works within the waterway corridor, which involve the partial replacement of a concrete lined drainage channel and storm water pipes with an open landscaped waterway, will enhance the potential of the waterway to possess some functional values as an ecological corridor.	
P4 The design and management of the proposal must ensure that significant biodiversity areas will be provided with ongoing protection	**A4.1** Areas supporting significant ecological features and/or processes are transferred to community ownership or control, e.g. Council, community group trusteeship, or community title OR **A4.2** Areas supporting significant ecological features and/or processes are included in the Conservation Area of included under a protective covenant	✓	• The site and adjacent land does not contain any significant biodiversity areas. • The proposal provides for the enhancement of the flood mitigation, drainage, landscape and ecological values of the affected section of the mapped waterway corridor.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
Waterways and Wetlands				
P5 Ecological features and processes associated with waterways and wetlands must not be significantly and adversely impacted by changes in hydrological regimes, including wet/dry regimes	**A5** Impacts on the surface and ground water flow patterns of the subject waterway or wetland are minimised Note: Information used to demonstrate the above is collected and presented in accordance with the principles and procedures of the **Stormwater Management Code**, and the **Environmental Impact Assessment Planning Scheme Policy**	✓	• The proposed works within the mapped waterway corridor have been specifically designed to ensure that Ecological features and processes associated with waterways and wetlands must not be significantly and adversely impacted by changes in hydrological regimes, whilst satisfying the desired flood mitigation outcomes sought by Council in this locality. • Additional detail concerning storm water management and hydraulic issues are provided in the Hydraulic Analysis report prepared by Cardno (Qld) Pty Ltd.	
Information				
P6 Ecological assessment information accompanying applications must be comprehensive, competent and adequate.	**A6** Ecological assessment information accompanying an application is consistent with the principles and procedures contained or referenced in the **Brisbane City Council Ecological Assessment Guidelines, Brisbane City Council Fire Management Guidelines, Natural Assets Planning Scheme Policy, Management of Urban Stormwater Quality Planning Scheme Policy** and the **Environmental Impact Assessment Planning Scheme Policy**	✓	• The information presented in this Natural Assets Assessment Report satisfies this performance criterion.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

APPENDIX E

Architectural Plans

Prepared by

Arkhefield



Site Context Plan

Yeronga Village

SCALE: NTS @ A3
DATE: 22.09.2005

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Independent Living/Assisted Living

Nursing Home

Park Precinct

GFA calculations:

Independent Living (incl. assisted living & community facilities)	31, 000 sqm
nursing home	5, 000 sqm
Total area	36,000 sqm
Maximum Independent Living and/or Assisted Living Dwellings	310
Maximum Nursing Home Beds	120

SOCCER FIELDS

LEYSHON PARK

2

NORMAN GRAY CRICKET OVAL

CANSDALE STREET

A1

A2

B

C

internal access road

H

G

F

D

possible integration of assisted living & nursing home

I

E

FEHLBERG PARK

adjacent industrial zone

HYDE ROAD

VENNER ROAD

HYDE PARK

Precinct Plan

Yeronga Village

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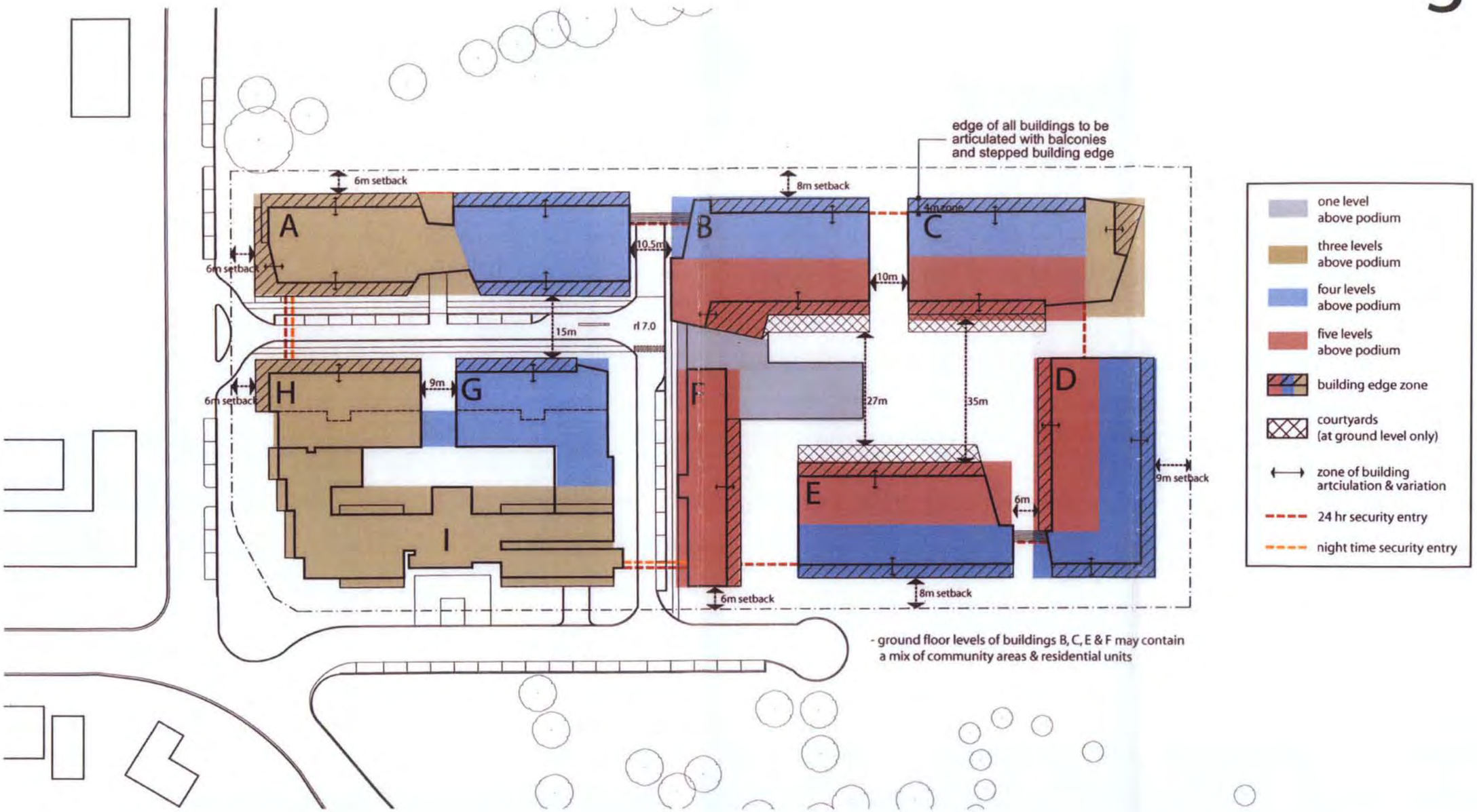

- ground floor levels of buildings B, C, E & F may contain a mix of community areas & residential units

Building Envelope Plan

Yeronga Village

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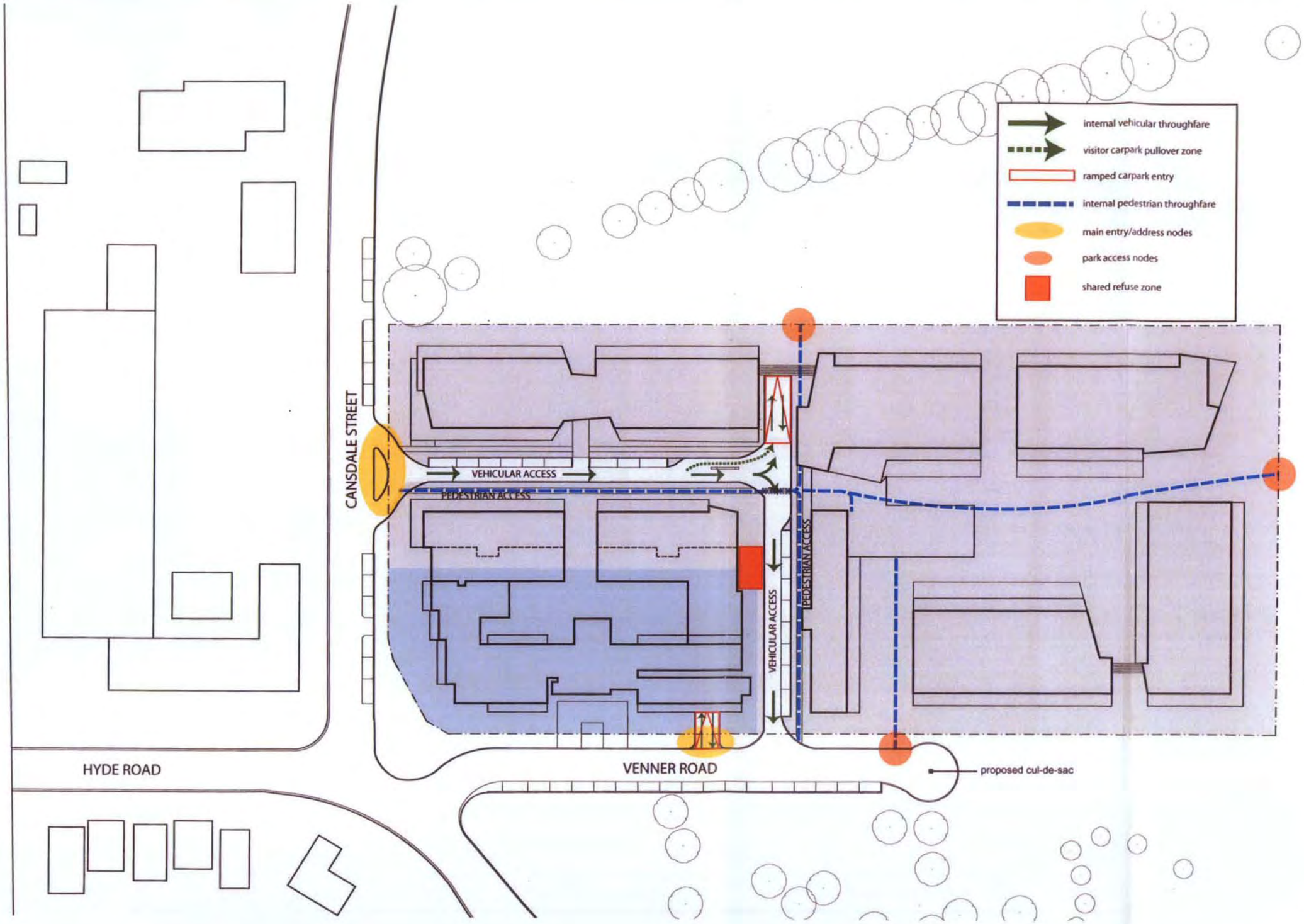

Circulation Plan

Yeronga Village

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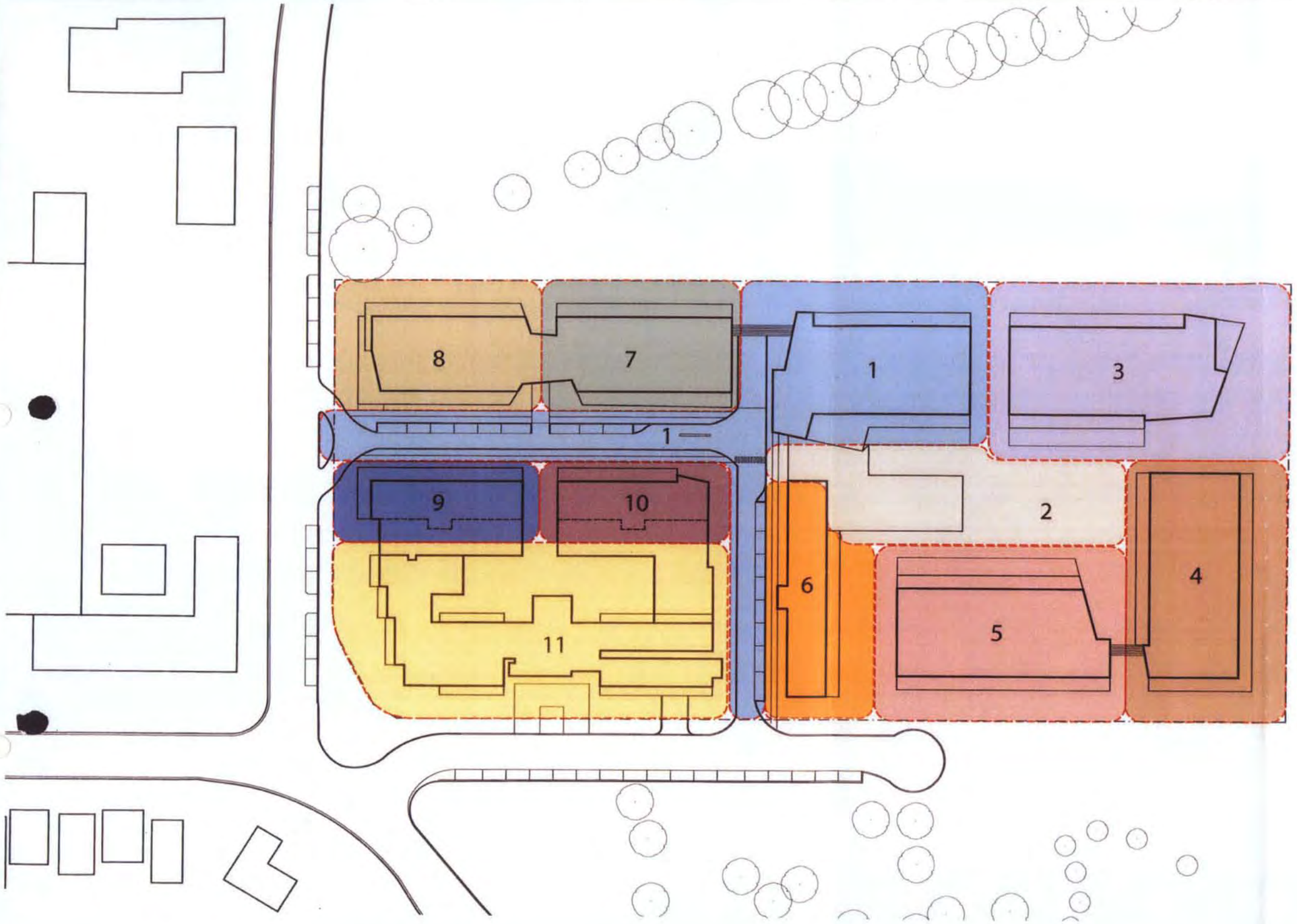

staging is indicative only
and non sequential

Conceptual Staging Plan

Yeronga Village

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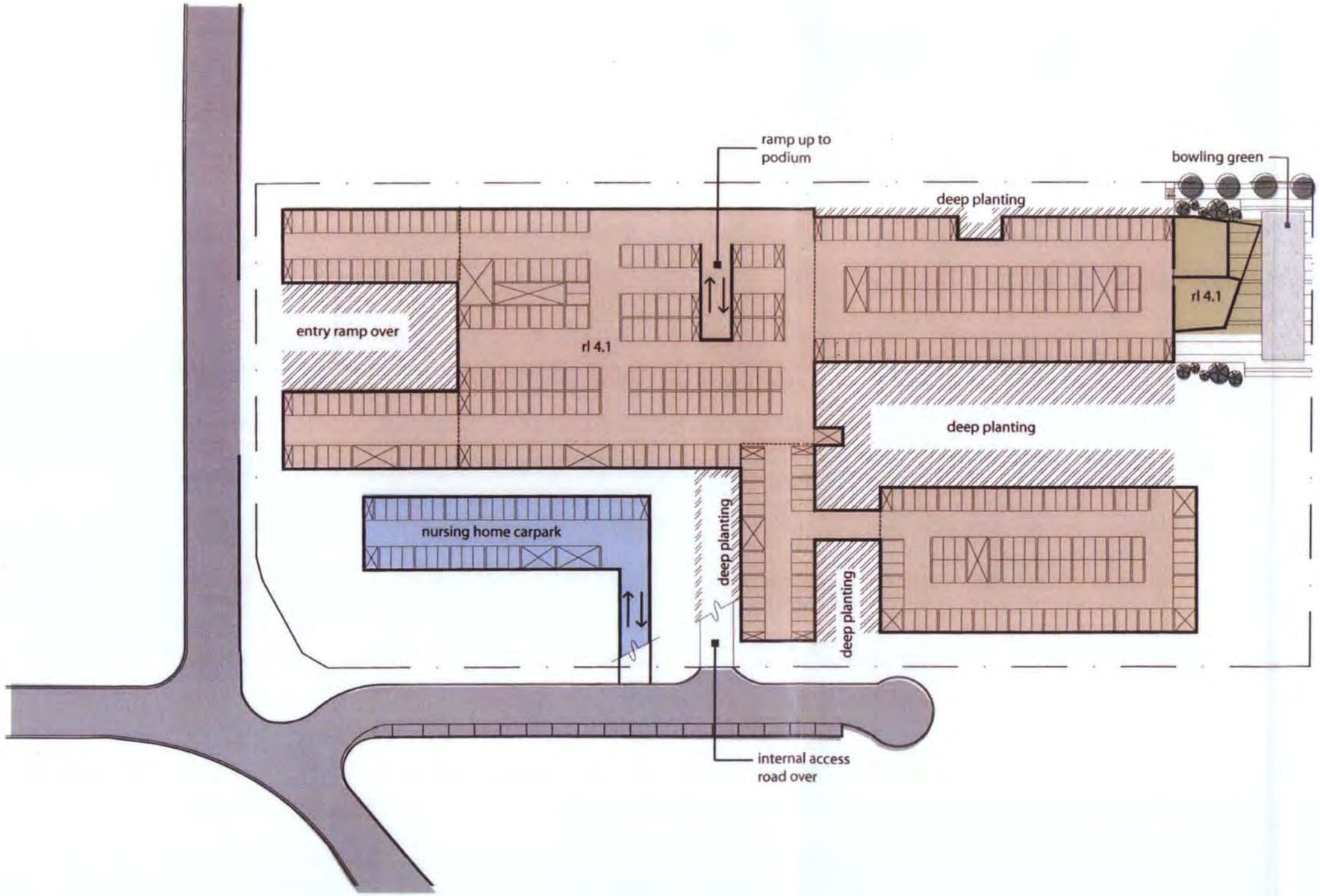

- independant living & visitors carpark
- nursing home carpark
- road at ground level
- residents' workshop, store room and outdoor room

carparking numbers:

residential	- 278 cars
visitors - basement	- 105 cars
on grade	- 17 cars
nursing home	- 30 cars
total	- 430 cars

Basement is to be staged relative to above podium works as required

Conceptual Basement Plan

Yeronga Village

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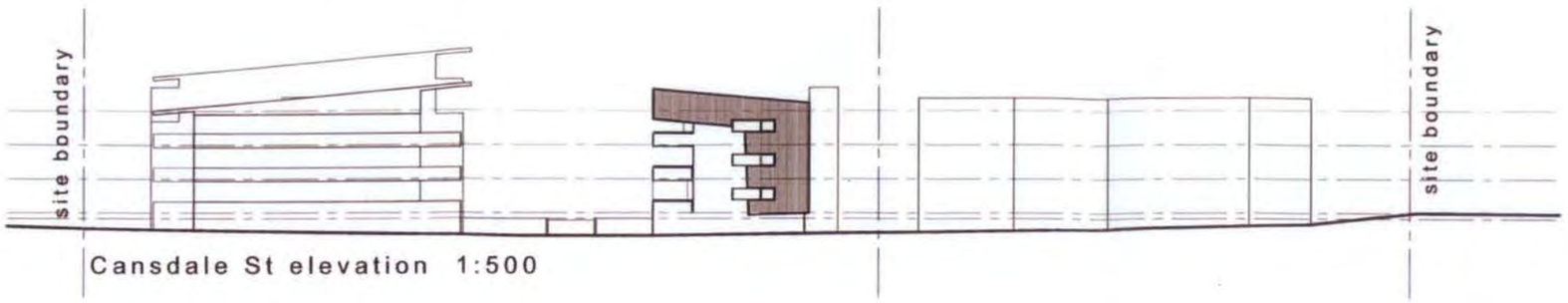
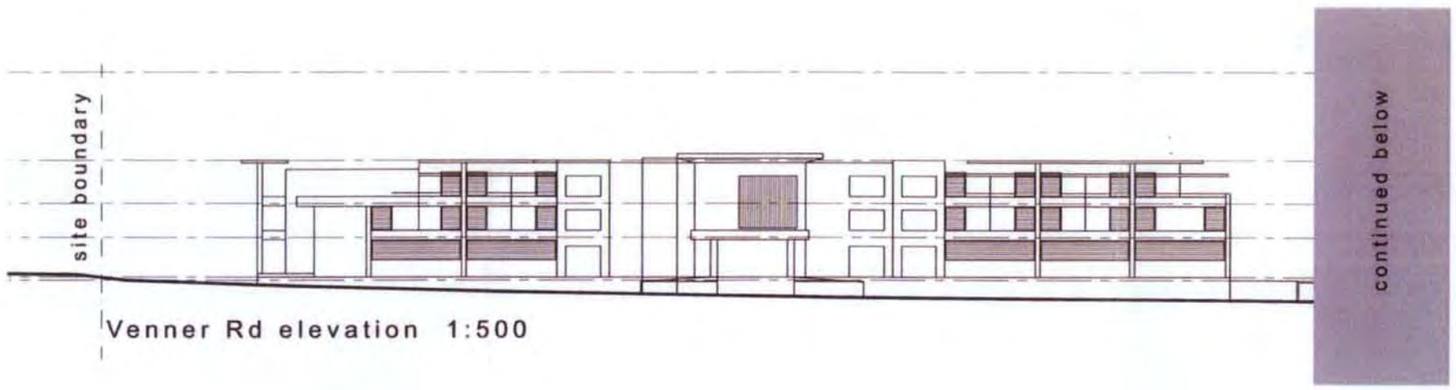
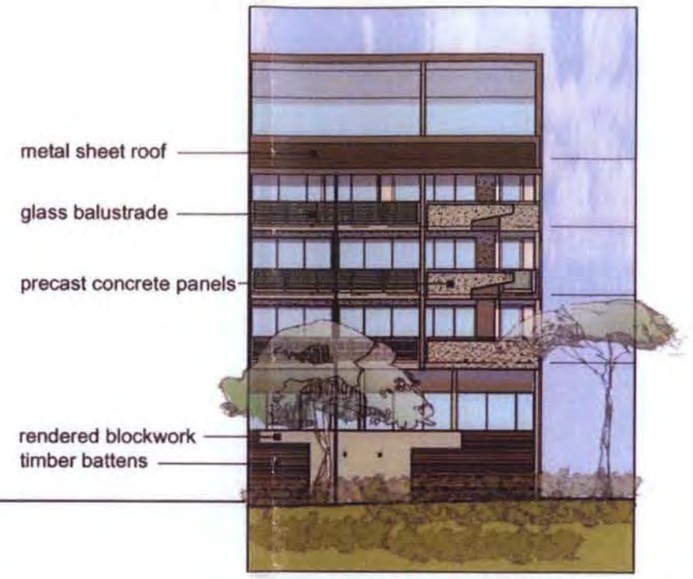


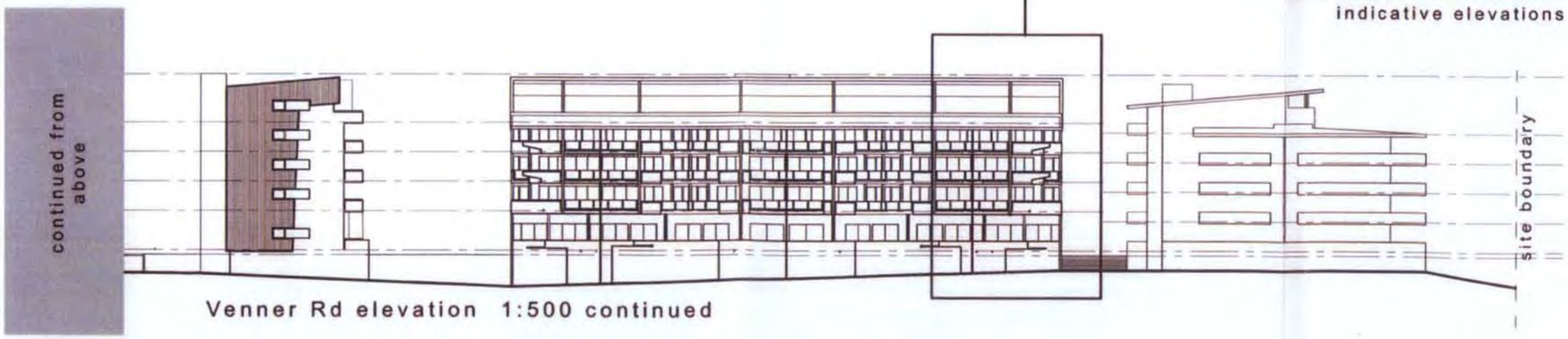
Cansdale St elevation 1:500



Venner Rd elevation 1:500



indicative elevations



Venner Rd elevation 1:500 continued

Indicative Site Elevations

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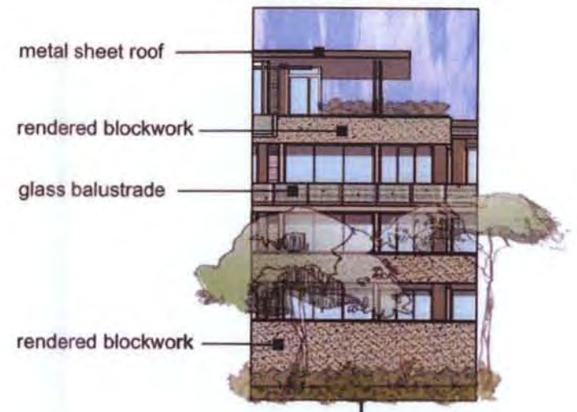
Fehlberg Park elevation 1:500



Leyshon Park elevation 1:500

continued below

indicative elevations



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Leyshon Park elevation continued 1:500

Indicative Site Elevations

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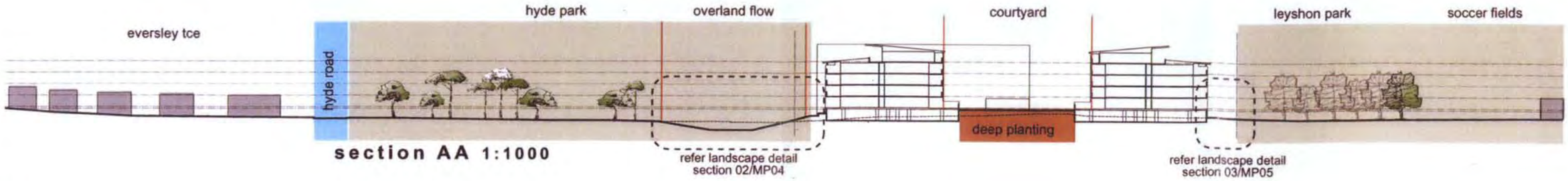

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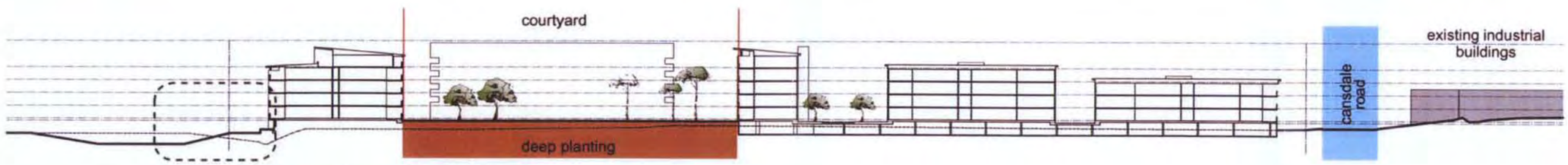

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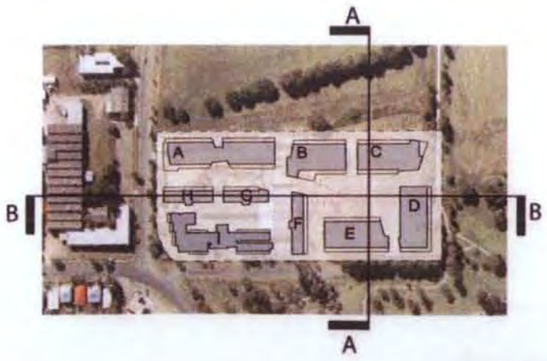

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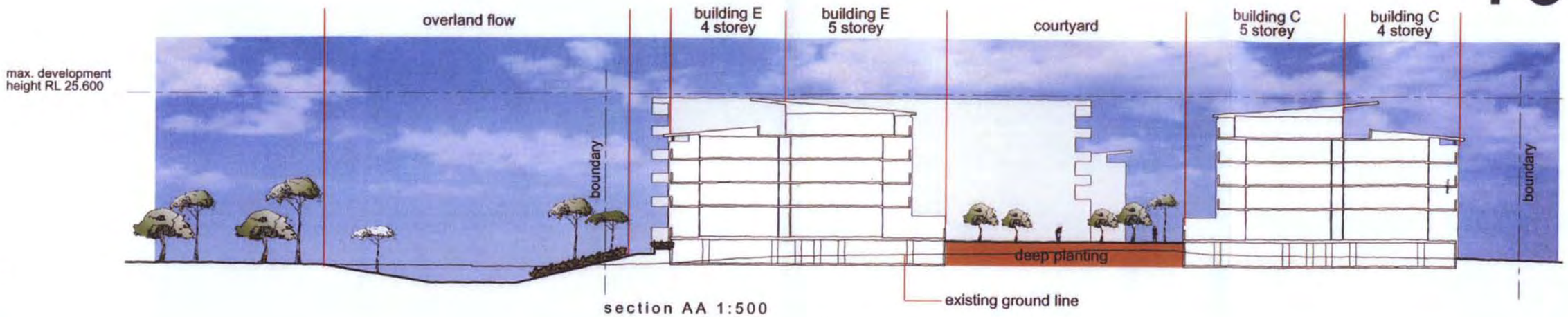

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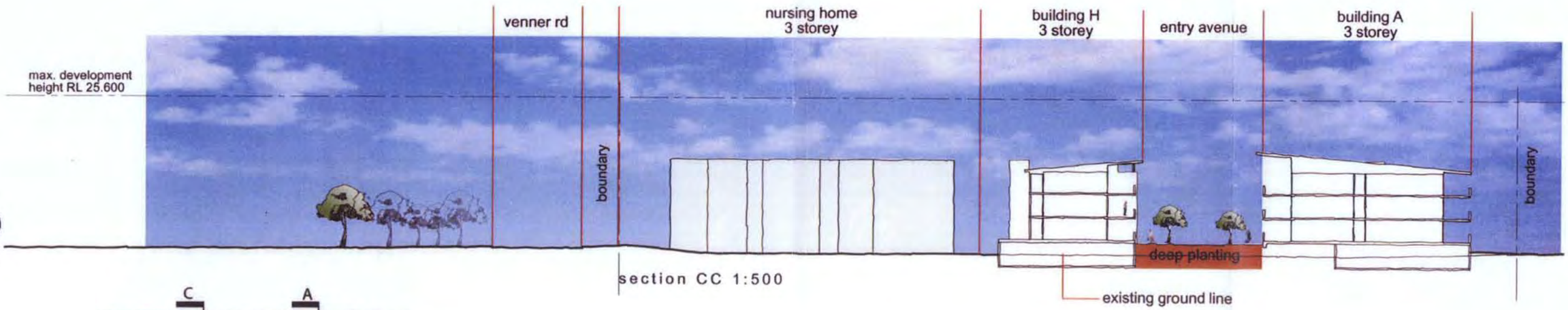

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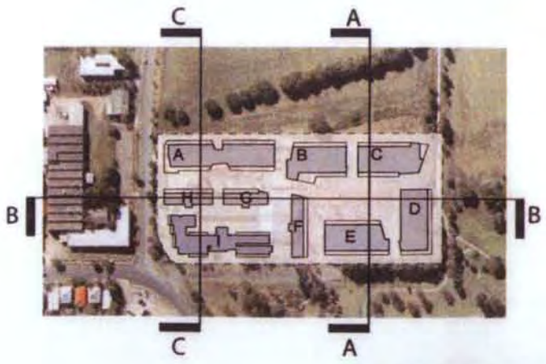

Site Sections

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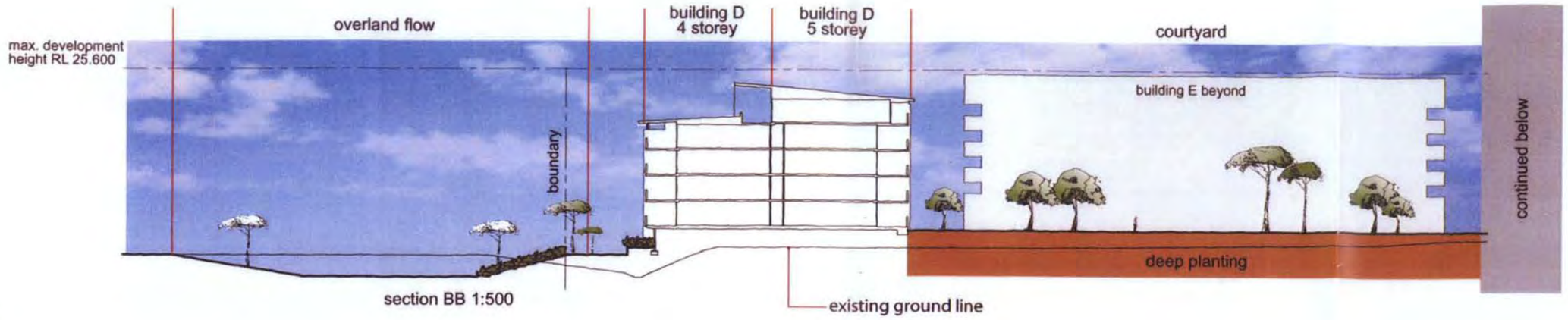

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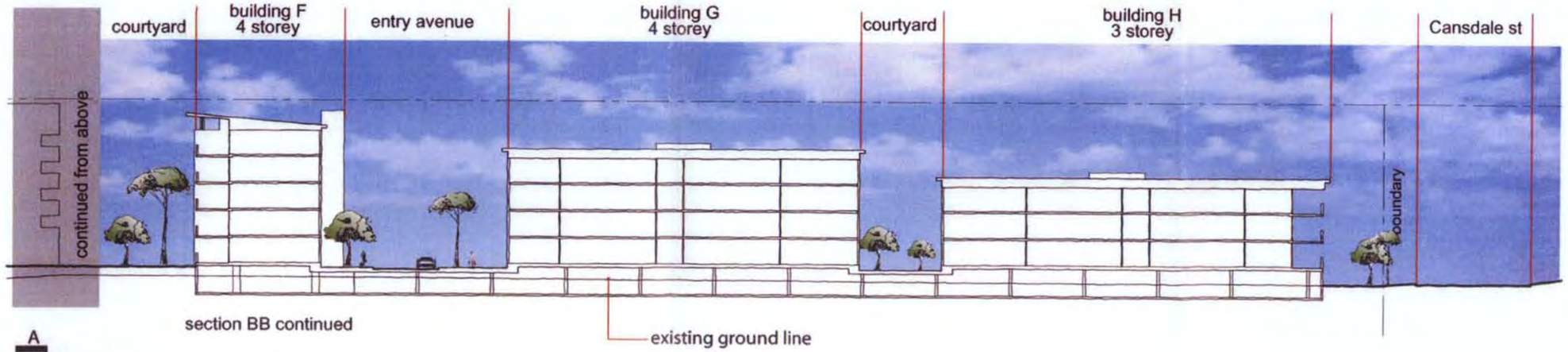

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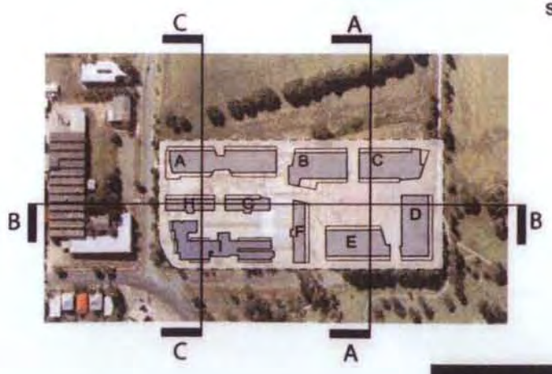

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December 22 9am



December 22 12pm



December 22 2pm



December 22 3pm



December 22 4pm



December 22 5pm

NORTH

Shadow Diagrams - Summer

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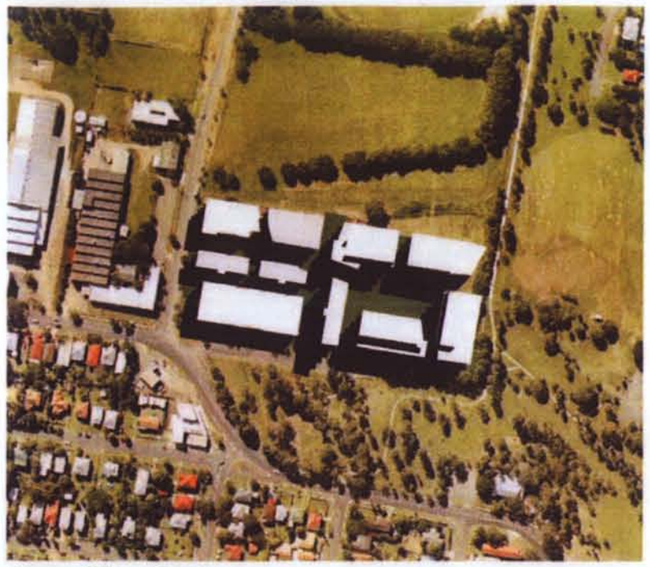


June 22 9am



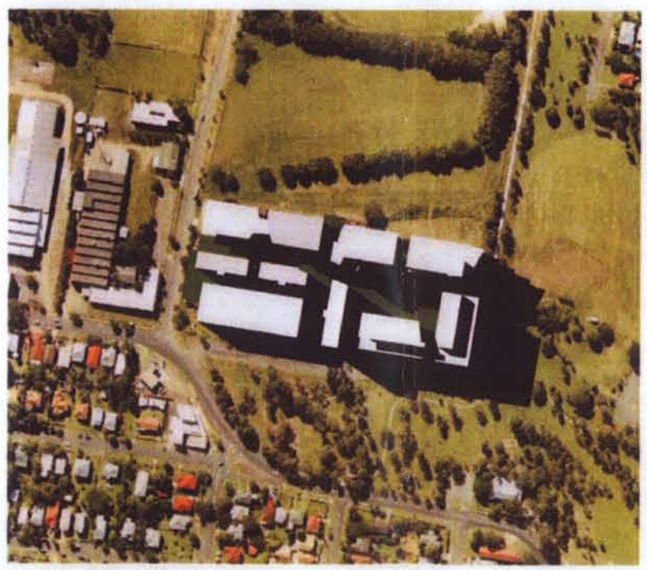
June 22 12pm



June 22 2pm



June 22 3pm



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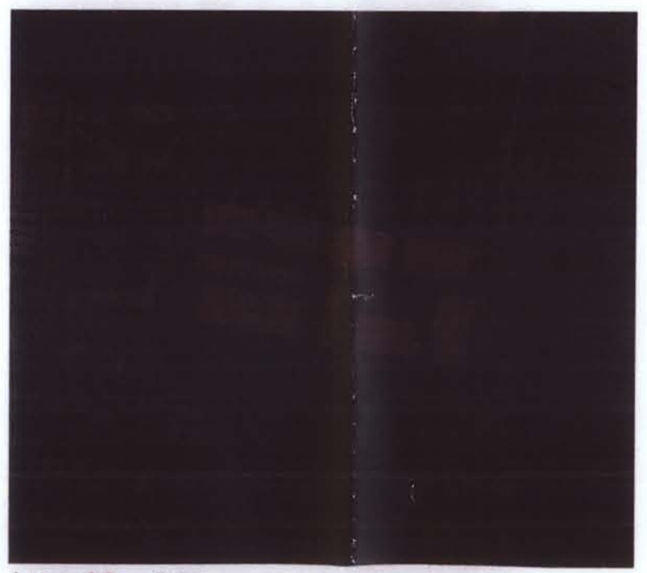

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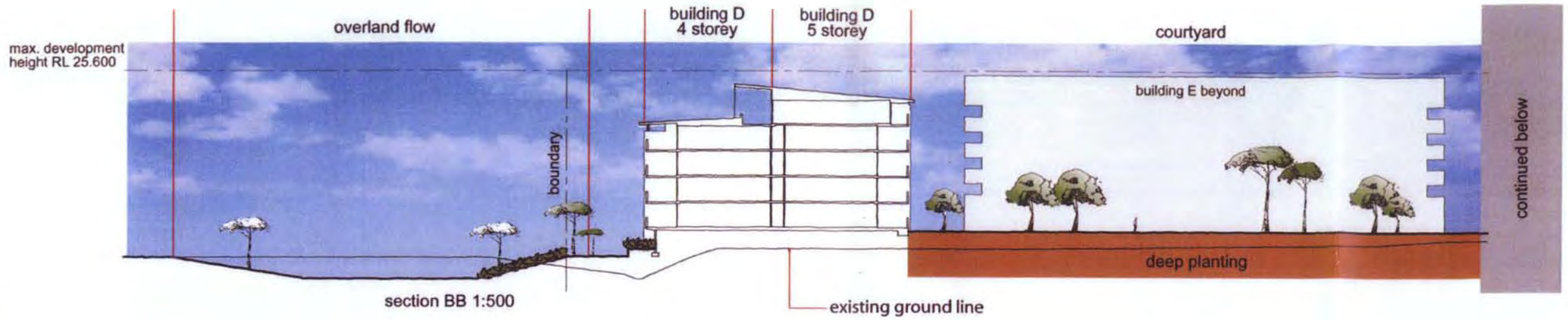

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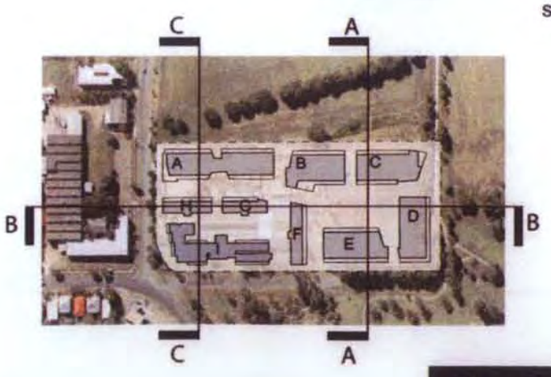

Site Sections

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December 22 12pm



December 22 2pm



December 22 3pm



December 22 4pm



December 22 5pm

NORTH

Shadow Diagrams - Summer

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June 22 2pm



June 22 3pm



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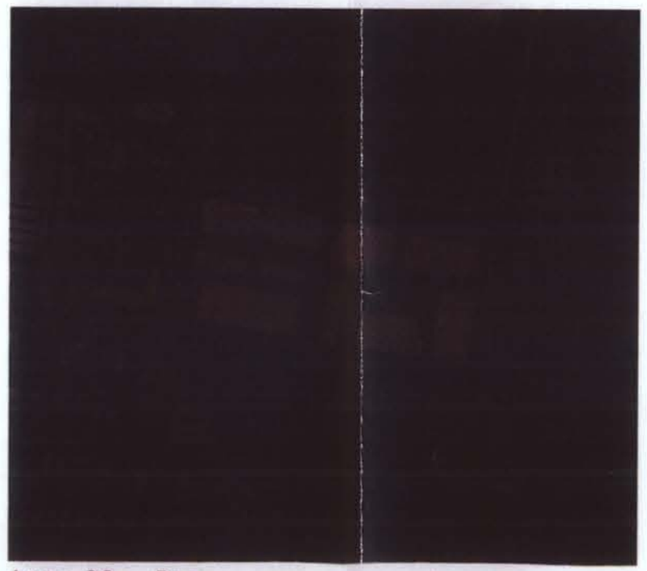

June 22 5pm

NORTH

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APPENDIX F

Landscape Response

Prepared by

JW Concepts

DATE: 23 September 2005

LANDSCAPE INTENT REPORT (Issue A)

SITE:	**15 Cansdale Street, Yeronga.**
CLIENT:	**M E Harrisons Investment Co Pty Ltd**
COUNCIL:	**Brisbane City Council**
REPORT PREPARED:	**jwConcepts**
CONTACT:	[redacted]

This report provides a summary of existing landscape conditions and landscape works associated with the proposed development. The report is to be read in conjunction with jwConcepts Master Plan drawings MP01 to MP10. Outlined proposals respond to the following specific items raised in SEQ-WB8 Planning Division's Information Request of 21st June 2005:

- Item 2 (iv);
- Item 8 a (i-viii);
- Item 8 c (I-viii);
- Item 8 e (I-v);
- Item 9 (Landscape Concept Plan).

1. GENERAL

1.1 SITE DESCRIPTION

(To be read in conjunction with jwConcepts drawing MP01 Existing Site Conditions)

The proposed development site is described as Lot 1 on RP150512 with existing vehicular and pedestrian access from both Venner Road and Cansdale Street.

The site is bounded to the north by Leyshon Park, to the east by Norman Grey Cricket Ovals and Fehlberg Park, to the south by Venner Road and Hyde Park and to the west by Cansdale Road.

The existing land use is industrial in nature and the site is characterised by large sheds and rough grassed or bare vehicle storage areas. Some advanced mature existing trees exist on the site's perimeter.

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1.2 DEVELOPMENT PROPOSAL

(To be read in conjunction with jwConcepts drawing MP02 Existing Site Conditions)

The proposed development is for a retirement village consisting of seven multi-unit buildings and a multi-unit nursing home site. The retirement village is proposed as a high quality built environment with a focus on quality living environments and design solutions.

The proposed site layout incorporates a one-way vehicle access route into the site from Cansdale Street exiting on Venner Road. These access roads are proposed as pedestrian focused low speed environments with an "urban village" character.

Communal landscape areas include possible facilities such as: an equitable access covered swimming pool, community workshop areas, shade structures, feature paving, BBQs / outdoor kitchens, seating and outdoor furniture, advanced shade trees in deep planting areas, bowling green lanes and lighting.

Particular attention will be paid to the interface landscape areas between residences and park frontages to cater for: integration of built forms with surrounding built environment, opportunities for views to park landscapes including regional sports facilities for visual amenity and passive surveillance and resident's security issues.

The proposed Landscape Master Plan provides an overall solution, which compliments the existing park setting by addressing local flooding issues in a way that enhances the aesthetic and environmental values of the existing park.

2. EXISTING VEGETATION AND LANDSCAPE CHARACTER

(To be read in conjunction with jwConcepts drawing MP02 Site Potentials and Constraints and MP03 Landscape Master Plan)

Clearing to accommodate the existing site uses has resulted in little vegetation persisting on the site. Trees are noted predominantly on the southern edge of the site with single trees dotted in the eastern section of the site.

No significant vegetation has been identified on site. Existing vegetation consists of semi-mature and mature specimen park trees, including both native and exotic specimen trees (refer to Cardno Ecological Assessment for a full description of the species identified within and adjacent to the site boundaries).

It is proposed that opportunities for the retention of trees within road reserve areas will be explored at the detailed design stage. Some existing trees within road reserve areas may require removal due to structural safety issues, proposed driveway locations and pedestrian entries.

Due to the site's unique location, bounded on three sides by public open space, the existence of surrounding parkland vegetation has a significant impact on the "parkland" character of the site. Building and landscape design proposals aim to maximize views to surrounding parkland view-sheds and enhance the park landscape qualities by continuing planting, materials and finishes into and out of the site.

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Overland flows and flood mitigation measures proposed in conjunction with site works are fully detailed in Cardno's report. The proposed works require some earthworks within the public open space on the eastern and southeastern edges of the site. Earthworks within this area will require the removal of several existing trees. As indicated on the drawing the trees bordering the southeastern corner of the site are Corymbia torelliana (Cadhagi) species, which have been documented as having weed potential outside its endemic environment.

As shown on jwConcepts drawing MP02 Site Potentials and Constraints the intended landscape treatments in this area aim to reduce the extent of cut and fill required by including rock retaining measures within the site boundary and 1:4 planted batters adjacent to the site. It is anticipated that trees in the zone around the approximate extent of earthworks cut may be able to be retained by the installation of localized retaining and earthworks subject to an arborist's detailed advice during construction. A full description of landscape proposals for this area follows in Section 3.

3. SITE FORM AND LANDSCAPE WORKS

(To be read in conjunction with jwConcepts drawing MP02 Site Potentials and Constraints and MP03 Landscape Master Plan)

3.1. DESIGN PHILOSOPHY

The development of a modern sustainable aged care living environment requires an understanding of built forms and structures and their relationship with their environment. Informed development, in this respect, can lead to the creation of vibrant spaces for social interaction and exchange, built form structures that are energy efficient and livable, and local environments that are human scale, safe, comfortable, environmentally sound and sustainable.

Proposed environmental sustainability proposals in relation to landscape works include:

- Generous allowance for trees in deep planting areas;
- Investigate incorporation of community gardens;
- Incorporation of permeable pavement surfaces;
- selection of drought hardy locally occurring native species;
- Location of trees to maximize screening to western sun and minimize loss of passive solar radiation during winter months;
- Opportunities for retention of native species and structurally sound trees;
- Minimization of higher maintenance grassed areas;
- On-line water quality improvement devices;
- Water efficient irrigation systems and passive irrigation design;
- storm water collection and use on site and creation of improved habitat opportunities within the park.

For a full description of the environmental sustainability measures proposed as part of the development refer to PMM's "Sustainability Initiatives" Report.

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The design philosophy is focused towards the creation of comfortable, safe and fluent extensions of private space into shared public spaces. Key considerations for landscape design proposals include:

- Strong connection with landscape areas surrounding the site;
- High quality surface finishes and materials promoting a sense of pride and ownership by residents;
- Development of communal open areas that incorporate access to facilities and intimate spaces suitable to older age residents;
- Design in compliance with Australian Standards for disability mobility access;
- Design that promotes passive surveillance and resident security through grade separation;
- Design for sustainable ongoing maintenance regimes;
- Landscaping to reflect a strong "Urban Village" character;

3.2. LANDSCAPE CONNECTIONS

An overriding aim of the development is to provide strong visual and physical links with the surrounding park and streetscape environment. Sight lines and visual links are enhanced by the building layout within the site and help to develop a sense of the parkland continuing into the development with safe connections (both ramps and step options) at designated points.

Internal connections are proposed with the following objectives:

- Ensuring that all planting and grassed areas are fully accessible by maintenance staff;
- Safe and comfortable pedestrian links between buildings and key activity areas (in accordance with Australian Standards);
- Aesthetically pleasing surface finishes that provide limited ongoing maintenance and visual relief to large areas of paving;
- Legibility in the pedestrian network for residents as well as visitors;

3.2. LANDSCAPE NODES

Key landscape nodes are proposed at junctions in the pedestrian and vehicular circulation network. The following nodes are proposed throughout the development (Refer to Master Plan MP03 for a full description of landscape areas):

Cansdale Street Entry Drive

- Vehicular entry drive - one-way circuit of broom finished coloured concrete alternating bands of light and dark shade colour;
- Priority pedestrian pathways maintained alongside vehicular;
- Seating / rest areas at key points alongside pathways.
- Entry - landmark feature tree, mass planting area and landscape markers at entry (termination of east - west site axis).
- Internal streetscape - advanced avenue trees in deep planting areas alongside raised kerb edge - potential permeable paving for passive irrigation;
- Smaller shade trees into raised planter beds in front of building

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Venner Road Exit

- One way vehicular circuit exits at after hours security point along Venner Road;
- Landscape markers at streetscape adjacent to raised pedestrian walkway;
- Concrete footpath connection between Venner Road and Fehlberg Park;

Central Communal Area

- Feature paving connections between drop-off area, bowling green and building openings;
- Possible facilities including covered pool with equitable access ramp entry; community workshop area; shade shelter, BBQs / outdoor kitchen, seating and tables.
- Planting:
- Feature and shade tree planting into natural ground particularly to screen western sun and screen pool area from buildings D and E;
- Manageable turfed areas surrounded by shade trees and feature planting;

Western Drainage Line

- 2m broom finished concrete pathway / bikeway reinstatement to perimeter of proposed drainage line re-alignment;
- 2m wide broom finished maintenance path within property boundary connects Venner Road to proposed bowling green (path set down 2.5m min. below balcony to ensure security on park frontage;
- Timber decking / bridge connection across culvert headwall connects main proposed communal use areas to external park paths and activity nodes;
- Timber deck outlooks above drainage line rockwork and planting;
- Clear-trunked shade / screen trees into deep planting areas in line with unit boundaries - feature planting for views from balconies;
- Shade / revegetation trees into 1:4 batters below rock retaining wall - trees grouped to maintain views between park and balconies;
- Mass planted mulched area with native species revegetation - predominantly grasses and groundcovers with clear trunk trees in turf;

Bowling Green / Outdoor Room

- Feature paving to external area adjacent to bowling green for re-locatable outdoor furniture;
- Ramped connections between bowling green paving, pool area and park;
- Clear-trunked shade / screen trees into deep planting areas in line with unit boundaries - feature planting for views from balconies;

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3.3. PLANTING

(Refer to the attached Proposed Planting Palette for typical species)
An overriding aim of the development is to provide strong visual and physical links with the surrounding park and streetscape environment, utilizing predominantly native subtropical and riverine species to provide a strong landscape character and visual unity with the scale of the existing parkland. Macrophyte and riverine grass plantings to the proposed landscaped storm-water connection will also provide water quality improvement opportunities prior to meeting the Brisbane River.

The general planting areas and themes throughout the development include:

Streetscape Planting;
Landscape presentation and visual integration with the Venner Road and Cansdale Street frontages provides a unique opportunity for an improved suburban streetscape with strong connections to surrounding footpaths, shops and other activity areas.

Proposed build-out planting areas adjacent to car park spaces will provide additional tree planting opportunities.

Perimeter Deep Planting.
Generous opportunities exist for advanced tree planting into natural ground adjacent to proposed buildings. Trees will be located to maintain views from balconies while reducing the impact of the buildings in the park setting. Trees in communal areas will provide shade and serve as landmark way finding elements.

Proposed trees are to be predominantly locally occurring native species particularly at park property boundaries.

Podium Planting;
Podium planters are proposed with the use of high-quality, lightweight imported topsoil, drainage connected to the storm-water system and dripper irrigation. Plant species will generally have non-invasive fibrous root systems and be selected for low light conditions where podiums are located under roof overhangs.

Planting areas will incorporate locally occurring native trees, shrubs and feature plants with the selective use of some non-invasive exotic feature plant species to reflect existing sub-tropical planting character and provide accent colour directly adjacent to living areas.

Southeastern Drainage Line Planting;

Incorporating locally occurring native riverine, rainforest and ecological plant species and to reflect existing parkland planting character, enhance environmental values and provide framed views, screening and shade adjacent to living areas and public access-ways.

A densely planted revegetation area is proposed in conjunction with the drainage line. A formal edge restraint is proposed between planting and grassed areas to reduce ongoing maintenance requirements.

Singletree plantings to match existing tree species are proposed in turfed areas to integrate landscape works with the existing park.

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Feature Planting in private courtyards;
Private courtyard landscaping will be limited and clearly defined from common access ways and footpath areas through the use of high quality paving finishes, feature plantings and screen fencing.

4.0 MAINTENANCE

Maintenance is essential to ensure that landscape works are allowed to grow to their full potential and that the proposed Landscape works are able to realize maturity. The landscape works shall incorporate the following principles to maximize sustainable landscape outcomes:

- Quality soil material to ensure good growth and retention of water. Where appropriate on podium areas, a lightweight soil mixture would be utilized in conjunction with podium drainage cells.
- Use of mulched planting beds to reduce evapo-transpiration.
- Infiltration of storm water on site.
- Edging to interface of planting and turf grass areas to minimize weeding requirements.
- Selection of locally occurring Native species to minimize irrigation requirements.
- No high maintenance plant selections such as annuals.

The following maintenance practices are proposed during the initial Landscape Works Establishment Period:

- Adequate watering to maintain active growth of turf and plants in all areas, including the irrigation and/or manual watering of all planting areas
- Replacement of damaged, dying or dead plants.
- Checking and adjusting stakes and ties. Stakes shall be firm and plants held securely. All ties are to be removed during the last week of establishment (with the exception of the advanced trees) and except on plants that are still unfirm.
- Weeding as necessary of grassed and garden areas.
- Making good any variation from specified levels, including mulches. Make good any erosion by traffic, wind or water with the use of further mulching.
- Carry out any other as necessary for the satisfactory completion of the work. Remove any debris resulting from work from the site, with the site to be left in a clean and tidy condition.

BCC.058.8528

LEGEND

Drainage line invert

Existing pedestrian path

Potential Nodal entry or meeting point

Potential site-parkland connections

Screening to road frontages

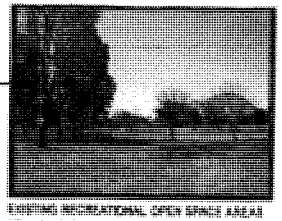
Western sun

Existing recreational open spaces

Existing woody weed covered banks/areas

Existing Eucalyptus torelliana weed tree species

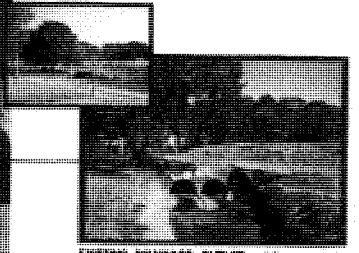




EXISTING RECREATIONAL OPEN SPACE AREAS ADJOINING PROPOSED DEVELOPMENT: unique opportunity to create strong visual and pedestrian links into and from these open space areas



EXISTING PATH ADJACENT GUTTER: exposed with poor visual amenity



EXISTING DRAINAGE OUTLET: existing concrete headwall and invert: has low environmental value and poor visual amenity



EXISTING DRAINAGE LINE: grassed overland flow line along southern property boundary: intermittent inundation would not promote frequent use and has led to a collection of rubbish



ROW OF EXISTING EUCALYPTUS TORELLIANA: Considered as having weed potential outside its endemic environment, currently provides buffer to development but limits clear sightlines between proposed private & public space, introducing a CPTED safety issue

EXISTING PATHWAY: forms a perceived edge to informal passive recreation area to the south. Current space between property boundary and path has little active or passive recreation value due to path and drain location.

new BCC plantings: CPTED issue

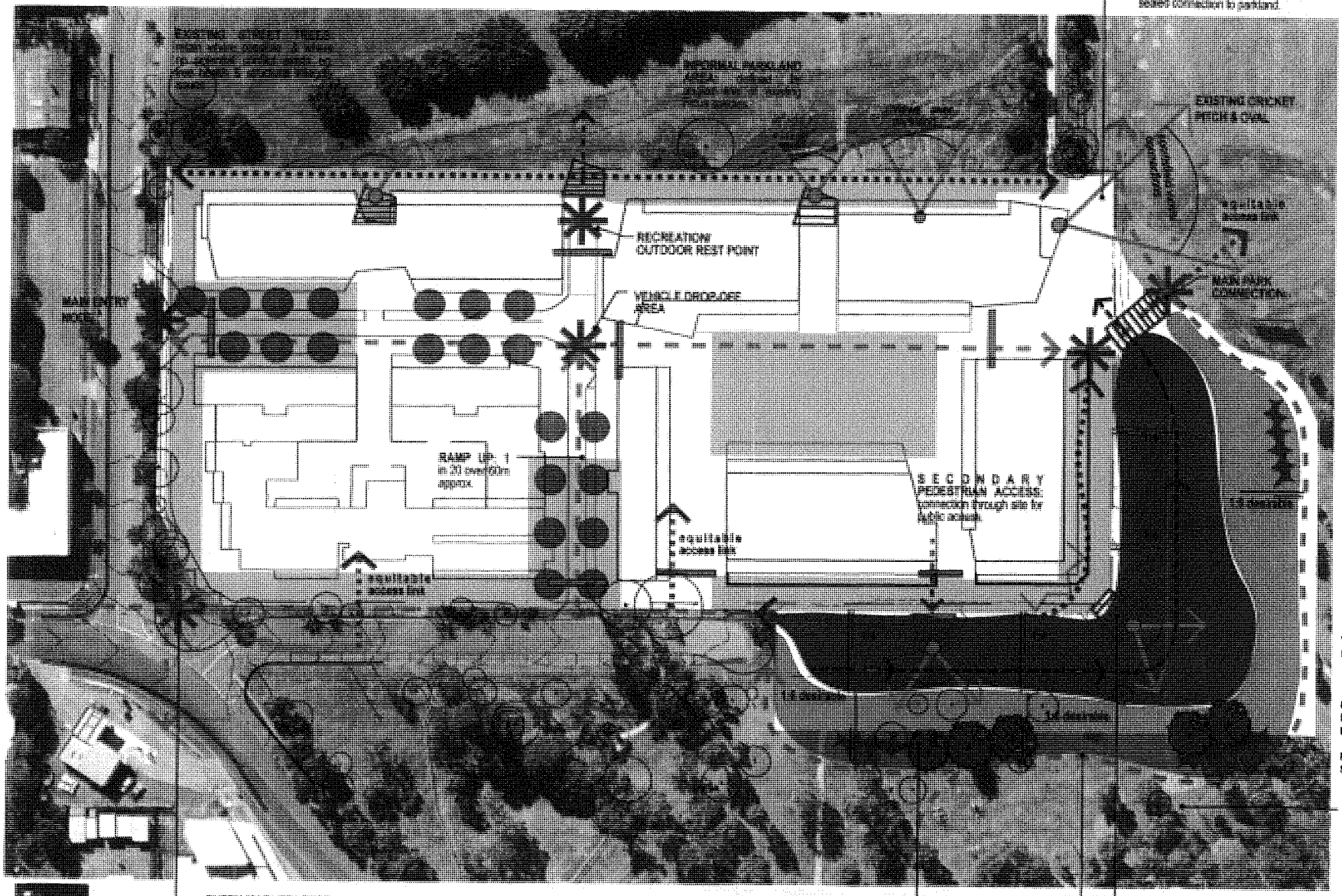


JW
1548 MASTERPLAN 15.09.05

N.T.S

YERONGA VILLAGE
FOR Harrisons Real Estate Development
Verner Rd, Yeronga

MP01> existing site conditions



JW
1540 MASTERPLAN 15.09.05

Scale 1:500@A3

YERONGA VILLAGE

FOR Harrisons Real Estate Development
Vonner Rd Yeronga

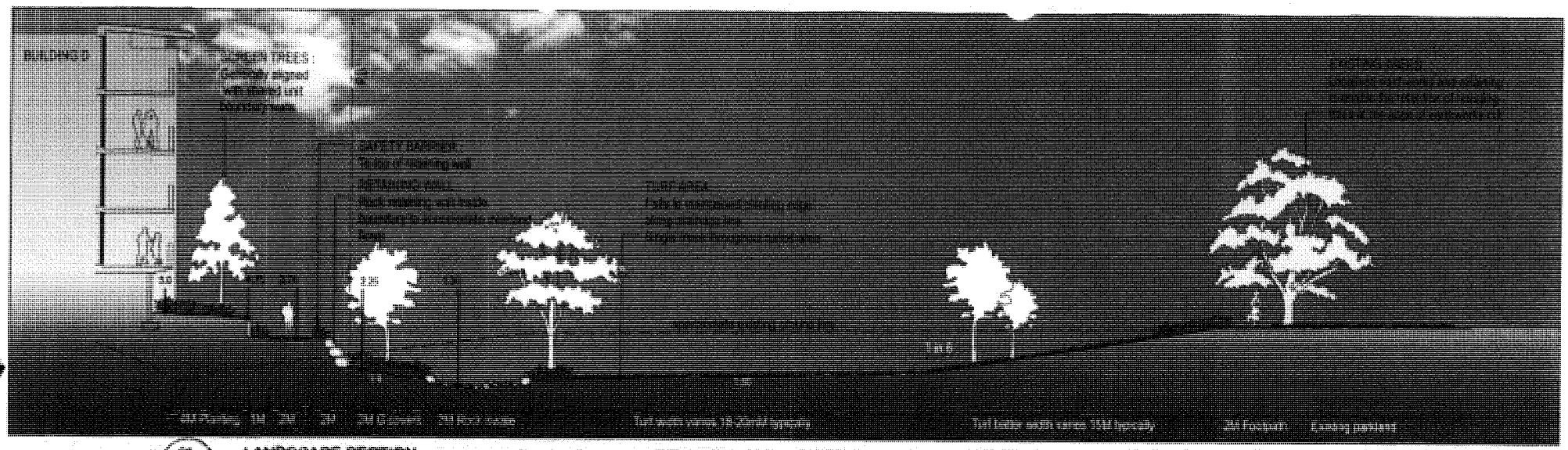
MP02> site potentials & constraints

BCC.058.8530

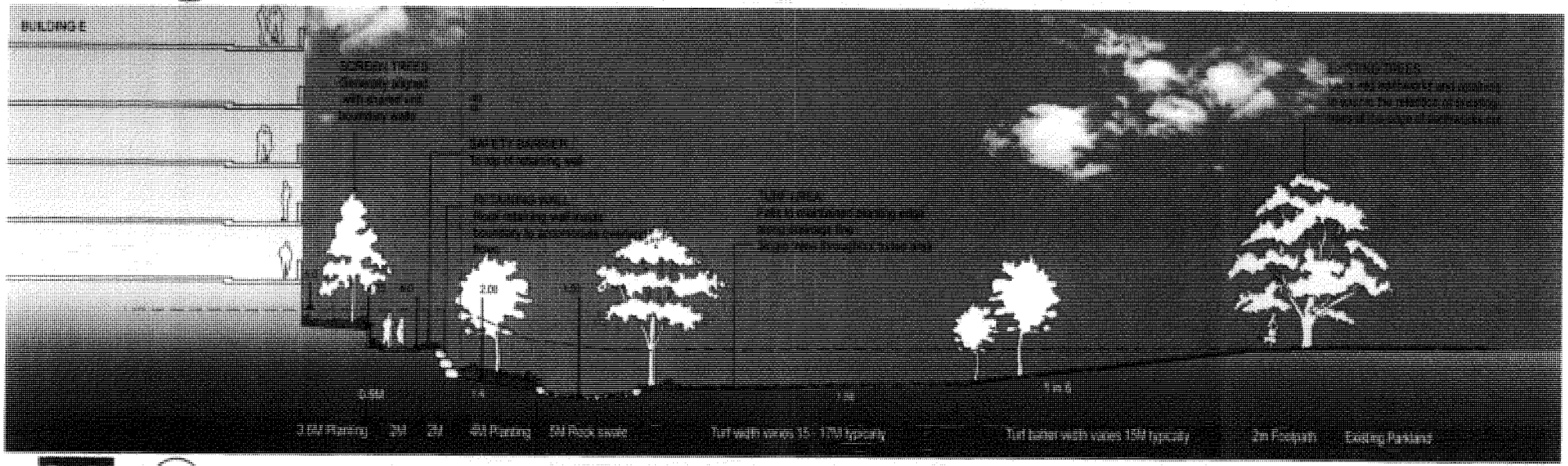


YERONGA VILLAGE

MP03> LANDSCAPE MASTER PLAN



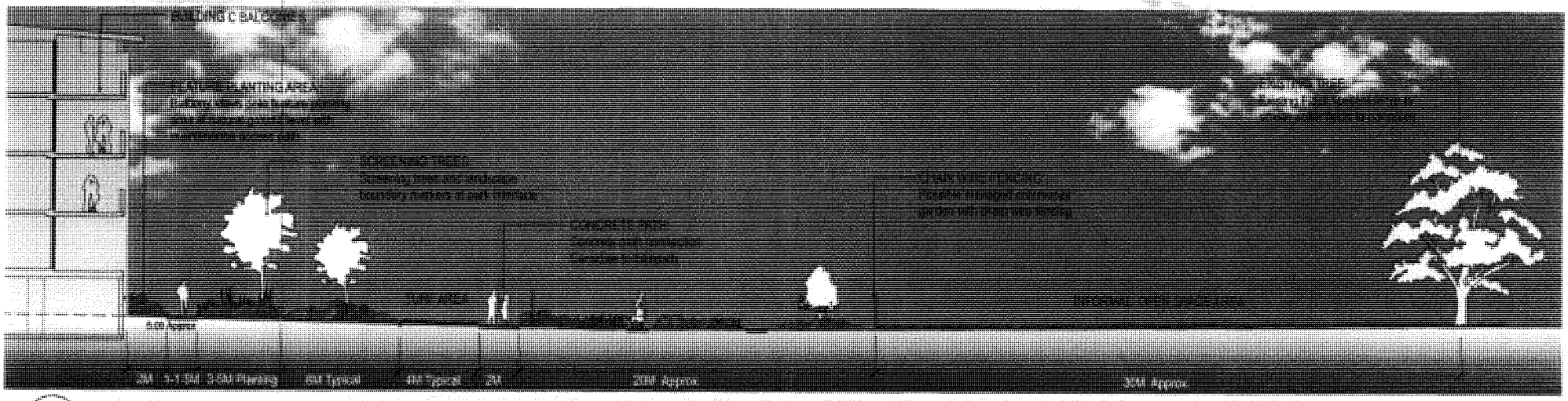
01 MP04 **LANDSCAPE SECTION**
Scale 1:200



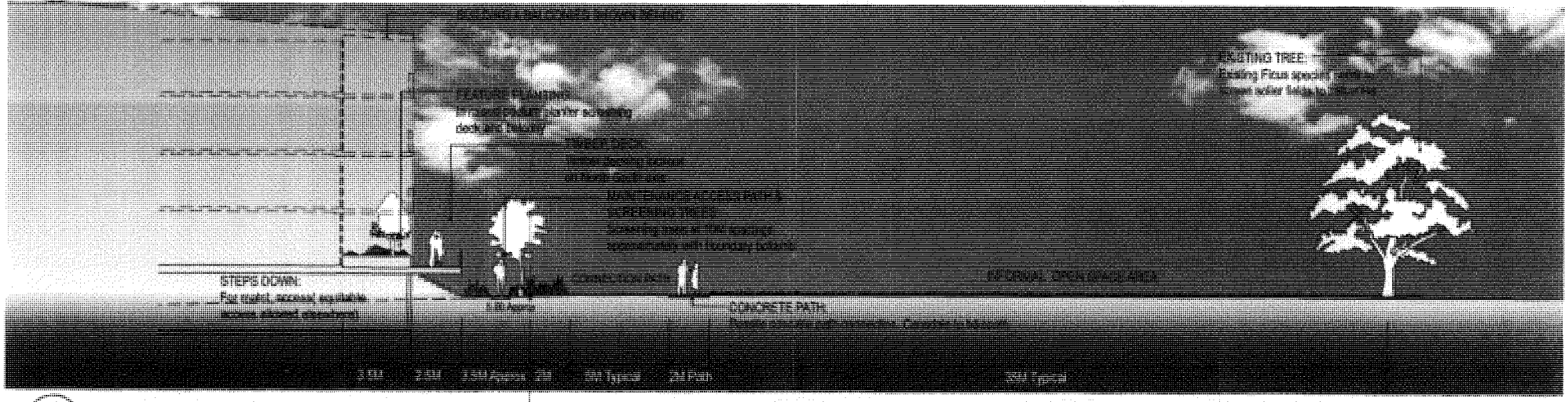
02 MP04 **LANDSCAPE SECTION**
Scale 1:200



BCC.058.8532



03 MP05 LANDSCAPE SECTION
Scale 1:200



04 MP05 LANDSCAPE SECTION
Scale 1:200

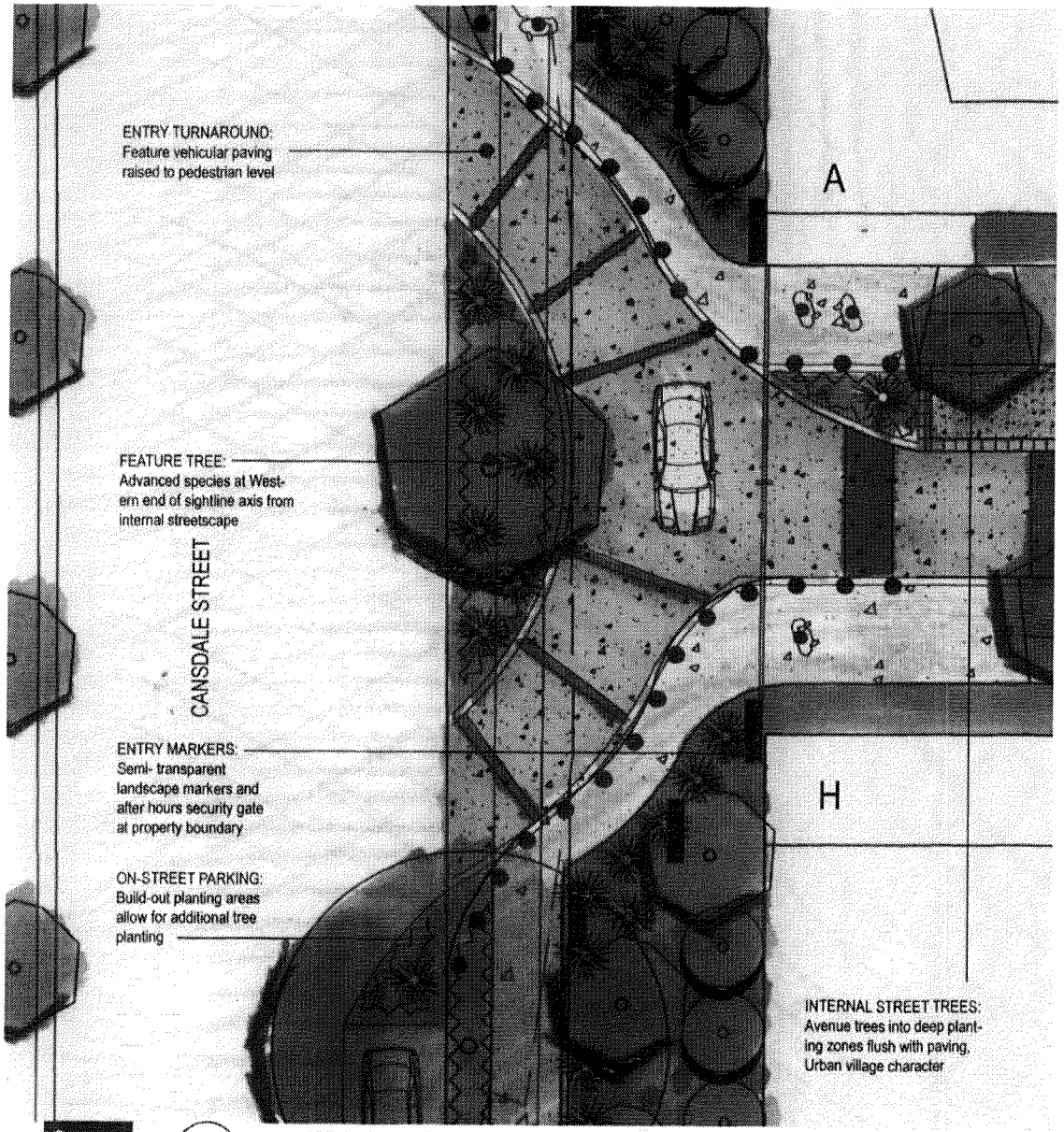


1540 MASTERPLAN 15.09.05

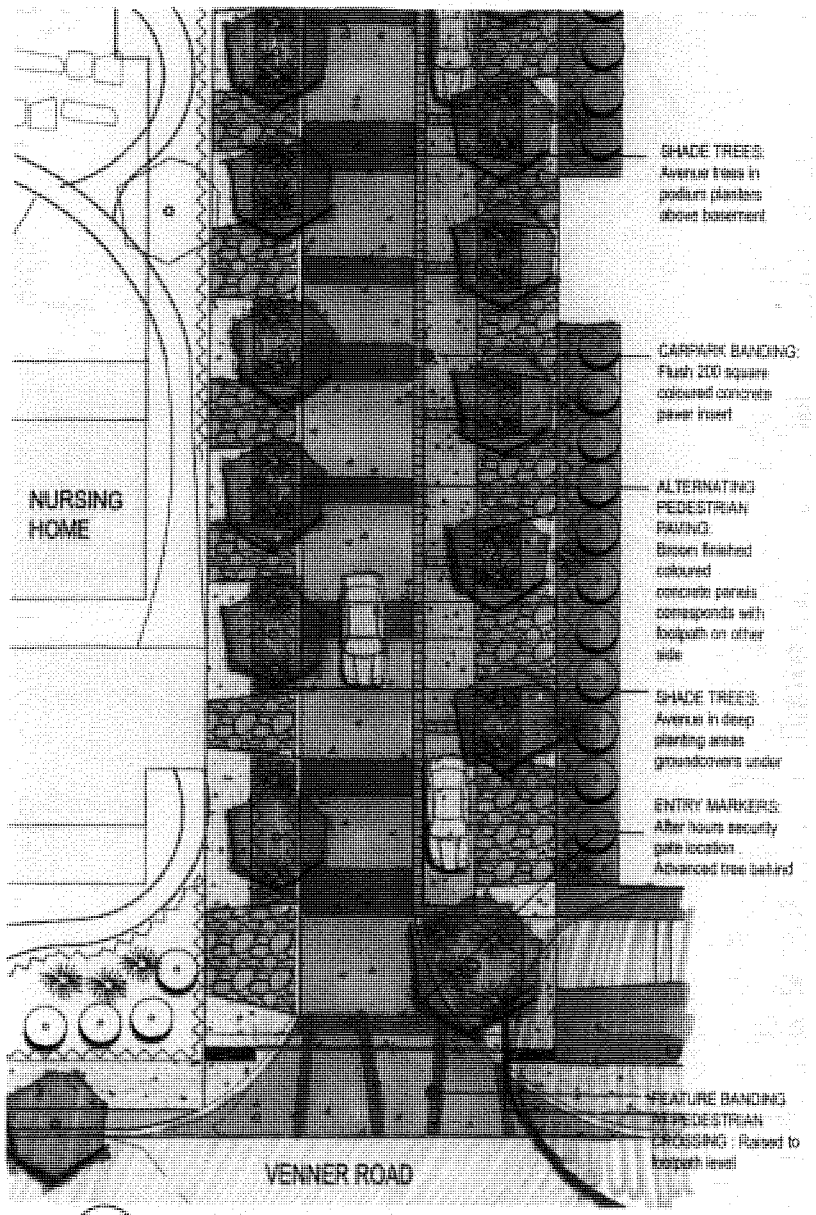
YERONGA VILLAGE
FOR Harrisons Real Estate Development
Venner Rd, Yeronga

MP05> Landscape Sections - Sheet 2

BCC.058.8533



A MP06 CANSDALE STREET ENTRY - DETAIL PLAN
Scale 1:200 @ A3



B MP06 VENNER ROAD EXIT - DETAIL PLAN
Scale 1:200 @ A3

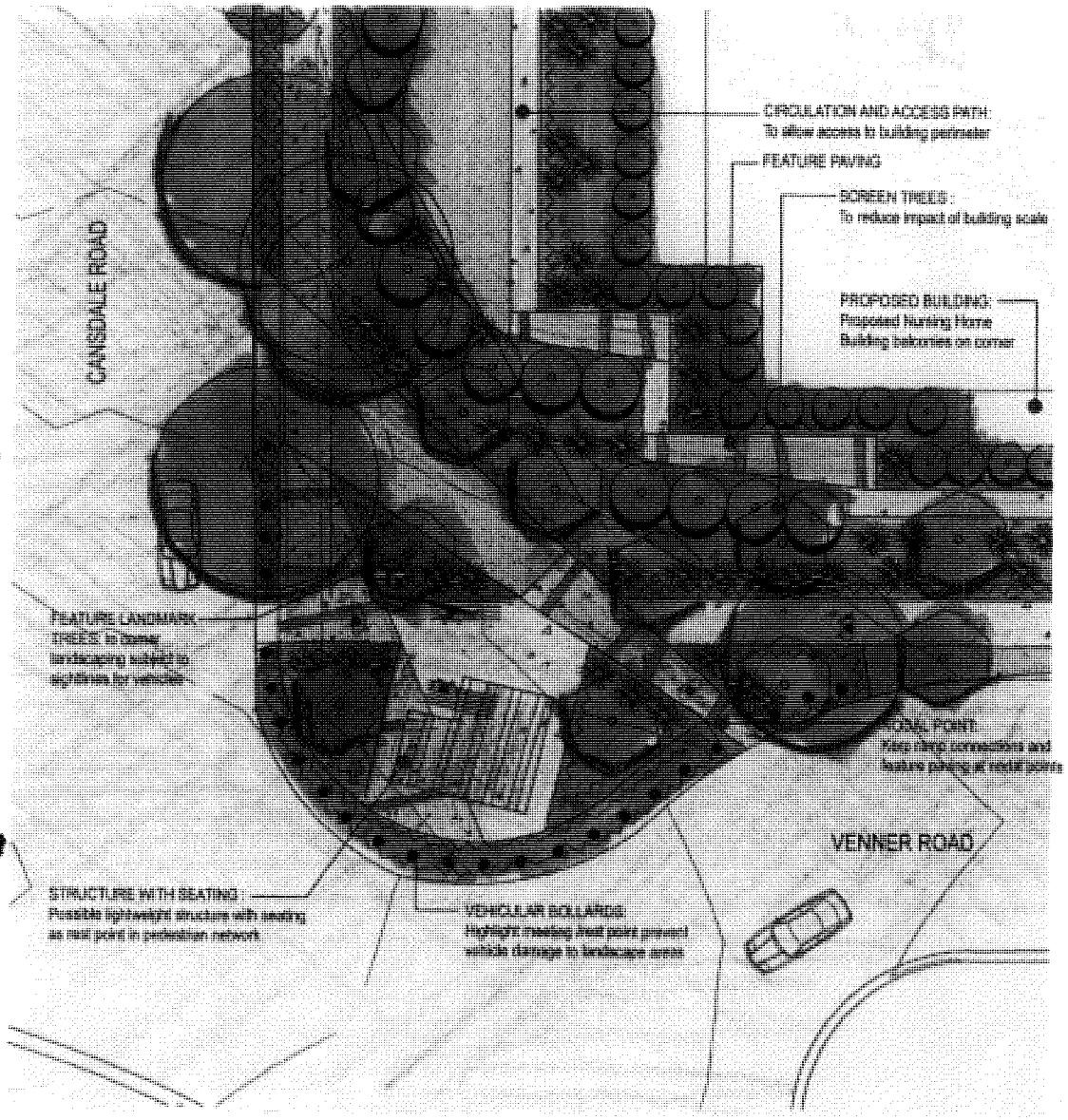


1540 MASTERPLAN 15.09.05

YERONGA VILLAGE
FCR Harrisburg Real Estate Development
Venner Rd, Yeronga

MP06> Landscape Details - Sheet 1

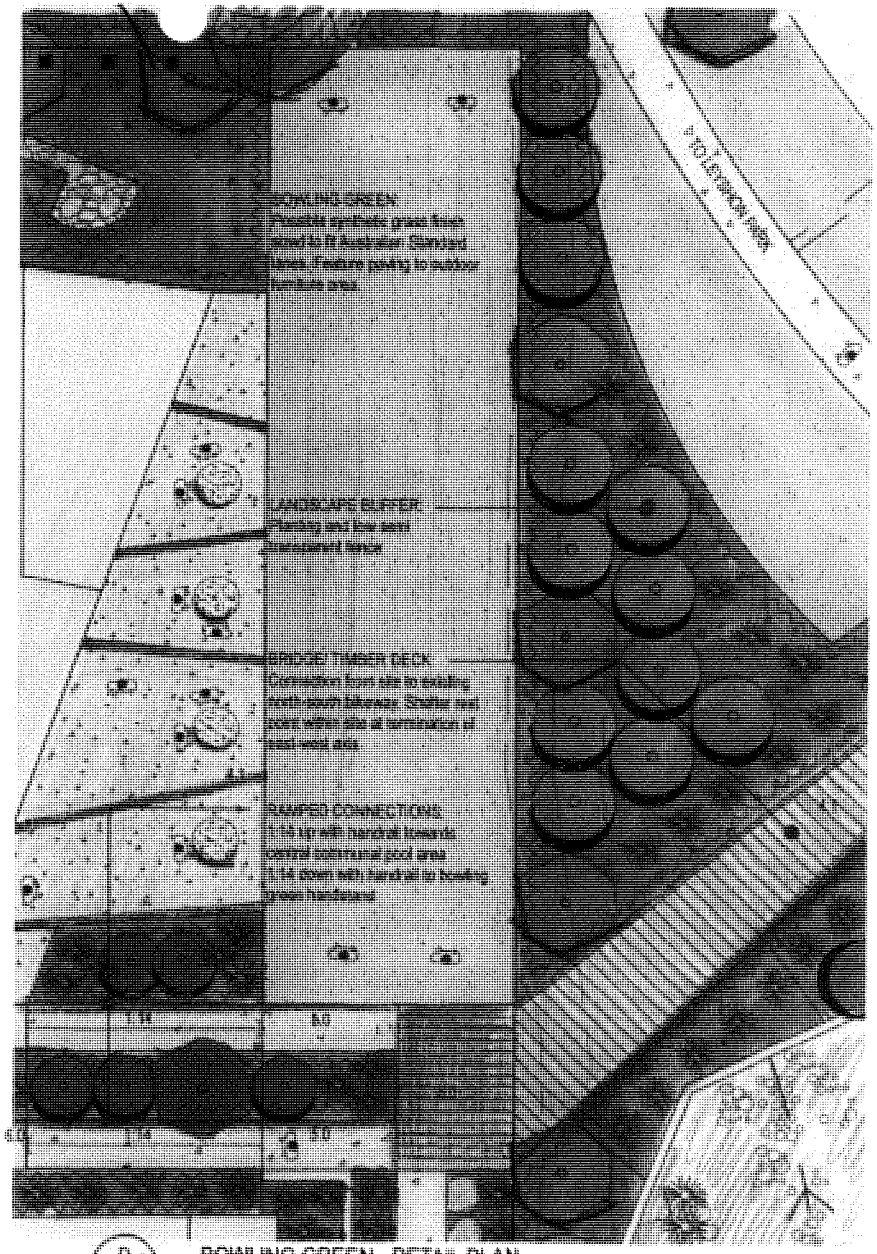
BCC.058.8534



C
MP07

VENNER ROAD/ CANSDALE STREET CORNER - DETAIL PLAN

Scale 1:200 @ A3



D
MP07

BOWLING GREEN - DETAIL PLAN

Scale 1:200 @ A3

NOTE: Indicative levels shown to establish ramp configuration to meet Australian Standards



JW
1540 MASTERPLAN 15.09.05

YERONGA VILLAGE
FOR Harrisons Real Estate Development
Venner Rd, Yeronga

MP07> Landscape Details - Sheet 2

BCC.058.8535



A.



B.



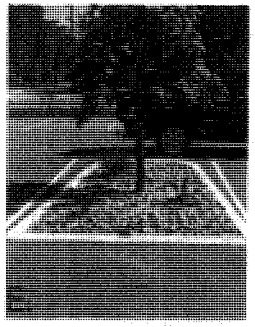
C.

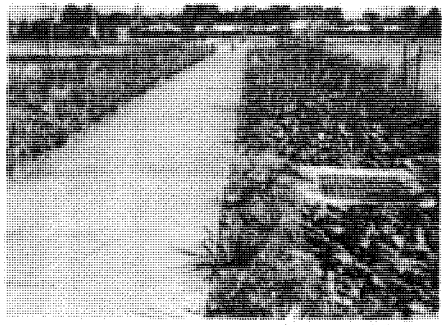
IMAGE KEY

A. Boulder edging / low walls to provide bank stability and
B. deep planting areas alongside constructed swales.
C. Use of graded rock sizes, curving alignments and pool
D. and riffle sections to reflect natural channel conditions.
E. Possible flush kerbs and gravel mulch for harvesting of
F. rainwater adjacent to hard-stand areas.
G. Above-ground overland flows incorporated into landscaping.
H. Bollards to prevent vehicle access at flush kerbs.
I. Riverine planting into benched areas above inverts for water
J. quality and amenity.
Jutematting in steep areas for
K. bank stabilisation and weed control.
L. Boardwalk crossings at key points for park permeability.



D.

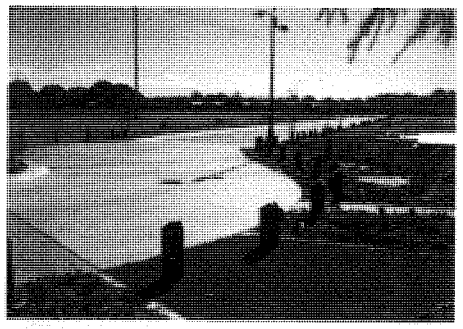




F.



G.



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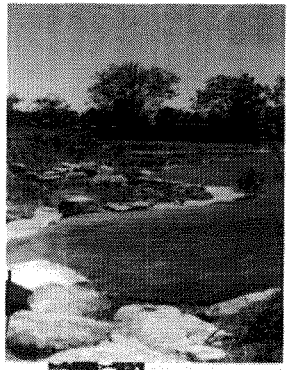
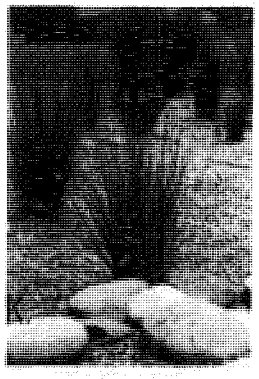
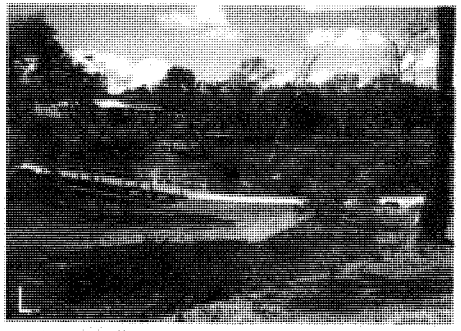


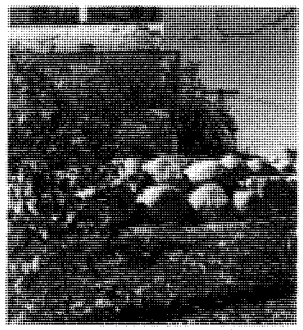






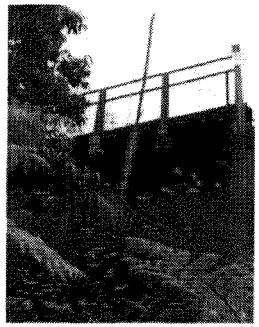
L

A.



B.





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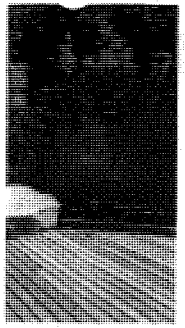
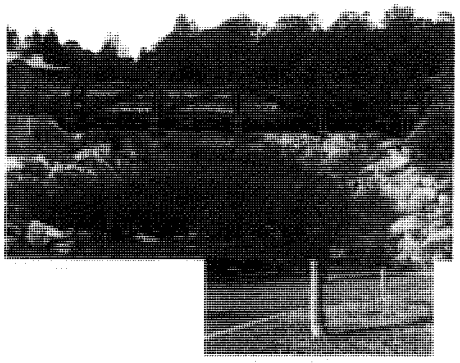
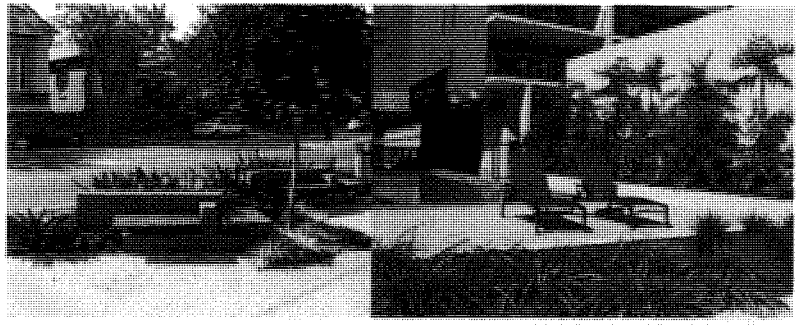


D.





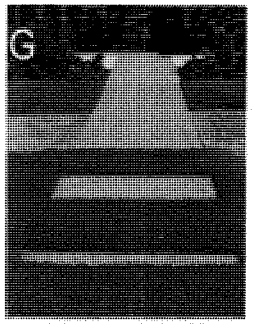
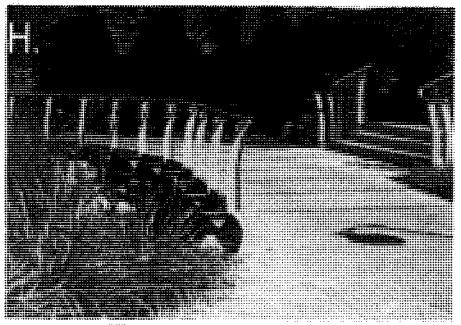
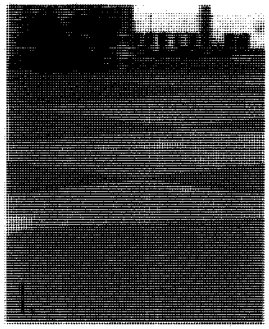
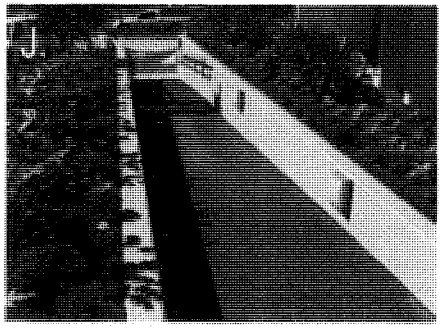


IMAGE KEY

A. Rockwork to stabilise batters on densely planted bunds
B. Raised timber platforms over rockwork.
C. Large rocks and timber decking over drainage line.
D. Boardwalk style connections from communal area to park
E. Outdoor furniture and seating opportunities under shade
F. Pool area solar access - selective tree placement.
G. Private courtyard paths extend into communal areas
H. High quality paving and balustrade finishes at park edge.
I. Detailed paving finishes in high use common areas.
J. Ramping, handrails & tactiles to meet disability mobility A.S.
K. Deep planting areas adjacent to outdoor areas.
L. Possible water feature - ambient noise.
M. Possible permeable paving finish for passive irrigation.









M.

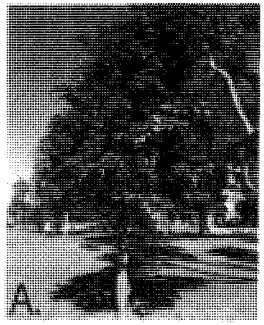




JW
1540 MASTERPLAN 15.09.05

YERONGA VILLAGE
FOR Harrisons Real Estate Development
Verner Rd, Yeronga

MP09> landscape finishes palette



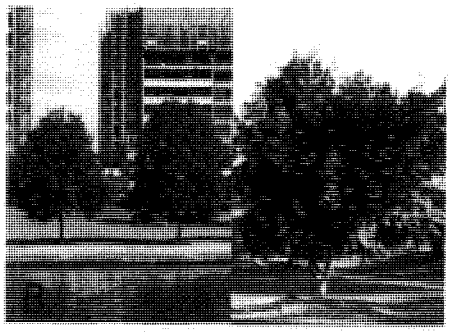














IMAGE KEY

A. Brachychiton acerifolius
Feature tree.

B. Syzygium sp./ Ficus sp. Park
shade tree.

C. Eucalyptus tesselaris
Park buffer tree.

D. Peltophorum pterocarpum
Avenue tree.

E. Xanthostemon chrysanthus
Courtyard feature tree.

F. Doryanthes excelsa
Feature plant

G. Zamia furfuracea
Feature pots.

H. Cycas revolutum
Feature plant.

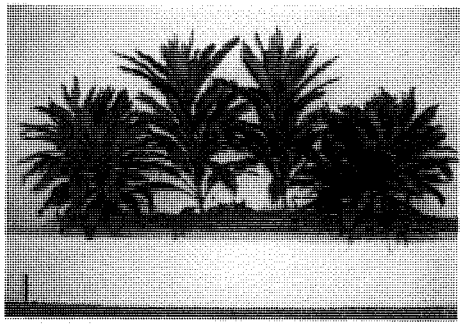
I. Cordyline fruticosum sp.
Feature plant against walls.

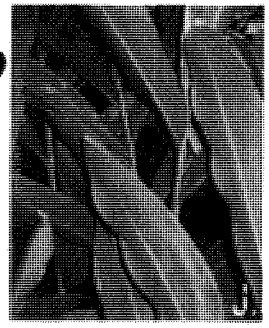
J. Alpinea purpurea
Screening plant.

K. Variegated Heliconia
Screening plant.

L. Philodendron Xanadu
Dense groundcover.

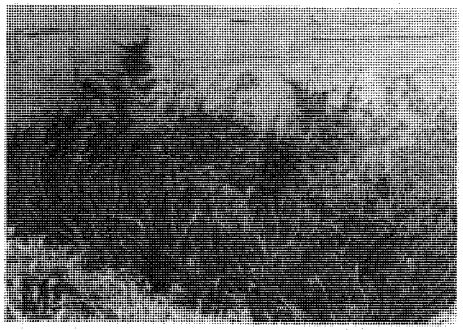
M. Anigozanthus sp.
Colourful groundcover.













JW
1340 MASTERPLAN 15.09.05

YERONGA VILLAGE
FOR Harrisons Real Estate Development
Varner Rd. Yeronga

MP10> landscape planting palette

APPENDIX G

Air Quality Assessment

Prepared by

Max Winders

Max Winders & Associates

Consulting Engineers & Environmental Scientists

Ref: L40105/PAK/04-227

27 September 2005

Harrisons Real Estate Developments
c/- PMM Group
PO BOX 1559
FORTITUDE VALLEY QLD 4006

Attention: [redacted]

Dear [redacted]

Re: Review of Noise Issues –
Proposed Yeronga Village Retirement Complex - Venner Road, Yeronga

Max Winders and Associates have previously addressed noise amenity issues associated with the proposed Yeronga Village Retirement Complex in the *Environmental Amenity Assessment – Proposed Yeronga Village Retirement Complex – Venner Road, Yeronga* (1 April 2005).

The design of the proposed Yeronga Village Retirement Complex has been revised since this noise impact assessment was undertaken (see **Figure 1**). As such, it is considered prudent to review the results and recommendations of the noise impact assessment.

The conclusions of the traffic noise assessment conducted in the *Environmental Amenity Assessment* are still relevant for the revised design. As the surrounding roadways are projected to carry ultimate traffic volumes below 15,000 vehicles per day, it is not necessary to undertake an internal traffic noise assessment. The revised design provides numerous communal outdoor recreation areas at locations shielded from the surrounding roadways by the proposed building structures. Thus, future residents will have access to recreation areas with a suitable level of traffic noise amenity.

The recommendations of the industrial noise assessment conducted in the *Environmental Amenity Assessment* apply to the revised design. The design internal noise limits for industrial noise will be readily achieved within the proposed units with the provision of standard residential grade building constructions and façade elements (i.e. windows, doors). The revised design provides numerous communal outdoor recreation areas at locations shielded from the surrounding industrial uses by the proposed building structures.

As per the results of the *Environmental Amenity Assessment*, noise from the adjacent sports fields will be within the appropriate amenity limits at the proposed development.

Thus, appropriate levels of acoustic amenity will be achieved for the revised retirement village design without the need for any specific noise controls or acoustic treatment of building facades.

I trust that the above review of the noise amenity issues is suitable to address the impacts of the design changes to the proposed development. If you require any further information or clarification please contact the undersigned on 3002 5500.

Yours sincerely

[redacted]

Senior Engineer

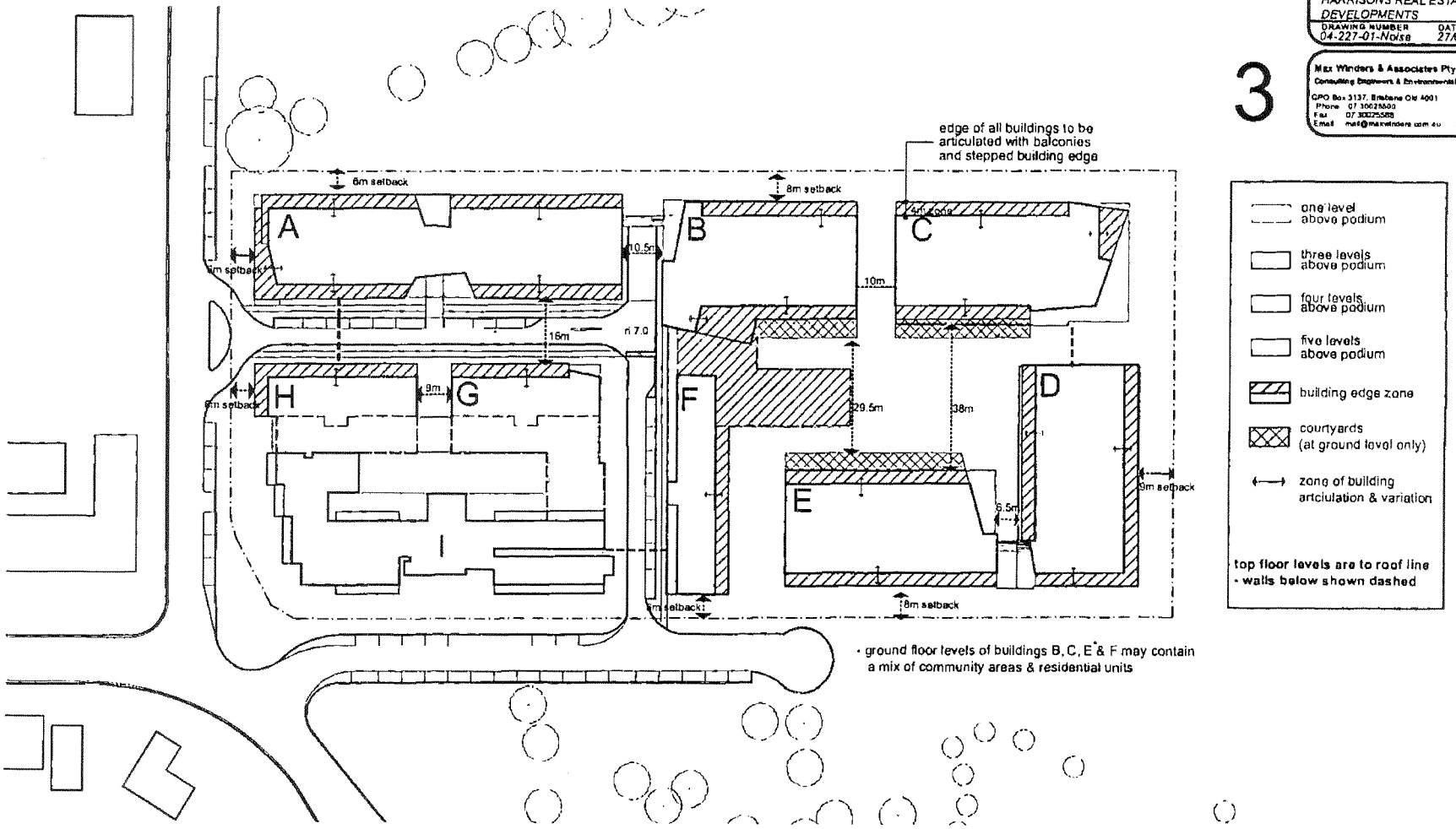
Level 15, Brisbane Club Tower, 241 Adelaide Street, Brisbane
GPO Box 3137, Brisbane Qld 4001 (ABN 94 010 833 084)
Ph: (07) 3002 5500 Fax: (07) 3002 5588 e-mail: mail@maxwinders.com.au

PROJECT
YERONGA
FIGURE 1
BUILDING ENVELOPE PLAN

JOB
YERONGA 04-227
CLIENT
HARRISONS REAL ESTATE DEVELOPMENTS
DRAWING NUMBER *04-227-01-Noise* DATE *27/09/05*

Max Winders & Associates Pty Ltd
Consulting Engineers & Environmental Scientists
GPO Box 3137, Brisbane Qld 4001
Phone 07 30025500
Fax 07 30025588
Email mail@maxwinders.com.au

3



Building Envelope Plan

Yeronga Village

SCALE: 1:1000 @ A3
DATE: 22.09.2005

418 ADELAIDE STREET
Brisbane Qld 4000
Phone (07) 3831 8150
Fax (07) 3831 8338
email : mail@arkhofield.com.au

ARKHOFIELD

Max Winders & Associates
Consulting Engineers & Environmental Scientists

Ref: L40005/PAK/04-227

27 September 2005

Harrisons Real Estate Developments
c/- PMM Group
PO BOX 1559
FORTITUDE VALLEY QLD 4006

Attention: [redacted]

Dear [redacted]

Re: Response to Item 13 of the Brisbane City Council Information Request – Proposed Yeronga Village Retirement Complex - Venner Road, Yeronga

We have reviewed the Referral Coordination Information Request (reference RCU 1837) for the proposed Yeronga Village Retirement Complex and identified Item 13 of the Brisbane City Council as the only issue relevant to environmental amenity.

We note that the design of the proposed development has been amended from that considered in our report "*Environmental Amenity Assessment - Proposed Yeronga Village Retirement Complex - Venner Road, Yeronga*" (dated 1 April 2005) which was submitted with the development application. The report addressed potential noise, air quality and lighting impacts on the proposed development from surrounding land uses. This response is based upon the current design proposal for the site, as shown on **Figure** 1 which indicates the proposed heights of each of the buildings.

Item 13 of the Brisbane City Council Information Request is as follows:

> *13. Please provide additional air quality modelling, to determine the effects of the industrial activity in the area, on the proposed Retirement Village.*

Discussions with the Council Pollution Officer have clarified that the issue relates to the *Environmental Amenity Assessment* not considering all Environmental Approvals held by Akzo Nobel, a paint manufacturer at 115 Hyde Road. The *Environmental Amenity Assessment* considered the Level 2 Environmental Approval No. SR1953 issued by the Queensland EPA as this was the only approval provided by the EPA when enquiries were made. Further enquiries to the EPA have revealed that the Akzo Nobel site also operates under Level 1 Environmental Approval No. SR0482 for ERA 10(a)(ii) and Level 2 Environmental Approval No. SR2402 for ERA 10(b).

Copies of Environmental Approvals SR0482 and SR2402 are included in ***Attachment 1***.

The additional Environmental Approvals SR0482 and SR2402 are generally in accordance with the SR1953 approval conditions considered in the *Environmental Amenity Assessment*. However, SR0482 and SR2402 include reference to additional contaminant release points, being H2 and H3. SR0482 and SR2402 require that the sum of Total Organic Compounds (TOC) emissions from H2 and H3 be a maximum of 20 grams per minute. SR0482 and SR2402 also refer to release point H4, which has already been considered in the *Environmental Amenity Assessment* air pollutant modelling.

Level 15, Brisbane Club Tower, 241 Adelaide Street, Brisbane
GPO Box 3137, Brisbane Qld 4001 (ABN 94 010 833 084)
Ph: (07) 3002 5500 Fax: (07) 3002 5588 e-mail: mail@maxwinders.com.au

As a result of the identification of the additional Environmental Approvals for the Akzo Nobel facility, it has been necessary to include an additional TOC emission point in the AUSPLUME model, representing release points H2 and H3 emitting at the maximum permissible 20 grams per minute (combined). The H2 and H3 release point (stack) was modelled with the minimum release height and efflux velocity as required under SR0482 and SR2402. All other parameters and modelling methodologies were maintained as described in Section 4.2.2 of the *Environmental Amenity Assessment* report (dated 1 April 2005).

The primary TOC emissions from Akzo Nobel are Toluene, Xylene, Methyl Ethyl Ketone (MEK) and Methyl Isobutyl Ketone (MIK). As Xylene has the lowest guideline limit (350 $\mu g/m^3$) of these pollutants, it is the limiting pollutant. This has been demonstrated in the air quality modelling conducted for our *Environmental Amenity Assessment* report (dated 1 April 2005).

The modelling incorporates the worst-case assumption that all the three release points are emitting the same Organic Compound (OC) simultaneously at the maximum permissible emission rate. In practice each of the three release points would generally be emitting different OCs from different production areas (i.e. toluene from one stack, xylene from another, MEK / MIK from another). Thus, the worst-case modelling assumption that all release points are simultaneously emitting the same OC at the maximum permissible emission rate significantly overestimates emissions that would occur in practice. Thus, actual emission rates of each of the main OCs (Toluene, Xylene, MEK and MIK) would generally be half to one third of the emission rate modelled using the worst-case assumption.

The adopted assessment criterion for Xylene concentrations at the proposed development is 350 $\mu g/m^3$ 3 minute average 99.9 percentile (8 hours per year).

The revised modelling has considered receptor heights equivalent to each of the proposed floor levels of the residential buildings based upon the current design.

The revised Xylene modelling output files are included as ***Attachment 2***.

The results of the revised Xylene modelling are presented in ***Attachment 3*** as the predicted 99.9 percentile 350 $\mu g/m^3$ criterion contour over an air photo base showing the proposed development.

The results demonstrate that, under worst-case emission assumptions, the 99.9 percentile 350 $\mu g/m^3$ criterion contours enter the western portion of the site for Level 4 and Level 5 receptors only. As such, the buildings adjacent to the western site boundary will need to satisfy maximum height (storey) limits as shown on **Figure 2**.

The proposed development has been designed to accord with the maximum height (storey) limits as determined in the air quality modelling and detailed on **Figure 2**.

As such, the additional air quality modelling undertaken to account for the requirements of the Akzo Nobel Environmental Approvals SR0482 and SR2402 has demonstrated that the design of the proposed development allows for the relevant air quality guidelines to be satisfied.

I trust that the above additional assessment satisfies the requirements of Item 13 of the Brisbane City Council Information Request. If you require any further information or clarification please contact the undersigned on 3002 5500.

Yours sincerely

[redacted]

Senior Engineer

BCC.058.8543

PROJECT
YERONGA
FIGURE 1
BUILDING ENVELOPE PLAN

JOB
YERONGA 04-227
CLIENT
HARRISONS REAL ESTATE DEVELOPMENTS
DRAWING NUMBER
04-227-01 RFI
DATE
27/09/05

3

Max Winders & Associates Pty Ltd
Consulting Engineers & Environmental Scientists
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Phone 07 30025000
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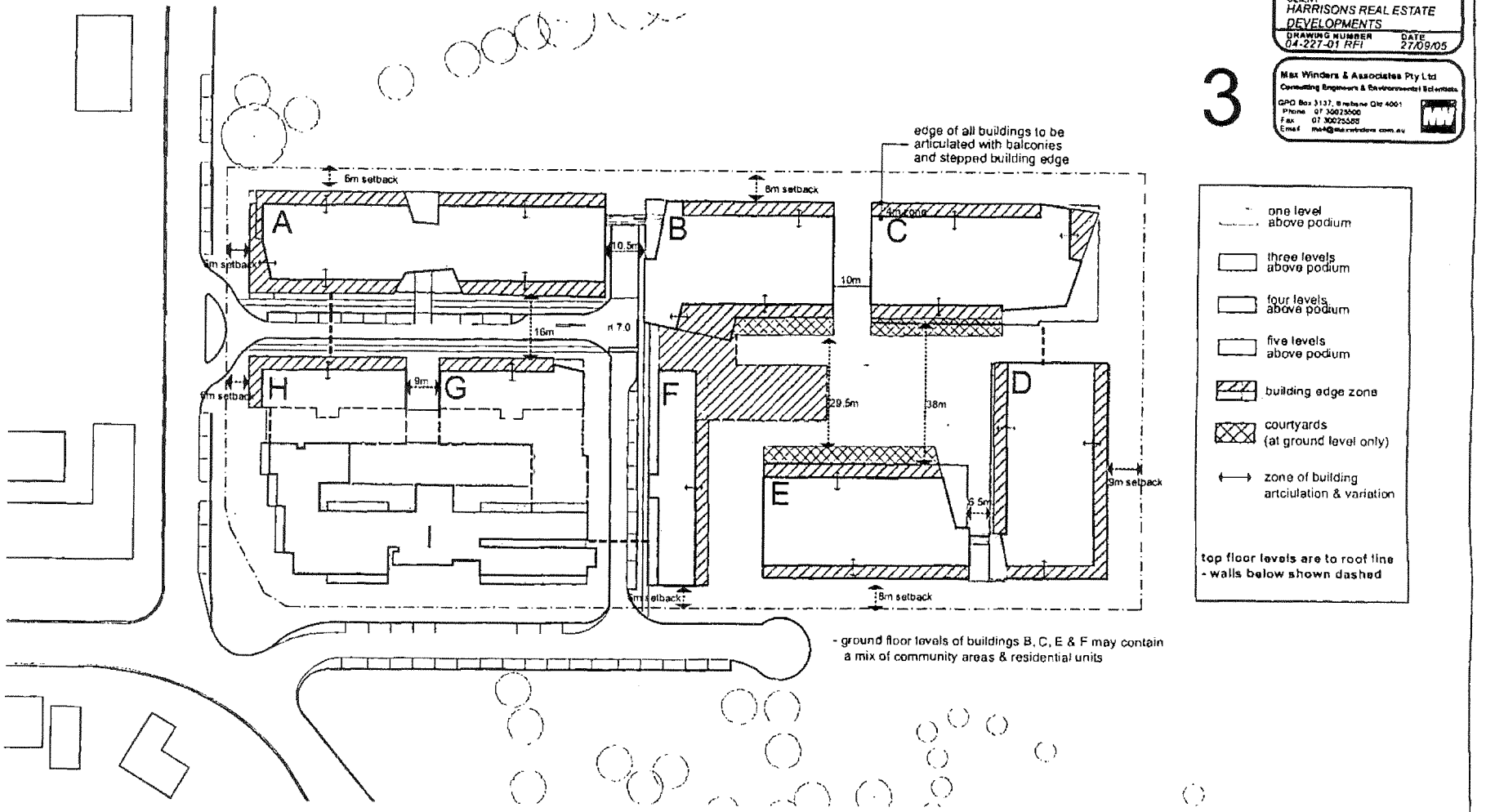

Building Envelope Plan

Yeronga Village

418 ADELAIDE STREET
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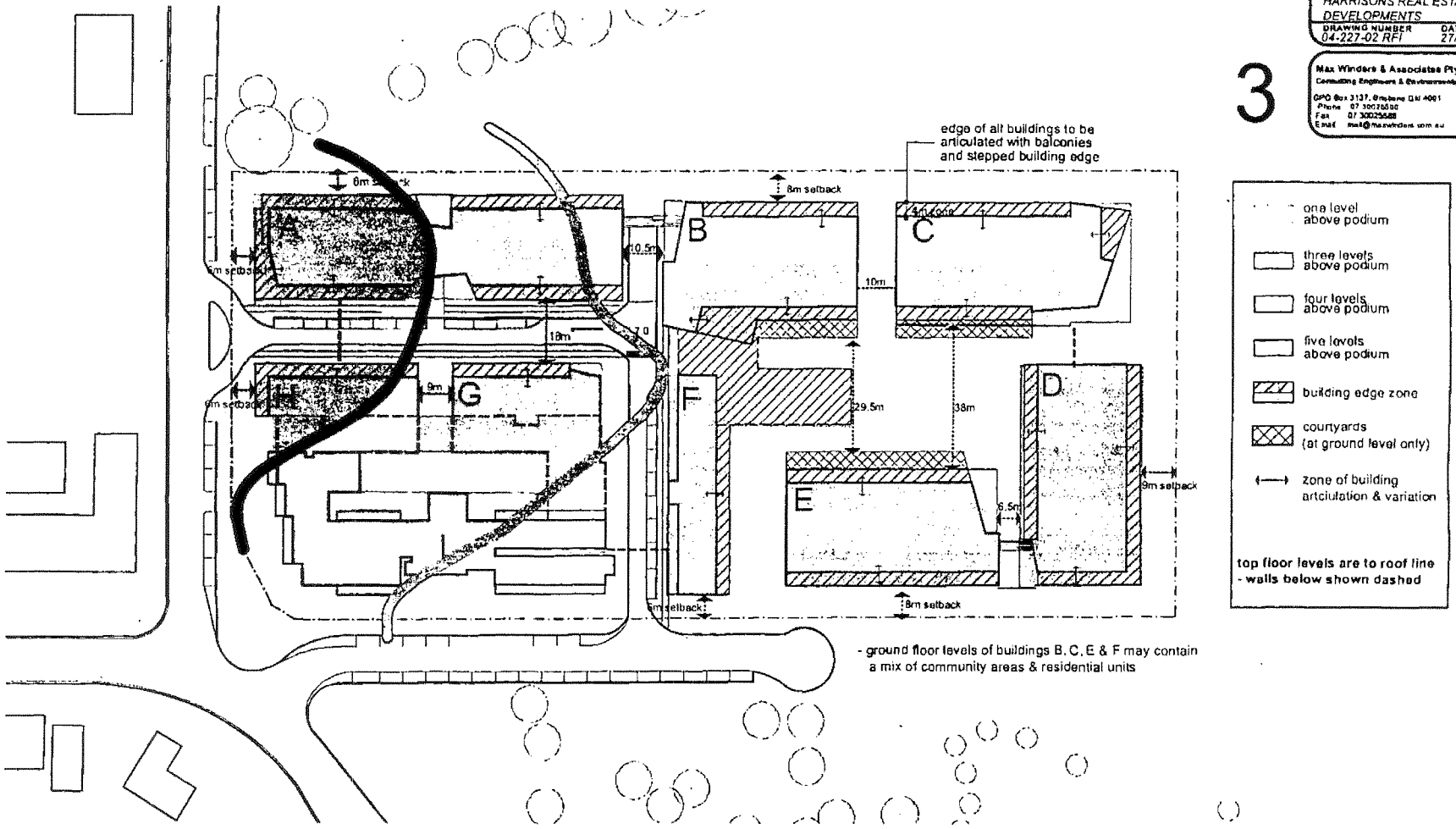
email . mail@archfield.com.au
ARCHFIELD

BCC.058.8544



PROJECT
YERONGA
FIGURE 2
RECOMMENDED MAXIMUM BUILDING HEIGHT LIMIT

JOB
YERONGA 04-227
CLIENT
HARRISONS REAL ESTATE DEVELOPMENTS
DRAWING NUMBER
04-227-02 RFI
DATE
27/09/05

3

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Building Envelope Plan

Yeronga Village

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SCALE
DATE 27 09 2005

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ARCHITECH

Attachment 1

Akzo Nobel Environmental Approvals

SR0482 & SR2402

ENVIRONMENTAL PROTECTION ACT 1994

Queensland Government
Environmental Protection Agency
Queensland Parks and Wildlife Service

Southern Regional Office (Brisbane)
GPO Box 2771 BRISBANE QLD 4001
Phone :(07) 3224 5641 Fax:(07) 3225 8723
www.env.qld.gov.au ABN: 87221158786

Licence No. SR0482
(without development approval)
Section 93 *Environmental Protection Act 1994*

This licence to carry out an environmentally relevant activity is issued in accordance with section 93 of the Environmental Protection Act 1994.

Under the provisions of the *Environmental Protection Act 1994* this licence is issued to:

Akzo Nobel Pty Ltd
6 Grand Avenue
CAMELLIA NSW 2142

in respect of carrying out the following environmentally relevant activity (ERA):

ERA 10(a)(ii) - **Paint manufacturing** - manufacturing organic solvent based paint in works having a design capacity of 1 000 000 litres or more, but less than 100 000 000 litres per year.

at the following place/s:

Lot 3 on RP66926 & Lot 1 on RP73748, Parish of Yeerongpilly, County of Stanley

located at 115 Hyde Road
YERONGA QLD 4104

This licence is subject to the conditions set out in the attached schedules.

The anniversary date of this licence is 21 May

This licence takes effect from 19 July 2004.

[redacted] Signed

12/7/04 Date

[redacted]
Acting Manager (Licensing)
Delegate of Administering Authority
Environmental Protection Act 1994

Note: This licence document is not proof of the current status of the licence. The current status of the licence may be ascertained by contacting the Environmental Protection Agency.

Schedule of conditions

The aforementioned description of the ERA for which this authority is issued is simply a restatement of the activity as prescribed in the legislation at the time of issuing the authority. Where there is any conflict between the above description of the ERA for which this authority is issued and the conditions as specified in this authority as to the scale, intensity or manner of carrying out of the ERA, then such conditions prevail to the extent of the inconsistency.

This licence incorporates the following schedules of conditions relevant to various issues:

- Schedule A - General conditions
- Schedule B - Air
- Schedule C - Water
- Schedule D - Stormwater management
- Schedule E - Land application
- Schedule F - Noise
- Schedule G - Waste management
- Schedule H - Self monitoring and reporting
- Schedule I - Definitions
- Schedule J - Site plans

Schedule A - General conditions

Release of Contaminants Not Otherwise Provided For

(A1) In carrying out the environmentally relevant activity, the holder of this environmental authority must take all reasonable and practicable measures to prevent and/or to minimise the likelihood of environmental harm being caused. Any environmentally relevant activity, that, if carried out incompetently, may cause environmental harm, in a manner that could be prevented, shall be carried out in a proper manner by a competent person in accordance with the conditions of this authority.

Maintenance of Plant and Equipment

(A2) The holder of this environmental authority must:

(i) install all plant and equipment necessary to ensure compliance with the conditions; and
(ii) maintain such plant and equipment in a proper and efficient condition; and
(iii) operate such plant and equipment in a proper and efficient manner.

In this condition, "plant and equipment" includes:

(i) plant and equipment used to prevent and/or minimise the likelihood of environmental harm being caused;
(ii) devices and structures to contain foreseeable escapes of contaminants and waste;
(iii) fuel burning equipment;
(iv) devices and structures used to store, handle, treat and dispose of waste;
(v) monitoring equipment and associated alarms; and
(vi) backup systems that act in the event of failure of a primary system.

Display of Environmental Authority

(A3) A copy of this environmental authority must be kept in a location readily accessible to personnel carrying out the activity.

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Records

(A4) Except as otherwise stated by the conditions of this environmental authority, any record or document required to be kept by a condition of this environmental authority must be kept at the licensed place for a period of at least five (5) years and be available for examination by an authorised person. The record retention requirements of this condition will be satisfied if any daily and weekly records are kept for a period of at least three (3) years and these records are then kept in the form of annual summaries after that period.

(A5) Copies of any record or document required to be kept by a condition of this environmental authority must be provided to any authorised person or the administering authority on request.

Alterations

(A6) No change, replacement or operation of any plant or equipment is permitted if the change, replacement or operation of the plant or equipment increases, or is likely to substantially increase, the risk of environmental harm above that expressly provided by this environmental authority.

Calibration

(A7) All instruments and devices used for the measurement or monitoring of any parameter under any condition of this environmental authority must be calibrated, and appropriately operated and maintained.

Nuisance

(A8) Notwithstanding any other condition of this environmental authority, this environmental authority does not authorise any release of contaminants which cause or are likely to cause an environmental nuisance beyond the boundaries of the licensed place.

END OF CONDITIONS FOR SCHEDULE A

Schedule B - Air

Specified Releases of Contaminants to the Atmosphere

(B1) The release of contaminants to the atmosphere from a point source must only occur from a point source which is identified in the application for environmental authority, or listed in Table 1 and table 2 of the air schedule of this environmental authority.

(B2) Contaminants resulting from the operation of the sources described in Table 1 and Table 2 of the air schedule must only be released to the atmosphere from those release points specified in Table 1 and Table 2 of this air schedule.

(B3) Contaminants released from each release point specified in Table 1 of this schedule must be directed vertically upwards without any impedance or hindrance.

(B4) Contaminants must be released to the atmosphere from a release point at a height not less than the corresponding height stated for that release point in Table 1 of this schedule.

(B5) Contaminants must be released to the atmosphere from a release point at a velocity not less than the corresponding velocity stated for that release point in Table 1 of this schedule.

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SCHEDULE B - Table 1

SOURCE DESCRIPTION	RELEASE POINT NUMBER AND STACK DESCRIPTION	MINIMUM RELEASE HEIGHT FROM GROUND LEVEL (metres)	MINIMUM EFFLUX VELOCITY (metres/ second)
Manufacturing area (factory floor): 6 dispersion machines	H2 and H3	14	5.29
Manufacturing area (mezzanine platform): Thinners Tank	H4	14	5.29
Batching area first floor	D3	14	8
Batching area ground floor	D4	14	8

SCHEDULE B - Table 2

SOURCE DESCRIPTION	RELEASE POINT NUMBER AND STACK DESCRIPTION
Floor scale area	H2 and H6
Floor level exhaust	H3
Adjustment area	H5
Tint room	H7
Filling area	H8
Pot wash	H9 and H13
Thinners building	H10
Lab Fume Hood	H11
Pre-mix area	H12
Drum Crush	H14
R & D Spray Booth	S1
Armawall building exhaust	D1
Powder prebatching area	D2

(B6) Contaminants must not be released to the atmosphere from a release point at a mass emission rate, as measured at a monitoring point specified in Schedule H, in excess of that stated in Table 3 of the air schedule.

SCHEDULE B - Table 3
Release Limits of Contaminants to Atmosphere

CONTAMINANT	RELEASE POINT NUMBERS	RELEASE LIMITS	RELEASE LIMIT UNITS
TOC	H2 and H3	20*	g/min
TOC	H4	20	g/min
Total particulates	D3	2	g/min
Total particulates	D4	2	g/min

*** Release limits expressed as a sum of both releases**

Labelling of Discharge Points

(B7) Within two (2) months of the date of issue of this environmental authority all release points referred to in Table 1 of the air schedule must be conspicuously marked with the corresponding release point number referred to in Table 1 of the air schedule.

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(B8) The label required for each release point must be readily visible from both ground level and at any required sampling point.

Fabric Filter Dust Collector (FFDC)

(B9) All gaseous and particulate contaminants extracted from the powder prebatching area must be treated in fabric filter dust collector (FFDC) prior to release to the atmosphere at release point D2.

(B10) All gaseous and particulate contaminants extracted from batching operations on the first floor of the manufacturing area must be treated in a fabric filter dust collector (FFDC) prior to release to the atmosphere at release point D3.

(B11) All gaseous and particulate contaminants extracted from batching operations on the ground floor of the manufacturing area must be treated in a fabric filter dust collector (FFDC) prior to release to the atmosphere at release point D4.

(B12) All collected material removed from the FFDCs must be removed and disposed of in a manner that will not cause the release of contaminants to the atmosphere or to waters.

(B13) No particulate addition operations are to be performed at the powder prebatching area or manufacturing area in the event of filter medium breakthrough

(B14) A filter medium breakthrough detector must be installed in the outlet of all FFDCs.

(B15) Replacement bags for the FFDC filter must be held on site or be readily available from a local contract maintenance service company at all times.

Spray Booth Filtration System

(B16) All paint mist and aerosols leaving the paint spray booths must be treated in a suitable filter medium prior to release to the atmosphere at release points S1 and S2.

Dust Control

(B17) All sealed surfaces intended to carry vehicular traffic must be kept clean.

(B18) Any spillage of material onto sealed areas, as a result of delivery or handling, must be cleaned up without delay into storage bins or other suitable receptacles.

END OF CONDITIONS FOR SCHEDULE B

Schedule C - Water

Release of Contaminants to Waters

(C1) Contaminants must not be directly or indirectly released from the licensed place to any waters or the bed and banks of any waters except:

(i) as permitted under the stormwater management schedule; or
(ii) to a sewer as permitted or otherwise agreed from time to time by the relevant Local Government.

END OF CONDITIONS FOR SCHEDULE C

12/7/04

Schedule D - Stormwater management

Contaminant Releases Caused by Rainfall

(D1) The environmentally relevant activities must be carried out by such practicable means necessary to prevent and/or minimise the contact of incident rainfall and stormwater runoff with wastes or other contaminants.

Release of Contaminated Stormwater Runoff

(D2) Except as otherwise provided by the conditions of the stormwater management schedule and the water schedule of this environmental authority, the environmentally relevant activity must be carried out by such practicable means necessary to prevent and/or minimise the release or likelihood of release of contaminated runoff from the licensed place to any stormwater drain or waters or the bed or banks of any such waters. "Contaminated runoff" for the purpose of this condition means stormwater and/or stormwater runoff that contains contaminants that may cause environmental harm.

(D3) Notwithstanding condition D2, the release of stormwater from Bund 1 and Bund 2 to the stormwater outlet at the north of the site identified on the Yeronga Site Plan (in Environmental licence Report, Akzo Nobel Pty Ltd Yeronga Site April 2001) must comply with the limits for each quality characteristic specified in Schedule D Table 1

Schedule D - Table 1

Quality Characteristic	Units	Limit
Chemical Oxygen Demand	mg/L	20
Suspended Solids	mg/L	30
PH	PH scale	6.5 – 9.0
Dissolved Oxygen	mg/L	2
Phenolic compounds	(µg/l)	50
Benzene	(µg/l)	300
Toluene	(µg/l)	300
Ethylbenzene	(µg/l)	140

Maintenance and Cleanup

(D4) The maintenance and cleaning of vehicles and any other equipment or plant must be carried out in areas from where contaminants cannot be released into any waters, roadside gutter or stormwater drainage system.

Bunding

(D5) All raw material tank storage, products tank storage and wastes tank storage areas must be bunded so that the capacity of the bund is sufficient to contain at least 100% of the largest storage tank plus 10% of the second largest tank within the bund.

(D6) All raw material drum storage, products drum storage and wastes drum storage areas must be bunded so that the capacity of the bund is sufficient to contain at least 25% of the maximum design storage volume within the bund.

(D7) All loading/unloading of bulk materials must take place only within designated vehicle loading/unloading areas.

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(D8) All tanker loading/unloading areas must be provided with a system for collecting and disposing of any potential spillage. The collection and disposal system must be sufficient to contain the total capacity of the largest compartment of any tank vehicle using the loading/unloading area.

(D9) All bunding must be constructed of materials which are impervious to the materials stored.

(D10) The base and walls of all bunded areas must be maintained and kept free from gaps and cracks.

(D11) All required pipework from the bunded areas must be directed over the bund wall and not through it.

(D12) All spills outside bunded areas must be cleaned up as quickly as practicable using dry absorbent material to prevent such spills entering the stormwater system.

Specific Stormwater Conditions

(D13) Collected stormwater in the bunded area must be removed as often as necessary to ensure effective operation of the bunding.

(D14) All empty drums must be stored on a concrete hardstand area with their closures in place.

END OF CONDITIONS FOR SCHEDULE D

Schedule E - Land application

Release of Contaminants to Land

(E1) The only contaminants to be released to land is stormwater collected in Bund 1 and Bund 2.

(E2) The defined contaminant release area is the area(s) marked "grassed area" on Yeronga Site Plan (in Environmental licence Report, Akzo Nobel Pty Ltd Yeronga Site April 2001).

(E3) The release of contaminants to land must not be carried out if soil moisture conditions are such that surface runoff is likely to occur.

(E4) Spray from any release of contaminants to land must not drift beyond the boundaries of the licensed place.

(E5) The contaminant release area must not be used for grazing or as a traffic thoroughfare.

(E6) Pipelines and fittings for the release of contaminants to land must be clearly identified and must not be connected to other service pipelines.

Quantity of Contaminants Released to Land

(E7) The quantity of contaminants released to the release area during any day must be kept to a level that will allow adequate assimilation, percolation, evaporation and transpiration of the released contaminants.

Quality of Contaminants Released to Land

(E8) The contaminant/s released must comply, at the sampling and in-situ measurement points specified in schedule H, with each of the release limits specified in schedule E - Table 1 for each quality characteristic.

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SCHEDULE E - TABLE 1

RELEASE QUALITY CHARACTERISTIC LIMITS

QUALITY CHARACTERISTICS	MAXIMUM RELEASE LIMIT	LIMIT TYPE
pH	6.0-9.0	Range

END OF CONDITIONS FOR SCHEDULE E

Schedule F - Noise

Emission of Noise

(F1) In the event of a complaint about noise that constitutes annoyance being made to the administering authority, that the administering authority considers is not frivolous or vexatious, then the emission of noise from the licensed place must not result in levels greater than those specified in Table 1 of the Noise Schedule.

SCHEDULE F - TABLE 1

NOISE LIMITS AT A NOISE SENSITIVE PLACE	
Period	***Noise Level at a Noise Sensitive Place Measured as the Adjusted Maximum Sound Pressure Level*** $L_{Amax\ adj,\ T}$
7 am - 6 pm	Background noise level plus 5 dB(A)
6 pm - 10 pm	Background noise level plus 5 dB(A)
10 pm - 7 am	Background noise level plus 3 dB(A)
NOISE LIMITS AT A COMMERCIAL PLACE	
Period	***Noise Level at a Commercial Place measured as the Adjusted Maximum Sound Pressure Level*** $L_{Amax\ adj,\ T}$
7 am - 6 pm	Background noise level plus 10 dB(A)
6 pm - 10 pm	Background noise level plus 10 dB(A)
10 pm - 7 am	Background noise level plus 8 dB(A)

END OF CONDITIONS FOR SCHEDULE F

Schedule G - Waste management

General

(G1) Waste must not be released to the environment, stored, transferred or disposed of contrary to any condition of this environmental authority.

(G2) The holder of this environmental authority must not:

(i) allow waste to burn or be burnt at or on the licensed place; nor
(ii) remove waste from the licensed place and burn such waste elsewhere

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except as permitted by the conditions of this environmental authority.

(G3) Records of trade waste agreements must be made available for inspection on request.

(G4) An area must be set aside for the segregation and storage of recyclable solid wastes.

(G5) Procedures must be implemented to ensure all disposal of wastes generated in carrying out the environmentally relevant activity is to a proper and appropriate facility that accepts such wastes, except as specifically provided for under the conditions of this environmental authority.

Liquid Organic Solvent Waste Management Plan

(G6) By six (6) months of the date of issue of this environmental authority, the holder of this environmental authority, must develop and implement a Liquid Organic Solvent Waste Management Plan which details how the holder of this environmental authority will effectively and appropriately manage solvent waste caused by the carrying out of the environmentally relevant activity.

(G7) In developing the Liquid Organic Solvent Waste Management Plan and periodically updating it to incorporate changing practices and future options, the holder of the environmental authority must have regard to the following hierarchy of preferred methods of dealing with waste. Where reasonable and practicable, the method of dealing with waste which is higher in the hierarchy must be adopted over another method which is lower in the hierarchy.

Hierarchy of methods of dealing with waste

The most preferred method [method (1)]

(1) Avoid the generation of waste in the first place, for example by utilising alternate materials and or processes.

(2) Minimise the quantity and or hazardous nature of the waste generated, for example by utilising alternate materials and or processes and segregation of high strength waste streams from low strength waste streams.

(3) Recycling of waste produced, for example by incorporating reuse, reprocessing, and utilisation of the waste for a worthwhile purpose.

(4) Treatment of the waste to render it less or non-hazardous.

(5) Disposal of the waste as a last resort.

The least preferred method [method (5)].

(G8) The Liquid Organic Solvent Waste Management Plan must detail the following:

- the source, quantity, nature of each solvent waste produced on site and the current method of disposal (in a table and graph form), and
- waste minimisation and cleaner production options addressing: target/objectives, management strategies, tasks, performance indicators, frequency, responsible person and reporting of reduction in quantity of all Liquid Organic Solvent wastes produced on site; and
- provisions for carrying out and submitting to the administering authority a solvent waste audit within two (2) years from the date of issue of this environmental authority and thereafter every five (5) years.

(G9) A copy of the Liquid Organic Solvent Waste Management Plan must be provided to the administering authority within 30 days of its completion.

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(G10) A copy of the Liquid Organic Solvent Waste Management Plan must be kept at the licensed place.

(G11) The holder of this environmental authority must not implement a Liquid Organic Solvent Waste Management Plan or amend a Liquid Organic Solvent Waste Management Plan where such implementation or amendment would result in a contravention of any condition of this environmental authority.

(G12) The holder of this environmental authority must submit details of any amendment to the Liquid Organic Solvent Waste Management Plan to the administering authority with the Annual Return which immediately follows the enactment of any such amendment.

Fugitive Emissions (Volatile Organic Carbon) Minimisation Plan

(G13) By six (6) months of the date of issue of this environmental authority, the holder of this environmental authority, must develop and implement a Fugitive Emissions (Volatile Organic Carbon) Minimisation Plan which details how the holder of this environmental authority will effectively and appropriately manage Fugitive Emissions (Volatile Organic Carbon) caused by the carrying out of the environmentally relevant activity.

(G14) The Fugitive Emissions (Volatile Organic Carbon) Minimisation Plan must address at least the following matters:

- the source of Fugitive Emission (Volatile Organic Carbon) generated on site, and
- fugitive emission minimisation and cleaner production options including: target/objectives, management strategies, tasks, performance indicators, frequency, responsible person and reporting of performance .

(G15) A copy of the Fugitive Emissions (Volatile Organic Carbon) Minimisation Plan must be provided to the administering authority within 30 days of its completion.

(G16) A copy of the Fugitive Emissions (Volatile Organic Carbon) Minimisation Plan must be kept at the licensed place.

(G17) The holder of this environmental authority must not implement a Fugitive Emissions (Volatile Organic Carbon) Minimisation Plan or amend a Fugitive Emissions (Volatile Organic Carbon) Minimisation Plan where such implementation or amendment would result in a contravention of any condition of this environmental authority.

(G18) The holder of this environmental authority must submit details of any amendment to the Fugitive Emissions (Volatile Organic Carbon) Minimisation Plan to the administering authority with the Annual Return which immediately follows the enactment of any such amendment.

Off Site Movement

(G19) Where regulated waste is removed from the licensed place (other than by a release as permitted under another schedule of this environmental authority), the holder of this environmental authority must monitor and keep records of the following:

(a) the date, quantity and type of waste removed; and
(b) name of the waste transporter and/or disposal operator that removed the waste; and
(c) the intended treatment/disposal destination of the waste.

Storage Conditions

(G20) The lids of all storage tanks and mixing vessels must be kept closed at all times except when the lid is opened for maintenance and operational (manual addition of raw materials) purposes.

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(G21) All drums containing raw, regulated waste or processed materials must be sealed to prevent loss of contents or exposure of the contents to the atmosphere.

(G22) There must be no visible leakage of the contents from any waste container.

Notification of Improper Disposal Of Regulated Waste

(G23) If the holder of this environmental authority becomes aware that a person has removed regulated waste from the licensed place and disposed of the regulated waste in a manner which is not authorised by this environmental authority or improper or unlawful, then the holder of this environmental authority must, as soon as practicable, notify the administering authority of all relevant facts, matters and circumstances known concerning the disposal.

END OF CONDITIONS FOR SCHEDULE G

Schedule H - Self monitoring and reporting

Complaint Recording

(H1) All complaints received by the holder of this environmental authority relating to releases of contaminants from operations at the licensed place must be recorded and kept in a log book with the following details:

(i) time, date and nature of complaint;
(ii) type of communication (telephone, letter, personal etc.);
(iii) name, contact address and contact telephone number of complainant (Note: if the complainant does not wish to be identified then "Not identified" is to be recorded);
(iv) response and investigation undertaken as a result of the complaint;
(v) name of person responsible for investigating complaint; and
(vi) action taken as a result of the complaint investigation and signature of responsible person.

Notification of Emergencies and Incidents

(H2) As soon as practicable after becoming aware of any emergency or incident which results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with the conditions of this environmental authority, the holder of this environmental authority must notify the administering authority of the release by telephone or facsimile.

(H3) The notification of emergencies or incidents as required by condition number H2 must include but not be limited to the following:

(i) the name of the holder of the environmental authority;
(ii) the location of the emergency or incident;
(iii) the number of the environmental authority;
(iv) the name and telephone number of the designated contact person;
(v) the time of the release;
(vi) the time the holder of the environmental authority became aware of the release;
(vii) the suspected cause of the release;
(viii) the environmental harm and or environmental nuisance caused, threatened, or suspected to be caused by the release; and
(ix) actions taken to prevent further any release and mitigate any environmental harm and or environmental nuisance caused by the release.

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Monitoring of Contaminant Releases to the Atmosphere

(H4) The holder of this environmental authority must conduct and keep records of a monitoring program of contaminant releases to the atmosphere at the release points, frequency, and for the parameters specified in Schedule H - Table 1 and which complies with the following:

(a) all determinations of the quality of contaminants released must be performed by a person or body possessing appropriate experience and qualifications to perform the required measurements;

(b) monitoring provisions for the release points listed in Schedule H Table 1 must comply with the Australian Standard AS 4323.1 - 1995 "Stationary source emissions Method 1: Selection of sampling provisions";

(c) the following tests must be performed for each required determination specified in Table 1:

(i) gas velocity and volume flow rate;
(ii) temperature; and
(iii) water vapour concentration (moisture content).

(d) where practicable samples taken must be representative of the contaminants discharged when emissions are expected to be at maximum;

(e) during the sampling period the following additional information must be gathered; operating conditions including:

(i) production rate at the time of sampling;
(ii) raw materials used;
(iii) number of equipment and mixing vessels operating;
(iv) operating or mixing temperature; and
(v) product made.

Schedule H - Table 1
Required Release Point Determinations

DETERMINATION REQUIRED	RELEASE POINT NUMBERS	FREQUENCY
Concentration and mass emission rate for TOC	H1 and H4	Annually

Noise Monitoring

(H5) For the purposes of investigating any complaint made about annoyance and also for checking compliance with condition F1 of the noise schedule, monitoring and recording of the noise levels from the activity must be undertaken for the following descriptors, characteristics and conditions:

(i) $L_{Amax,\ Adj\ T}$;
(ii) $L_{Abg,\ T}$;
(iii) $L_{AN,\ T}$ (where N equals statistical levels of 1, 10, 90);
(iv) Max $L_{pA\ T}$;
(v) $L_{Aeq,\ T}$;
(vi) the level and frequency of occurrence of impulsive or tonal noise;
(vii) atmospheric conditions including temperature, relative humidity and wind speed and direction; and
(viii) effects due to extraneous factors such as traffic noise.

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(H6) In conjunction with the measurement and recording of the noise, the following parameters and conditions must be recorded:

(i) location, date, time and duration of recording.

(H7) The method of measurement and reporting of noise levels must comply with the Department of Environment and Heritage Noise Measurement Manual, second edition, March 1995, or more recent additions or supplements to that document as become available.

(H8) The measurement and reporting of noise levels must be undertaken by a person or body possessing appropriate experience and qualifications to perform the required measurements.

Monitoring of Contaminant Releases to Waters

(H9) For the purpose of ensuring the effectiveness of measures adopted to prevent and/or minimise likelihood of contaminated stormwater being released as required by condition D1, the holder of this environmental authority is responsible for the making of determinations and keeping of records of the quality of the stormwater released from Bund 1 and Bund 2 to the stormwater outlet on the northern boundary of the site identified on Yeronga Site Plan (in Environmental licence Report, Akzo Nobel Pty Ltd Yeronga Site April 2001) for the quality characteristics, and at the frequency specified in Schedule H - Table 1:

Schedule H - Table 1

Quality Characteristic	Units	Frequency
Chemical Oxygen Demand	mg/L	3 monthly in the event of a release
Suspended Solids	mg/L	3 monthly in the event of a release
PH	pH scale	3 monthly in the event of a release
Dissolved Oxygen	mg/L	3 monthly in the event of a release
Total Organic Compounds (TOC)	(mg/l)	3 monthly in the event of a release
Phenolic compounds	(µg/l)	3 monthly in the event of a release
Benzene	(µg/l)	3 monthly in the event of a release
Toluene	(µg/l)	3 monthly in the event of a release
Ethylbenzene	(µg/l)	3 monthly in the event of a release

Sampling and Monitoring Point Details

(H10) Determinations of the quality of contaminants released to waters to check conformity with the release quality characteristics specified in the water schedule of this environmental authority must be undertaken at the sampling and measurement point described as:

SP1 – within Bund 1
SP2 – within Bund 2

Monitoring of Contaminant Releases to Land

(H11) For the purposes of checking conformity with condition E8 of the land application schedule, the holder of this environmental authority must be responsible for the making of determinations of the quality of the contaminants released. Such determinations must be performed for at least the following quality characteristics:

(iii) pH.

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(H12) The determinations of the quality of contaminants released must be performed as often as necessary to check that the conditions of this environmental authority are being complied with, but not less frequently than quarterly in the event of a release.

Sampling and Monitoring Point Details

(H13) Determinations of the quality of contaminants released to land to check conformity with the release quality characteristics specified in the land schedule of this environmental authority must be undertaken at the sampling and measurement point described as:

SP1 – within bund 1
SP2 – within bund 2

Quality Assurance

(H14) All determinations of the quality of contaminants released to waters must be made in accordance with methods prescribed in the Environmental Protection Agency Water Quality Sampling Manual, 3rd Edition, December 1999, or more recent editions or supplements to that document as such become available.

(H15) All determinations of the quality of contaminants released must be performed by a person or body possessing appropriate experience and qualifications to perform the required measurements.

Waste Disposal Area Soil Monitoring

(H16) The holder of this environmental authority is responsible for ensuring a soil monitoring program is performed which complies with the following requirements:

(a) All determinations of the quality of contaminants released must be performed by a person or body possessing appropriate experience and qualifications to perform the required measurements;

(b) Samples of soil must be taken from the grassed area(s) no less than once every three years;

(c) The samples obtained in accordance with paragraph (b) of this condition must be analysed for petroleum hydrocarbons by fraction, C6 – C14; and

(d) Any record made of the results of the waste disposal area soil monitoring made in accordance with this condition must not be disposed of for 15 years of the date the record was made.

Reporting of Total Hydrocarbon Release to Air

(H17) The holder of this environmental authority must determine by measurement or estimation the total mass of hydrocarbon released from the licensed place to the atmosphere each year.

Note: Where possible hydrocarbons must be grouped according to photochemically reactive functional groups.

(H18) The determination of the total mass of hydrocarbon released to the atmosphere annually must include all point source and non-point source releases.

(H19) By 30 August 1997 the holder of this environmental authority must submit a report detailing the methods to be used to determine the total mass quantity of Hydrocarbons released to the atmosphere.

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(H20) A report on the total mass of Hydrocarbons released to the atmosphere for the preceding 12 month period must be included with each annual return and include, but not limited to:

(i) total mass of Hydrocarbons released;
(ii) the percentage increase or decrease in the hydrocarbons releases;
(iii) the ratio of the total mass quantity of point source releases to non-point source releases;
(iv) the impact of any waste minimisation initiatives adopted on the total mass of hydrocarbons released; and
(v) the ratio of total mass of hydrocarbons released to mass of product which includes such hydrocarbons.

Report Submission

(H21) The holder of this environmental authority must ensure that the results of all monitoring performed in accordance with this environmental authority for the period covered by the return are submitted with the Annual Return.

Environmental Impact Analysis Reporting

(H22) The holder of this environmental authority must arrange for the data gathered in accordance with this environmental authority to be analysed and interpreted to assess the nature and extent of any environmental impact of the environmentally relevant activity. The data, analysis and assessment must be submitted to the administering authority with each Annual Return.

END OF CONDITIONS FOR SCHEDULE H

Schedule I - Definitions

Some of the words and phrases used throughout this licence are defined below:

(I1) "Act" means the Environmental Protection Act 1994.

(I2) "administering authority" means the Environmental Protection Agency or its successor.

(I3) "land" in the land application schedule means land excluding waters and the atmosphere.

Air Definitions.

(I4) "cubic metre" ("m^3") means the volume of dry gaseous contaminant which occupies 1 cubic metre at a temperature of zero degrees Celsius and at an absolute pressure of 101.3 kilopascals.

(I5) "Total Organic Compounds" ("TOC") means the sum of all compounds of carbon which contain at least one carbon to carbon bond plus methane and its derivatives. For the purpose of measurement 1 gram of TOC is deemed to have the same flame ionisation response as 1 gram of Hexane.

Noise Definitions

(I6) "$L_{Amax\ adj,T}$" means the average maximum A-weighted sound pressure level, adjusted for noise character and measured over a time period of not less than 15 minutes, using Fast response.

(I7) "background noise level" means either:

$L_{A90,T}$ being the A-weighted sound pressure level exceeded for 90 percent of the time period of not less than 15 minutes, using Fast response, or

$L_{abg,T}$ being the arithmetic average of the minimum readings measured in the absence of the noise under investigation during a representative time period of not less than 15 minutes, using Fast response.

(I8) "Max $L_{pA,T}$" means the maximum A-weighted sound pressure level measured over a time period of not less than 15 minutes, using Fast response.

(I9) "noise sensitive place" means -

(a) a dwelling, mobile home or caravan park, residential marina or other residential premises; or
(b) a motel, hotel or hostel; or
(c) a kindergarten, school, university or other educational institution; or
(d) a medical centre or hospital; or
(e) a protected area; or
(f) a park or gardens.

(I10) "commercial place" means a place used as an office or for business or commercial purposes.

(I11) "annoyance". In determining what constitutes "annoyance" regard must be had to Australian Standard 1055.2 - 1989 Acoustics - Description and Measurement of Environmental Noise Part 2 Application to specific situations.

(I12) "protected area" means:

- a protected area under the *Nature Conservation Act 1992*; or
- a marine park under the *Marine Parks Act 1982*; or
- a World Heritage Area.

(I13) "a park or gardens" is defined as "a park or garden open to the public as of right whether by the payment of a fee or otherwise".

Water definitions

(I14) "waters" includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water natural or artificial water course, bed or bank of any waters, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and groundwater and any part-thereof.

(I15) "mg/L" means milligrams per litre.

(I16) "ug/L" means micrograms per litre.

END OF CONDITIONS FOR SCHEDULE I

Schedule J - Site plans

The site plans for the licensed places are attached.

END OF CONDITIONS FOR SCHEDULE J

END OF ENVIRONMENTAL AUTHORITY

[redacted] 12/7/04

BCC.058.8562

ENVIRONMENTAL PROTECTION ACT 1994

Queensland Government
Environmental Protection Agency
Queensland Parks and Wildlife Service

Southern Regional Office (Brisbane)
GPO Box 2771 BRISBANE QLD 4001
Phone: (07) 3224 5641 Fax: (07) 3225 8723
www.env.qld.gov.au ABN: 87221158786

Level 2 Approval No. SR2402

Section 104 *Environmental Protection Act 1994*

This level 2 approval to carry out a level 2 environmentally relevant activity is issued in accordance with section 104 of the Environmental Protection Act 1994.

Under the provisions of the *Environmental Protection Act 1994* this level 2 approval is issued to:

Akzo Nobel Pty Ltd
6 Grand Avenue
CAMELLIA NSW 2142

in respect of carrying out the environmental relevant activity:

10(b) Paint manufacturing - Manufacturing water based paint in works having a design capacity of more than 10 000 l per year

at the following place(s):

Lot 3 on RP66926 & Lot 1 on RP73748, Parish of Yeerongpilly, County of Stanley.

located at:

115 Hyde Road YERONGA QLD 4104

This level 2 approval is subject to the conditions set out in the attached schedules.

This level 2 approval takes effect from 17 August 2004 and remains in force until 30 June 2009.

[redacted]
Signed

9 August 2004
Date

[redacted]
Acting Manager (Licensing)
Delegate of Administering Authority
Environmental Protection Act 1994

Note: This approval document is not proof of the current status of the approval. The current status of the approval may be ascertained by contacting the Environmental Protection Agency.

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Schedule of conditions

The aforementioned description of the ERA for which this authority is issued is simply a restatement of the activity as prescribed in the legislation at the time of issuing the authority. Where there is any conflict between the above description of the ERA for which this authority is issued and the conditions as specified in this authority as to the scale, intensity or manner of carrying out of the ERA, then such conditions prevail to the extent of the inconsistency.

This licence incorporates the following schedules of conditions relevant to various issues:

- Schedule A - General conditions
- Schedule B - Air
- Schedule C - Water
- Schedule D - Stormwater management
- Schedule E - Land application
- Schedule F - Noise
- Schedule G - Waste management
- Schedule H - Self monitoring and reporting
- Schedule I - Definitions
- Schedule J - Site plans

Schedule A - General conditions

The following conditions are prescribed:

Release of Contaminants Not Otherwise Provided For

(A1) In carrying out the environmentally relevant activity, the holder of this environmental authority must take all reasonable and practicable measures to prevent and/or to minimise the likelihood of environmental harm being caused. Any environmentally relevant activity, that, if carried out incompetently, may cause environmental harm, in a manner that could be prevented, shall be carried out in a proper manner by a competent person in accordance with the conditions of this authority.

Maintenance of Plant and Equipment

(A2) The holder of this environmental authority must:

(i) install all plant and equipment necessary to ensure compliance with the conditions; and
(ii) maintain such plant and equipment in a proper and efficient condition; and
(iii) operate such plant and equipment in a proper and efficient manner.

In this condition, "plant and equipment" includes:

(i) plant and equipment used to prevent and/or minimise the likelihood of environmental harm being caused;
(ii) devices and structures to contain foreseeable escapes of contaminants and waste;
(iii) fuel burning equipment;
(iv) devices and structures used to store, handle, treat and dispose of waste;
(v) monitoring equipment and associated alarms; and
(vi) backup systems that act in the event of failure of a primary system.

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Display of Environmental Authority

(A3) A copy of this environmental authority must be kept in a location readily accessible to personnel carrying out the activity.

Records

(A4) Except as otherwise stated by the conditions of this environmental authority, any record or document required to be kept by a condition of this environmental authority must be kept at the premises to which this approval relates for a period of at least five (5) years and be available for examination by an authorised person. The record retention requirements of this condition will be satisfied if any daily and weekly records are kept for a period of at least three (3) years and these records are then kept in the form of annual summaries after that period.

(A5) Copies of any record or document required to be kept by a condition of this environmental authority must be provided to any authorised person or the administering authority on request.

Alterations

(A6) No change, replacement or operation of any plant or equipment is permitted if the change, replacement or operation of the plant or equipment increases, or is likely to substantially increase, the risk of environmental harm above that expressly provided by this environmental authority.

Calibration

(A7) All instruments and devices used for the measurement or monitoring of any parameter under any condition of this environmental authority must be calibrated, and appropriately operated and maintained.

Nuisance

(A8) Notwithstanding any other condition of this environmental authority, this environmental authority does not authorise any release of contaminants which cause or are likely to cause an environmental nuisance beyond the boundaries of the premises to which this approval relates.

END OF CONDITIONS FOR SCHEDULE A

Schedule B - Air

The following conditions are prescribed:

Specified Releases of Contaminants to the Atmosphere

(B1) The release of contaminants to the atmosphere from a point source must only occur from a point source which is identified in the application for environmental authority, or listed in Table 1 and table 2 of the air schedule of this environmental authority.

(B2) Contaminants resulting from the operation of the sources described in Table 1 and Table 2 of the air schedule must only be released to the atmosphere from those release points specified in Table 1 and Table 2 of this air schedule.

(B3) Contaminants released from each release point specified in Table 1 of this schedule must be directed vertically upwards without any impedance or hindrance.

(B4) Contaminants must be released to the atmosphere from a release point at a height not less than the corresponding height stated for that release point in Table 1 of this schedule.

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(B5) Contaminants must be released to the atmosphere from a release point at a velocity not less than the corresponding velocity stated for that release point in Table 1 of this schedule.

SCHEDULE B - Table 1

SOURCE DESCRIPTION	RELEASE POINT NUMBER AND STACK DESCRIPTION	MINIMUM RELEASE HEIGHT FROM GROUND LEVEL (metres)	MINIMUM EFFLUX VELOCITY (metres/second)
Manufacturing area (factory floor): 6 dispersion machines	H2 and H3	14	5.29
Manufacturing area (mezzanine platform): Thinners tank	H4	14	5.29
Batching area first floor	D3	14	8
Batching area ground floor	D4	14	8

SCHEDULE B - Table 2

SOURCE DESCRIPTION	RELEASE POINT NUMBER AND STACK DESCRIPTION
Floor scale area	H2 and H6
Floor level exhaust	H3
Adjustment area	H5
Tint room	H7
Filling area	H8
Pot wash	H9 and H13
Thinners building	H10
Lab Fume Hood	H11
Pre-mix area	H12
Drum Crush	H14
R&D Spray Booth	S1
Armawall building exhaust	D1
Powder prebatching area	D2

(B6) Contaminants must not be released to the atmosphere from a release point at a mass emission rate, as measured at a monitoring point specified in Schedule H, in excess of that stated in Table 3 of the air schedule.

SCHEDULE B - Table 3
Release Limits of Contaminants to Atmosphere

CONTAMINANT	RELEASE POINT NUMBERS	RELEASE LIMITS	RELEASE LIMIT UNITS
TOC	H2 and H3	20*	g/min
TOC	H4	20	g/min
Total particulates	D3	2	g/min
Total particulates	D4	2	g/min

* Release limits expressed as a sum of both releases

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Labelling of Discharge Points

(B7) All release points referred to in Table 1 of the air schedule must be conspicuously marked with the corresponding release point number referred to in Table 1 of the air schedule.

(B8) The label required for each release point must be readily visible from both ground level and at any required sampling point.

Fabric Filter Dust Collector (FFDC)

(B9) All gaseous and particulate contaminants extracted from the powder prebatching area must be treated in fabric filter dust collector (FFDC) prior to release to the atmosphere at release point D2.

(B10) All gaseous and particulate contaminants extracted from batching operations on the first floor of the manufacturing area must be treated in a fabric filter dust collector (FFDC) prior to release to the atmosphere at release point D3.

(B11) All gaseous and particulate contaminants extracted from batching operations on the ground floor of the manufacturing area must be treated in a fabric filter dust collector (FFDC) prior to release to the atmosphere at release point D4.

(B12) All collected material removed from the FFDCs must be removed and disposed of in a manner that will not cause the release of contaminants to the atmosphere or to waters.

(B13) No particulate addition operations are to be performed at the powder prebatching area or manufacturing area in the event of filter medium breakthrough

(B14) A filter medium breakthrough detector must be installed in the outlet of all FFDCs.

(B15) Replacement bags for the FFDC filter must be held on site or be readily available from a local contract maintenance service company at all times.

Spray Booth Filtration System

(B16) All paint mist and aerosols leaving the paint spray booths must be treated in a suitable filter medium prior to release to the atmosphere at release points S1 and S2.

Dust Control

(B17) All sealed surfaces intended to carry vehicular traffic must be kept clean.

(B18) Any spillage of material onto sealed areas, as a result of delivery or handling, must be cleaned up without delay into storage bins or other suitable receptacles.

END OF CONDITIONS FOR SCHEDULE B

Schedule C - Water

The following conditions are prescribed:

Release of Contaminants to Waters

(C1) Contaminants must not be directly or indirectly released from the premises to which this approval relates to any waters or the bed and banks of any waters except:

(i) as permitted under the stormwater management schedule; or

(ii) to a sewer as permitted or otherwise agreed from time to time by the relevant Local Government.

END OF CONDITIONS FOR SCHEDULE C

Schedule D - Stormwater management

The following conditions are prescribed:

Contaminant Releases Caused by Rainfall

(D1) The environmentally relevant activities must be carried out by such practicable means necessary to prevent and/or minimise the contact of incident rainfall and stormwater runoff with wastes or other contaminants.

Release of Contaminated Stormwater Runoff

(D2) Except as otherwise provided by the conditions of the stormwater management schedule and the water schedule of this environmental authority, the environmentally relevant activity must be carried out by such practicable means necessary to prevent and/or minimise the release or likelihood of release of contaminated runoff from the premises to which this approval relates to any stormwater drain or waters or the bed or banks of any such waters. "Contaminated runoff" for the purpose of this condition means stormwater and/or stormwater runoff that contains contaminants that may cause environmental harm.

(D3) Notwithstanding condition D2, the release of stormwater from Bund 1 and Bund 2 to the stormwater outlet at the north of the site identified on the Yeronga Site Pan (in Environmental licence Report, Akzo Nobel Pty Ltd Yeronga Site April 2001) must comply with the limits for each quality characteristic specified in Schedule D - Table 1.

Schedule D - Table 1

Quality Characteristic	Units	Limit
Chemical Oxygen Demand	mg/L	20
Suspended Solids	mg/L	30
PH	PH scale	6.5 – 9.0
Dissolved Oxygen	mg/L	2
Phenolic compounds	(µg/l)	50
Benzene	(µg/l)	300
Toluene	(µg/l)	300
Ethylbenzene	(µg/l)	140

Maintenance and Cleanup

(D4) The maintenance and cleaning of vehicles and any other equipment or plant must be carried out in areas from where contaminants cannot be released into any waters, roadside gutter or stormwater drainage system.

Bunding

(D5) All raw material tank storage, products tank storage and wastes tank storage areas must be bunded so that the capacity of the bund is sufficient to contain at least 100% of the largest storage tank plus 10% of the second largest tank within the bund.

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(D6) All raw material drum storage, products drum storage and wastes drum storage areas must be bunded so that the capacity of the bund is sufficient to contain at least 25% of the maximum design storage volume within the bund.

(D7) All loading/unloading of bulk materials must take place only within designated vehicle loading/unloading areas.

(D8) All tanker loading/unloading areas must be provided with a system for collecting and disposing of any potential spillage. The collection and disposal system must be sufficient to contain the total capacity of the largest compartment of any tank vehicle using the loading/unloading area.

(D9) All bunding must be constructed of materials which are impervious to the materials stored.

(D10) The base and walls of all bunded areas must be maintained and kept free from gaps and cracks.

(D11) All required pipework from the bunded areas must be directed over the bund wall and not through it.

(D12) All spills outside bunded areas must be cleaned up as quickly as practicable using dry absorbent material to prevent such spills entering the stormwater system.

(D13) Collected stormwater in the bunded area must be removed as often as necessary to ensure effective operation of the bunding.

(D14) All empty drums must be stored on a concrete hardstand area with their closures in place.

END OF CONDITIONS FOR SCHEDULE D

Schedule E - Land application

The following conditions are prescribed:

Release of Contaminants to Land

(E1) The only contaminants to be released to land is stormwater collected in Bund 1 and Bund 2.

(E2) The defined contaminant release area is the area(s) marked "grassed area" on Yeronga Site Plan (in Environmental licence Report, Akzo Nobel Pty Ltd Yeronga Site April 2001).

(E3) The release of contaminants to land must not be carried out if soil moisture conditions are such that surface runoff is likely to occur.

(E4) Spray from any release of contaminants to land must not drift beyond the boundaries of the licensed place.

(E5) The contaminant release area must not be used for grazing or as a traffic thoroughfare.

(E6) Pipelines and fittings for the release of contaminants to land must be clearly identified and must not be connected to other service pipelines.

Quantity of Contaminants Released to Land

(E7) The quantity of contaminants released to the release area during any day must be kept to a level that will allow adequate assimilation, percolation, evaporation and transpiration of the released contaminants.

Quality of Contaminants Released to Land

(E8) The contaminant/s released must comply, at the sampling and in-situ measurement points specified in schedule H, with each of the release limits specified in schedule E - Table 1 for each quality characteristic.

SCHEDULE E - TABLE 1

RELEASE QUALITY CHARACTERISTIC LIMITS

QUALITY CHARACTERISTICS	MAXIMUM RELEASE LIMIT	LIMIT TYPE
pH	6.0-9.0	Range

END OF CONDITIONS FOR SCHEDULE E

Schedule F - Noise

The following conditions are prescribed:

Emission of Noise

(F1) In the event of a complaint about noise that constitutes annoyance being made to the administering authority, that the administering authority considers is not frivolous or vexatious, then the emission of noise from the premises to which this approval relates must not result in levels greater than those specified in Table 1 of the Noise Schedule.

SCHEDULE F - TABLE 1

NOISE LIMITS AT A NOISE SENSITIVE PLACE	
Period	***Noise Level at a Noise Sensitive Place Measured as the Adjusted Maximum Sound Pressure Level*** $L_{Amax\,adj,\,T}$
7 am - 6 pm	Background noise level plus 5 dB(A)
6 pm - 10 pm	Background noise level plus 5 dB(A)
10 pm - 7 am	Background noise level plus 3 dB(A)
NOISE LIMITS AT A COMMERCIAL PLACE	
Period	***Noise Level at a Commercial Place measured as the Adjusted Maximum Sound Pressure Level*** $L_{Amax\,adj,\,T}$
7 am - 6 pm	Background noise level plus 10 dB(A)
6 pm - 10 pm	Background noise level plus 10 dB(A)
10 pm - 7 am	Background noise level plus 8 dB(A)

END OF CONDITIONS FOR SCHEDULE F

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Schedule G - Waste management

The following conditions are prescribed:

General

(G1) Waste must not be released to the environment, stored, transferred or disposed of contrary to any condition of this environmental authority.

(G2) The holder of this environmental authority must not:

(i) allow waste to burn or be burnt at or on the premises to which this approval relates; nor
(ii) remove waste from the premises to which this approval relates and burn such waste elsewhere except as permitted by the conditions of this environmental authority.

(G3) Records of trade waste agreements must be made available for inspection on request.

(G4) An area must be set aside for the segregation and storage of recyclable solid wastes.

(G5) Procedures must be implemented to ensure all disposal of wastes generated in carrying out the environmentally relevant activity is to a proper and appropriate facility that accepts such wastes, except as specifically provided for under the conditions of this environmental authority.

Off Site Movement

(G6) Where regulated waste is removed from the premises to which this approval relates (other than by a release as permitted under another schedule of this environmental authority), the holder of this environmental authority must monitor and keep records of the following:

(a) the date, quantity and type of waste removed; and
(b) name of the waste transporter and/or disposal operator that removed the waste; and
(c) the intended treatment/disposal destination of the waste.

Storage Conditions

(G7) The lids of all storage tanks and mixing vessels must be kept closed at all times except when the lid is opened for maintenance and operational (manual addition of raw materials) purposes.

(G8) All drums containing raw, regulated waste or processed materials must be sealed to prevent loss of contents or exposure of the contents to the atmosphere.

(G9) There must be no visible leakage of the contents from any waste container.

Notification of Improper Disposal Of Regulated Waste

(G10) If the holder of this environmental authority becomes aware that a person has removed regulated waste from the premises to which this approval relates and disposed of the regulated waste in a manner which is not authorised by this environmental authority or improper or unlawful, then the holder of this environmental authority must, as soon as practicable, notify the administering authority of all relevant facts, matters and circumstances known concerning the disposal.

END OF CONDITIONS FOR SCHEDULE G

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Schedule H - Self monitoring and reporting

The following conditions are prescribed:

Complaint Recording

(H1) All complaints received by the holder of this environmental authority relating to releases of contaminants from operations at the premises to which this approval relates must be recorded and kept in a log book with the following details:

(i) time, date and nature of complaint;
(ii) type of communication (telephone, letter, personal etc.);
(iii) name, contact address and contact telephone number of complainant (Note: if the complainant does not wish to be identified then "Not identified" is to be recorded);
(iv) response and investigation undertaken as a result of the complaint;
(v) name of person responsible for investigating complaint; and
(vi) action taken as a result of the complaint investigation and signature of responsible person.

Notification of Emergencies and Incidents

(H2) As soon as practicable after becoming aware of any emergency or incident which results in the release of contaminants not in accordance, or reasonably expected to be not in accordance with the conditions of this environmental authority, the holder of this environmental authority must notify the administering authority of the release by telephone or facsimile.

(H3) The notification of emergencies or incidents as required by condition number H2 must include but not be limited to the following:

(i) the name of the holder of the environmental authority;
(ii) the location of the emergency or incident;
(iii) the number of the environmental authority;
(iv) the name and telephone number of the designated contact person;
(v) the time of the release;
(vi) the time the holder of the environmental authority became aware of the release;
(vii) the suspected cause of the release;
(viii) the environmental harm and or environmental nuisance caused, threatened, or suspected to be caused by the release; and
(ix) actions taken to prevent further any release and mitigate any environmental harm and or environmental nuisance caused by the release.

Noise Monitoring

(H4) For the purposes of investigating any complaint made about annoyance and also for checking compliance with condition F1 of the noise schedule, monitoring and recording of the noise levels from the activity must be undertaken for the following descriptors, characteristics and conditions:

(i) $L_{Amax,\ Adj\ T}$;
(ii) $L_{Abg,\ T}$;
(iii) $L_{AN,\ T}$ (where N equals statistical levels of 1, 10, 90);
(iv) Max $L_{pA\ T}$;
(v) $L_{Aeq,\ T}$;
(vi) the level and frequency of occurrence of impulsive or tonal noise;
(vii) atmospheric conditions including temperature, relative humidity and wind speed and direction; and
(viii) effects due to extraneous factors such as traffic noise.

[redacted] 9/8/04

BCC.058.8572

(H5) In conjunction with the measurement and recording of the noise, the following parameters and conditions must be recorded:

(i) location, date, time and duration of recording.

(H6) The method of measurement and reporting of noise levels must comply with the Department of Environment and Heritage Noise Measurement Manual, second edition, March 1995, or more recent additions or supplements to that document as become available.

(H7) The measurement and reporting of noise levels must be undertaken by a person or body possessing appropriate experience and qualifications to perform the required measurements.

Monitoring of Contaminant Releases to Waters

(H8) For the purpose of ensuring the effectiveness of measures adopted to prevent and/or minimise likelihood of contaminated stormwater being released as required by condition D1, the holder of this environmental authority is responsible for the making of determinations and keeping of records of the quality of the stormwater released from Bund 1 and Bund 2 to the stormwater outlet on the northern boundary of the site identified on Yeronga Site Plan (in Environmental licence Report, Akzo Nobel Pty Ltd Yeronga Site April 2001) for the quality characteristics, and at the frequency specified in Schedule H - Table 1:

Schedule D - Table 1

Quality Characteristic	Units	Frequency
Chemical Oxygen Demand	mg/L	3 monthly in the event of a release
Suspended Solids	mg/L	3 monthly in the event of a release
PH	pH scale	3 monthly in the event of a release
Dissolved Oxygen	mg/L	3 monthly in the event of a release
Total Organic Compounds (TOC)	(mg/l)	3 monthly in the event of a release
Phenolic compounds	(µg/l)	3 monthly in the event of a release
Benzene	(µg/l)	3 monthly in the event of a release
Toluene	(µg/l)	3 monthly in the event of a release
Ethylbenzene	(µg/l)	3 monthly in the event of a release

Sampling and Monitoring Point Details

(H9) Determinations of the quality of contaminants released to waters to check conformity with the release quality characteristics specified in the water schedule of this environmental authority must be undertaken at the sampling and measurement point described as:

SP1 – within Bund 1
SP2 – within Bund 2

Monitoring of Contaminant Releases to Land

(H10) For the purposes of checking conformity with condition E8 of the land application schedule, the holder of this environmental authority must be responsible for the making of determinations of the quality of the contaminants released. Such determinations must be performed for at least the following quality characteristics:

(iii) pH.

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(H11) The determinations of the quality of contaminants released must be performed as often as necessary to check that the conditions of this environmental authority are being complied with, but not less frequently than quarterly in the event of a release.

Sampling and Monitoring Point Details

(H12) Determinations of the quality of contaminants released to land to check conformity with the release quality characteristics specified in the land schedule of this environmental authority must be undertaken at the sampling and measurement point described as:

SP1 – within bund 1
SP2 – within bund 2

Quality Assurance

(H13) All determinations of the quality of contaminants released to waters must be made in accordance with methods prescribed in the Environmental Protection Agency Water Quality Sampling Manual, 3rd Edition, December 1999, or more recent editions or supplements to that document as such become available.

(H14) All determinations of the quality of contaminants released must be performed by a person or body possessing appropriate experience and qualifications to perform the required measurements.

Waste Disposal Area Soil Monitoring

(H15) The holder of this environmental authority is responsible for ensuring a soil monitoring program is performed which complies with the following requirements.

(a) All determinations of the quality of contaminants released must be performed by a person or body possessing appropriate experience and qualifications to perform the required measurements;

(b) Samples of soil must be taken from the grassed area(s) no less than once every three years;

(c) The samples obtained in accordance with paragraph (b) of this condition must be analysed for petroleum hydrocarbons by fraction , C6 – C14; and

(d) Any record made of the results of the waste disposal area soil monitoring made in accordance with this condition must not be disposed of for 15 years of the date the record was made.

END OF CONDITIONS FOR SCHEDULE H

Schedule I - Definitions

Words and phrases used throughout this licence.

Some of the words and phrases used throughout this licence are defined below:

For the purposes of this environmental authority the following definitions apply:

(I1) "Act" means the Environmental Protection Act 1994.

(I2) "administering authority" means the Environmental Protection Agency or its successor

(I3) "land" in the land application schedule means land excluding waters and the atmosphere.

[redacted] 9/8/04

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Air Definitions.

(I4) "cubic metre" ("m^3") means the volume of dry gaseous contaminant which occupies 1 cubic metre at a temperature of zero degrees Celsius and at an absolute pressure of 101.3 kilopascals.

(I5) "Total Organic Compounds" ("TOC") means the sum of all compounds of carbon which contain at least one carbon to carbon bond plus methane and its derivatives. For the purpose of measurement 1 gram of TOC is deemed to have the same flame ionisation response as 1 gram of Hexane.

Noise Definitions

(I6) "$L_{Amax\ adj,\ T}$" means the average maximum A-weighted sound pressure level, adjusted for noise character and measured over a time period of not less than 15 minutes, using Fast response.

(I7) "background noise level" means either:

$L_{A90,\ T}$ being the A-weighted sound pressure level exceeded for 90 percent of the time period of not less than 15 minutes, using Fast response, or

$L_{abg,\ T}$ being the arithmetic average of the minimum readings measured in the absence of the noise under investigation during a representative time period of not less than 15 minutes, using Fast response.

(I8) "Max $L_{pA,\ T}$" means the maximum A-weighted sound pressure level measured over a time period of not less than 15 minutes, using Fast response.

(I9) "noise sensitive place" means -.

(a) a dwelling, mobile home or caravan park, residential marina or other residential premises; or
(b) a motel, hotel or hostel; or
(c) a kindergarten, school, university or other educational institution; or
(d) a medical centre or hospital; or
(e) a protected area; or
(f) a park or gardens.

(I10) "commercial place" means a place used as an office or for business or commercial purposes.

(I11) "annoyance". In determining what constitutes "annoyance" regard must be had to Australian Standard 1055.2 - 1989 Acoustics - Description and Measurement of Environmental Noise Part 2 Application to specific situations.

(I12) "protected area' means:

- a protected area under the *Nature Conservation Act 1992*; or
- a marine park under the *Marine Parks Act 1982*; or
- a World Heritage Area.

(I13) "a park or gardens" is defined as "a park or garden open to the public as of right whether by the payment of a fee or otherwise".

END OF CONDITIONS FOR SCHEDULE I

Schedule J - Site plans

Site plans are not required

END OF CONDITIONS FOR SCHEDULE J

END OF ENVIRONMENTAL AUTHORITY

Attachment 2

Amended Xylene Modelling

AUSPLUME Outputs

1

Akzo Nobel - Xylene - Level 1 - Aug05 Model with 3 Release Points

Concentration or deposition	Concentration
Emission rate units	grams/second
Concentration units	microgram/m3
Units conversion factor	1.00E+06
Constant background concentration	3.50E+01
Terrain effects	Egan method
Smooth stability class changes?	No
Other stability class adjustments ("urban modes")	None
Ignore building wake effects?	No
Decay coefficient (unless overridden by met. file)	0.000
Anemometer height	10 m
Roughness height at the wind vane site	0.300 m
Use the convective PDF algorithm?	No

DISPERSION CURVES

Horizontal dispersion curves for sources <100m high	Pasquill-Gifford
Vertical dispersion curves for sources <100m high	Pasquill-Gifford
Horizontal dispersion curves for sources >100m high	Briggs Rural
Vertical dispersion curves for sources >100m high	Briggs Rural
Enhance horizontal plume spreads for buoyancy?	Yes
Enhance vertical plume spreads for buoyancy?	Yes
Adjust horizontal P-G formulae for roughness height?	Yes
Adjust vertical P-G formulae for roughness height?	Yes
Roughness height	0.800m
Adjustment for wind directional shear	None

PLUME RISE OPTIONS

Gradual plume rise?	Yes
Stack-tip downwash included?	Yes
Building downwash algorithm:	PRIME method.
Entrainment coeff. for neutral & stable lapse rates	0.60,0.60
Partial penetration of elevated inversions?	No
Disregard temp. gradients in the hourly met. file?	No

and in the absence of boundary-layer potential temperature gradients given by the hourly met. file, a value from the following table (in K/m) is used:

Wind Speed Category	Stability Class A	B	C	D	E	F
1	0.000	0.000	0.000	0.000	0.020	0.035
2	0.000	0.000	0.000	0.000	0.020	0.035
3	0.000	0.000	0.000	0.000	0.020	0.035
4	0.000	0.000	0.000	0.000	0.020	0.035
5	0.000	0.000	0.000	0.000	0.020	0.035
6	0.000	0.000	0.000	0.000	0.020	0.035

WIND SPEED CATEGORIES
Boundaries between categories (in m/s) are: 1.54, 3.09, 5.14, 8.23, 10.80

WIND PROFILE EXPONENTS: "Irwin Urban" values (unless overridden by met. file)

AVERAGING TIME: 3 minutes.

1

Akzo Nobel - Xylene - Level 1 - Aug05 Model with 3 Release Points

SOURCE CHARACTERISTICS

STACK SOURCE: H1

X(m)	Y(m)	Ground Elev.	Stack Height	Diameter	Temperature	Speed
92	140	15m	14m	0.30m	30C	5.3m/s

Effective building dimensions (in metres)

Flow direction	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°
Effective building width	62	64	67	67	65	62	56	49	40	33	43	52
Effective building height	8	8	8	8	8	8	8	8	8	8	8	8
Along-flow building length	33	43	52	59	64	67	69	68	65	62	64	67
Along-flow distance from stack	-18	-27	-35	-43	-49	-53	-56	-58	-57	-55	-55	-54
Across-flow distance from stack	24	22	21	19	16	13	10	6	2	-1	-6	-10

Flow direction	130°	140°	150°	160°	170°	180°	190°	200°	210°	220°	230°	240°
Effective building width	59	64	67	69	68	65	62	64	67	67	65	62
Effective building height	8	8	8	8	8	8	8	8	8	8	8	8
Along-flow building length	67	65	62	56	49	40	33	43	52	59	64	67
Along-flow distance from stack	-52	-49	-44	-38	-30	-22	-15	-16	-16	-16	-15	-14
Across-flow distance from stack	-13	-17	-20	-22	-24	-25	-24	-22	-21	-19	-16	-13

Flow direction	250°	260°	270°	280°	290°	300°	310°	320°	330°	340°	350°	360°
Effective building width	56	49	40	33	43	52	59	64	67	69	68	65
Effective building height	8	8	8	8	8	8	8	8	8	8	8	8
Along-flow building length	69	68	65	62	64	67	67	65	62	56	49	40
Along-flow distance from stack	-12	-10	-8	-7	-10	-12	-15	-16	-18	-18	-18	-18
Across-flow distance from stack	-10	-6	-2	1	6	10	13	17	20	22	24	25

(Constant) emission rate = 3.33E-01 grams/second
No gravitational settling or scavenging.

STACK SOURCE: H4

X(m)	Y(m)	Ground Elev.	Stack Height	Diameter	Temperature	Speed
95	150	15m	14m	0.30m	30C	5.3m/s

Effective building dimensions (in metres)

Flow direction	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°
Effective building width	62	64	67	67	65	62	56	49	40	33	43	52
Effective building height	8	8	8	8	8	8	8	8	8	8	8	8
Along-flow building length	33	43	52	59	64	67	69	68	65	62	64	67
Along-flow distance from stack	-28	-37	-46	-52	-58	-61	-63	-62	-60	-56	-54	-52
Across-flow distance from stack	25	22	19	15	11	6	1	-3	-8			

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-12 -16 -20

Flow direction	130°	140°	150°	160°	170°	180°	190°	200°	210°	220°	230°	240°
Effective building width	59	64	67	69	68	65	62	64	67	67	65	62
Effective building height	8	8	8	8	8	8	8	8	8	8	8	8
Along-flow building length	67	65	62	56	49	40	33	43	52	59	64	67
Along-flow distance from stack	-48	-43	-37	-29	-21	-12	-5	-5	-6	-6	-6	-6
Across-flow distance from stack	-23	-26	-27	-28	-28	-28	-25	-22	-19	-15	-11	-6

Flow direction	250°	260°	270°	280°	290°	300°	310°	320°	330°	340°	350°	360°
Effective building width	56	49	40	33	43	52	59	64	67	69	68	65
Effective building height	8	8	8	8	8	8	8	8	8	8	8	8
Along-flow building length	69	68	65	62	64	67	67	65	62	56	49	40
Along-flow distance from stack	-6	-6	-5	-6	-11	-15	-19	-22	-25	-27	-28	-28
Across-flow distance from stack	-1	3	8	12	16	20	23	26	27	28	28	28

(Constant) emission rate = 3.33E-01 grams/second
No gravitational settling or scavenging.

STACK SOURCE: H2&3

X(m)	Y(m)	Ground Elev.	Stack Height	Diameter	Temperature	Speed
92	130	15m	14m	0.30m	30C	5.3m/s

Effective building dimensions (in metres)

Flow direction	10°	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°
Effective building width	62	64	67	67	65	62	56	49	40	33	43	52
Effective building height	8	8	8	8	8	8	8	8	8	8	8	8
Along-flow building length	33	43	52	59	64	67	69	68	65	62	64	67
Along-flow distance from stack	-8	-18	-27	-35	-42	-48	-53	-56	-57	-56	-58	-59
Across-flow distance from stack	26	26	26	25	24	22	19	16	12	9	4	-1

Flow direction	130°	140°	150°	160°	170°	180°	190°	200°	210°	220°	230°	240°
Effective building width	59	64	67	69	68	65	62	64	67	67	65	62
Effective building height	8	8	8	8	8	8	8	8	8	8	8	8
Along-flow building length	67	65	62	56	49	40	33	43	52	59	64	67
Along-flow distance from stack	-59	-57	-53	-47	-40	-32	-25	-25	-25	-24	-22	-19
Across-flow distance from stack	-6	-10	-15	-19	-22	-25	-26	-26	-26	-25	-24	-22

Flow direction	250°	260°	270°	280°	290°	300°	310°	320°	330°	340°	350°	360°
Effective building width	56	49	40	33	43	52	59	64	67	69	68	65
Effective building height	8	8	8	8	8	8	8	8	8	8	8	8

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8 8 8
Along-flow building length 69 68 65 62 64 67 67 65 62
56 49 40
Along-flow distance from stack -16 -12 -8 -5 -6 -7 -8 -9 -9
-9 -9 -8
Across-flow distance from stack -19 -16 -12 -9 -4 1 6 10 15
19 22 25

(Constant) emission rate = 3.33E-01 grams/second
No gravitational settling or scavenging.

1

Akzo Nobel - Xylene - Level 1 - Aug05 Model with 3 Release Points

RECEPTOR LOCATIONS

The Cartesian receptor grid has the following x-values (or eastings):

0.m	25.m	50.m	75.m	100.m	125.m	150.m
175.m	200.m	225.m	250.m	275.m	300.m	325.m
350.m	375.m	400.m	425.m	450.m	475.m	500.m

and these y-values (or northings):

0.m	25.m	50.m	75.m	100.m	125.m	150.m
175.m	200.m	225.m	250.m	275.m	300.m	

at a height above ground level of 1.2 metres

METEOROLOGICAL DATA : Ausplume Meteorological database for brisbane

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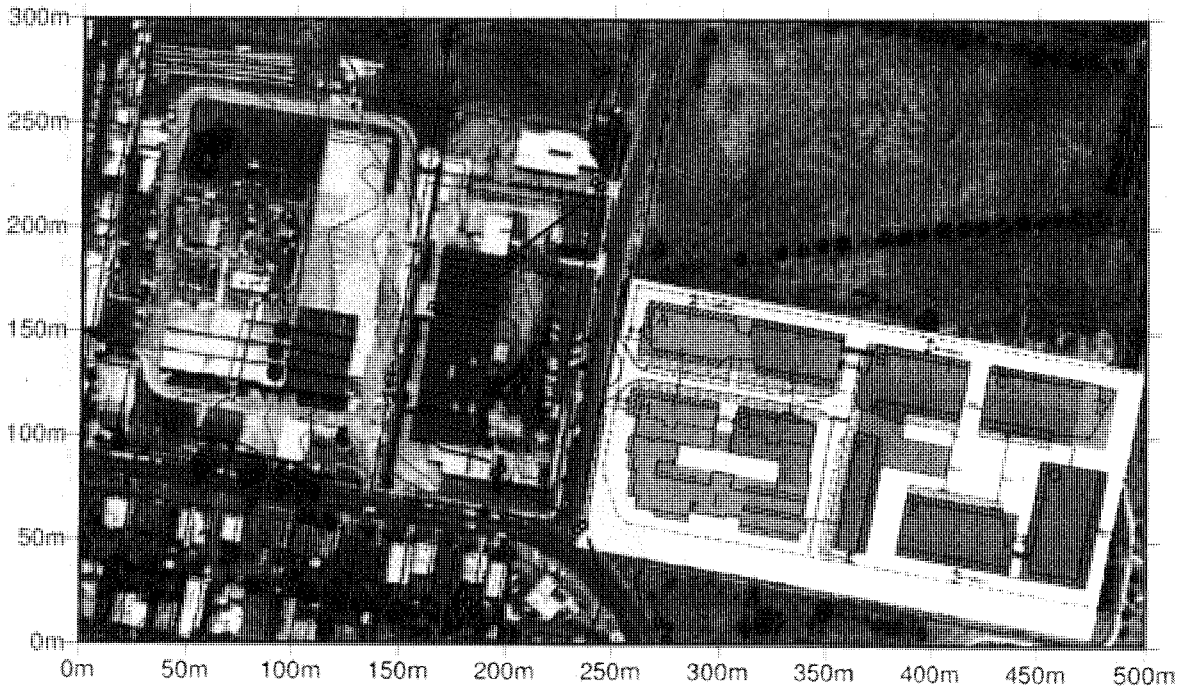
Attachment 3

Amended Xylene Modelling

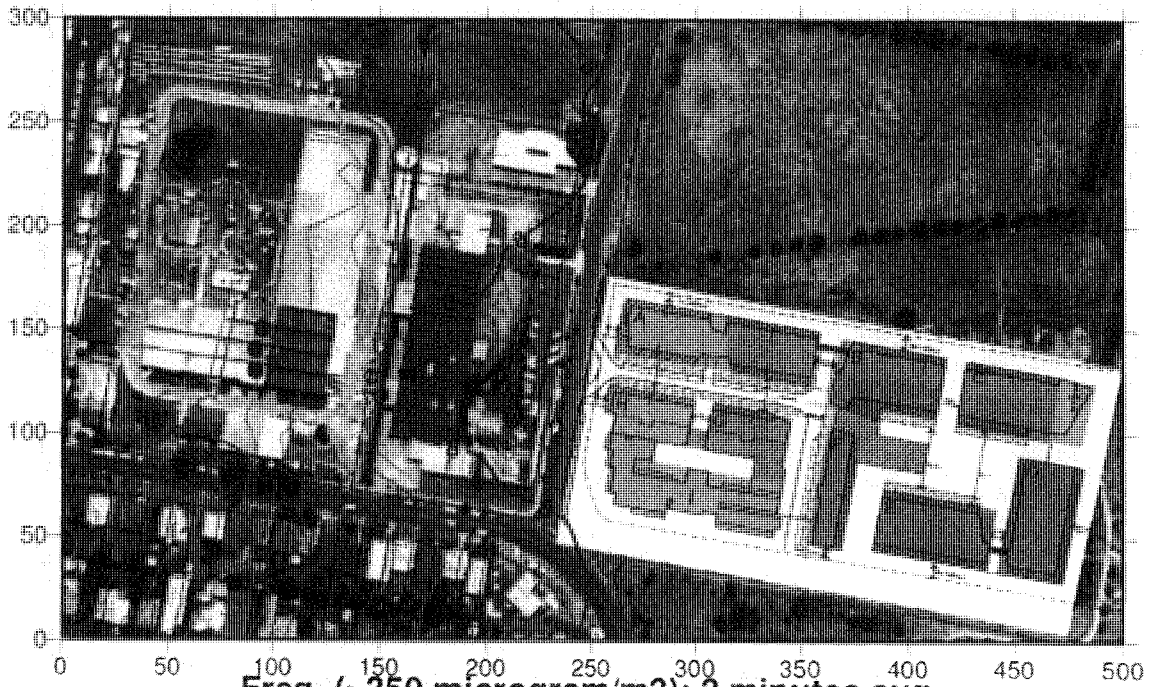
Results Plots

Akzo Nobel - Xylene - Level 1 - Sept05 Model with 3 Release Points - 99.9%ile Contour



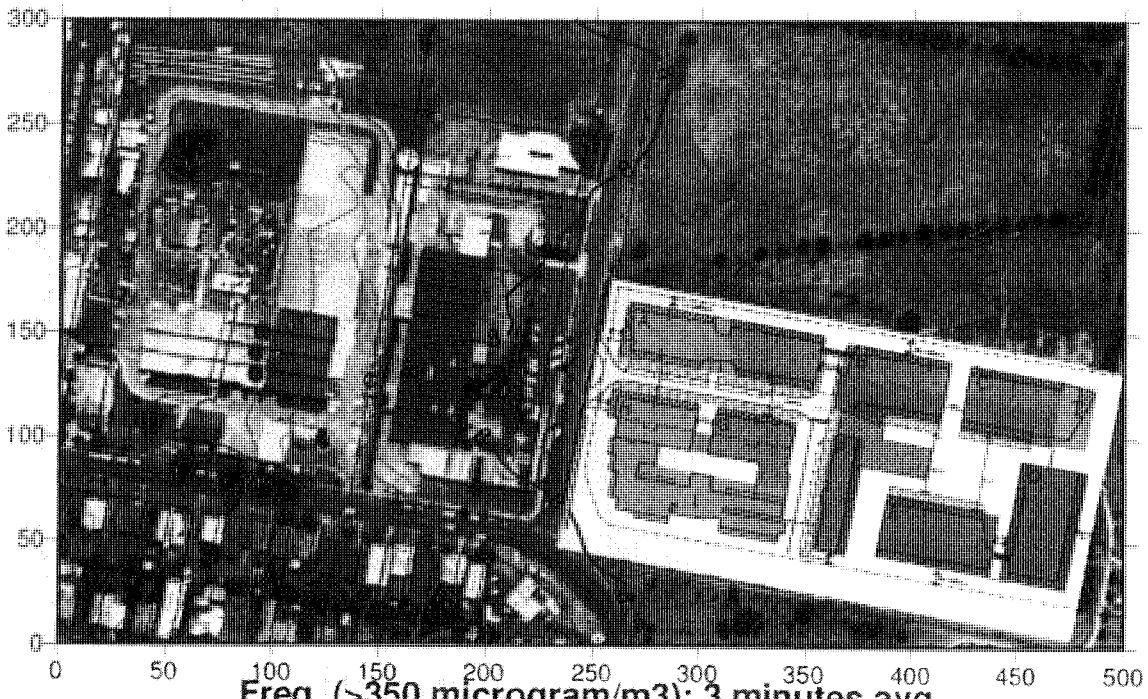
Freq. (>350 microgram/m3); 3 minutes avg.

Akzo Nobel - Xylene - Level 2 - Sept05 Model with 3 Release Points - 99.9%ile Contour

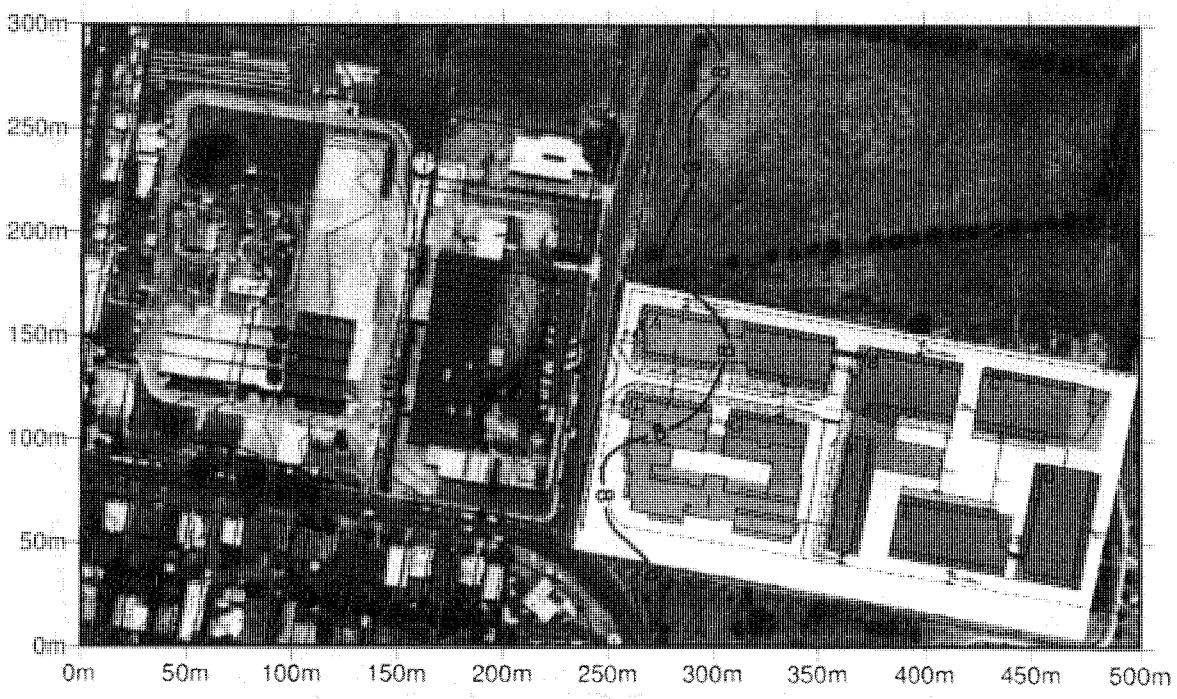


Freq. (>350 microgram/m3); 3 minutes avg.

Akzo Nobel - Xylene - Level 3 - Sept05 Model with 3 Release Points - 99.9%ile Contour

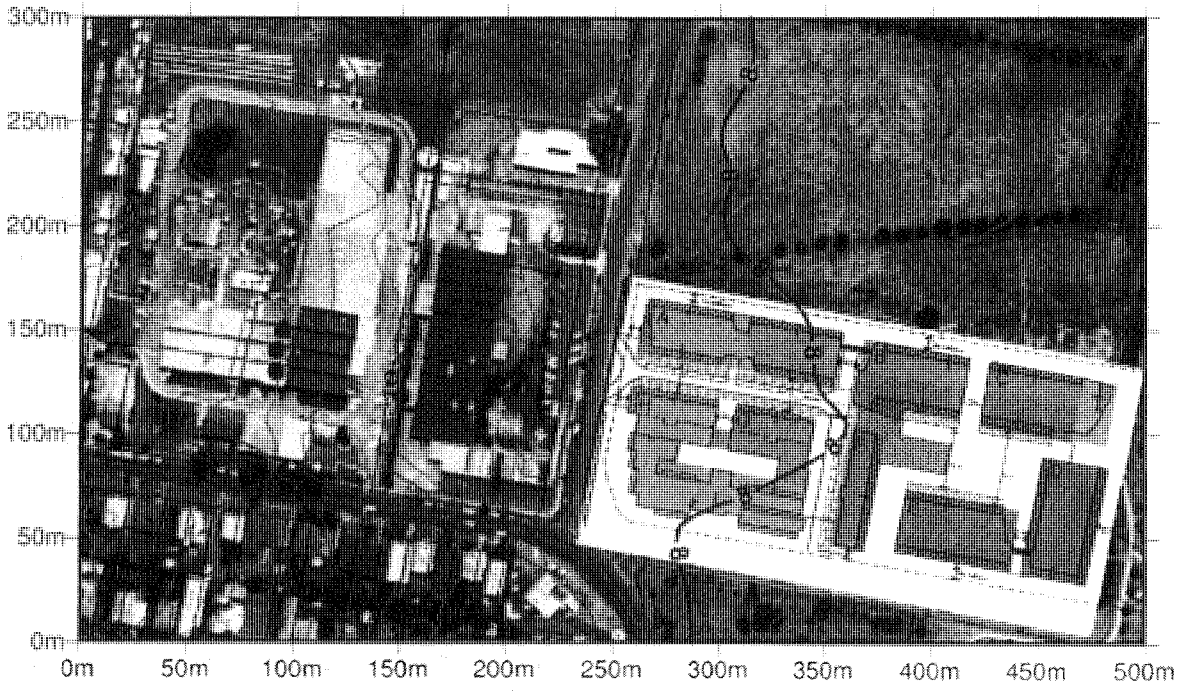


Akzo Nobel - Xylene - Level 4 - Sept05 Model with 3 Release Points - 99.9%ile Contour



Freq. (>350 microgram/m3); 3 minutes avg.

Akzo Nobel - Xylene - Level 5 - Sept05 Model with 3 Release Points - 99.9%ile Contour



Freq. (>350 microgram/m3); 3 minutes avg.

APPENDIX H

Sustainability Initiatives

Prepared by

PMM Group

SUSTAINABILITY INITIATIVES TO BE INCORPORATED IN THE YERONGA RETIREMENT VILLAGE
Sustainability is considered in all elements of the built environment including Infrastructure, Buildings, Landscape and Fitout

The development intends to achieve to the *BCC 15 Principles for Sustainable Development* through the implementation of the following guidelines. This table contains relevant items from the BCC Guidelines for Sustainable development (shown in green) as well as a range of additional initiatives. Construction and Occupancy initiatives will be refined as the project progresses.

SUSTAINABILITY VISION
'Our mission is to improve the quality of life of the aging communities in Yeronga Retirement Village.
We recognise the important links between environmental health and community health and we aim to improve and maintain the surrounding natural and social environments where possible and minimise the negative impacts resulting from the siting, design, construction and operation of our retirement and nursing facilities.'

PRE-DESIGN	DESIGN & DOCUMENTATION	CONSTRUCTION	OCCUPANCY (BCC Principle 15: Inform the end owner and user)
SUSTAINABILITY PROJECT MANAGEMENT (BCC Principles 1. Establish agreed sustainable design values 2. Apply and integrated and collaborative design and construction process)			
Early integration of sustainability advice ▪ Commence integration of ESD advice has at project initiation and continue throughout design, delivery and occupancy phases, maximising environmental and social benefits and cost savings. **Set targets / establish vision** ▪ Establish and agree on Sustainable design values / vision using a collaborative process. Ensure that it is clearly communicated to and agreed by all stakeholders This vision is stated above. ▪ Set performance targets both short term and long term. **Community consultation** ▪ Promote active community involvement, consultation, participation and collaboration in the decision making process for: - planning, - development and - long-term management of the development. ▪ Involve the community in meetings to discuss what they want and need and how it will be provided. This encourages local residents to actively participate in the project, and helps overcome any future objections and ensure the community is committed to sustainable outcomes. ▪ Ensure decision processes are integrated and inclusive. **State / Local Government Involvement** ▪ Ongoing involvement of council planning and environmental representatives in inception and early design stages to ensure any issues are addressed and resolved early in the process.	**Collaborative design process** ▪ Establish a collaborative design process engaging the multiple design disciplines, users, community, local council, government agencies where applicable (eg EPA), construction managers, contractors and facility managers. Use an open communications process to facilitate merging of ideas, perspectives and areas of expertise. **Ongoing design review process** ▪ Assess design against proposed vision: Every decision should have concern for sustainable outcomes Always consider all sustainability elements in relation to one each other. **Education** ▪ Implement implicit and explicit educational elements into the building form. For example: - explicit education may take the form of signage - implicit education may take the form of expression of building elements eg. rainwater collected off the roof into clearly visible tanks suggests that there is a finite source of water and it should not be wasted.	**Building commissioning** ▪ Improve building services performance and energy efficiency through adequate commissioning and handover to building owner. **Environmental Management:** The contractor should; ▪ provide and implement a comprehensive Environmental Management Plan for the works. ▪ have ISO 14001 Environmental Management System accreditation applicable to the construction of this building.	**Ongoing improvement** ▪ Regularly review all initiatives and recorded data and implement amendments where necessary. ▪ Provide an efficient vehicle for ongoing user feedback and corresponding prompt responsive action to ensure occupants' requirements are being addressed. **Sustainability Maintenance Manual** ▪ Provide a sustainability maintenance manual that provides information on ongoing maintenance and information of sustainability elements. **User Education** ▪ Provide user guides for building manager / owner (commercial building), building occupant (house), tenant (commercial tenancy) to enable users to understand and be well informed of all environmental and social initiatives in place. ▪ Provide sustainability awareness training for staff (ongoing and part of staff initiation process) to provide education on the internal and external sustainable initiatives put in place.

PRE-DESIGN	DESIGN & DOCUMENTATION	CONSTRUCTION	OCCUPANCY (BCC Principle 15: Inform the end owner and user)
ENVIRONMENTAL SUSTAINABILITY			
LAND (BCC Principles 3. Design for our subtropical place 4. Protect and restore natural ecosystems **5. Utilise land appropriately)**			
Site selection ▪ Re-use of a brownfield site where the previous light industrial use was no longer compatible with the area.	▪ Integrate passive (eg bushlands / woodlands) and active (eg bikeways / walking tracks) open space. ▪ Provide internal and external greenspace for the development. ▪ Design developments within areas that are already cleared and degraded ▪ Avoid subdividing areas that need extensive preparation so that natural drainage systems and existing ecological systems are preserved Retain these waterways and wetland areas and enhance them for public enjoyment. **INFRASTRUCTURE / BUILDINGS** **Site Analysis / Investigation** Creation of built form that reflects the natural, cultural and historical surroundings is essential in ensuring the creation of a strong sense of place and authenticity. Prior to design commencement conduct a thorough site investigation including: ▪ Site selection considering orientation, access, and topography ▪ Site history both distant and recent, and any indigenous culture ▪ Significant site features ▪ Topography ▪ Significant trees and vegetation to be retained Conduct detailed surveying and evaluation of the on site ecological values and processes including vegetation communities, significant species, wetlands, waterways, and ecological corridors. Plan development to respond to, protect and restore these natural features and processes on the site ▪ Character of local neighbourhood to be enhanced and reflected ▪ Opportunities / requirements for improving casual surveillance and amenity of streets and open spaces ▪ Opportunities for passive heating and cooling ▪ Site landscape values Investigate opportunities to enhance and protect existing values, including shade cover, scenic amenity, sense of place and natural bushland ▪ Overland flow paths **Building Footprint** ▪ Reduce building footprint, optimise layouts and reduce size of roads, parking and other site improvements to concentrate and limit total paving and other site disturbance. ▪ Commercial / public / multi-residential buildings: - Minimise corridors and circulation spaces - Design main circulation spaces to allow conversion to multi tenant use as a possible future requirement. - Provide double loaded corridors to provide maximum space efficiency. - Do not provide more than the code required number of stairs. - Stack regularised floor plates one on top of the other. - Design to accommodate relevant requirements – do not provide additional car parking or circulation space. **Minimise heat sink** ▪ Minimise the amount of impervious surfaces within the development. ▪ Reduce area of road surface – narrow roads, pedestrian/ cycle ways alternatives (savings on infrastructure costs) ▪ Cover / plant trees to provide shade to solid heat radiating surfaces such as walls and carparking areas to minimise the heat absorbed and re-radiated and to reduce the glare ▪ Provide street trees to provide shade and enhance the quality of the street ▪ Investigate treating access roads (not used by heavy vehicles) and walkways in an informal manner. Use porous surface materials to define and mark special territories. This provides; - functional spaces for vehicle access and service, - courtyards for social activities, - areas where rain can be absorbed into the ground through porous paving. - areas for climatic moderation, **Soil / Topography** ▪ Design buildings to suit topography to minimise cut and fill and minimise the extent and duration of disturbance	**EARTHWORKS** **Soil / Topography** ▪ Balance cut and fill requirements on site and avoid fill or topsoil removal from site ▪ Store leaf litter and topsoil layers separately from other soil in designated controlled areas for future re-use in landscaping works The benefits of this include - Providing a seed bank of appropriate endemic species - Reducing the need for soil from other sites - Reducing the risk of spreading fire ants ▪ Provide surface stabilisation of exposed soil to stop erosion by wind or water. Implement adequate erosion and sediment controls such as sediment fences (permeable barriers) or sediment control ponds ▪ Divide construction work into manageable stages to make it easier to control erosion, sedimentation and nuisance dust; ▪ Minimise disturbance to off site areas **Contamination** ▪ Construction landscape and waste materials are appropriately and securely stored on site ▪ Materials being imported to the site are free from contamination and pests and landscaping materials are certified to AS 4454-2003 for the current Australian Standard) **Biodiversity / Flora and Fauna** ▪ Avoid clearing outside the building footprint ▪ Minimise disturbance of flora and fauna to off site areas **Hydrology / Stormwater** ▪ Minimise impacts to existing site groundwater flows during construction.	**Soil / Topography** ▪ Monitor erosion and control with non-invasive grass species as required. ▪ Monitor and maintain termite barriers. **Biodiversity / Flora and Fauna** ▪ Monitor and replace vegetation / trees where required. ▪ Remove foreign / introduced pest species. ▪ Manage domestic pet impacts on the local environment (e g. exclude/restrict pet numbers or movements through covenants); ▪ Investigate legal instruments such as covenants and body corporates to provide long-term bio-diversity protection ▪ Provide education on vegetation species through signage on trees.

PRE-DESIGN	DESIGN & DOCUMENTATION	CONSTRUCTION	OCCUPANCY (BCC Principle 15: Inform the end owner and user)
	▪ Avoid specification of chemical termite treatments. Use barrier methods (eg Temimesh) and provide education for occupants on maintenance and regular checking. **Contamination** ▪ Contaminated land or land with contaminated facilities should not be included in public spaces such as road, park or reserves **Biodiversity / Flora and Fauna** ▪ Minimise impacts to site and surrounding flora and fauna. ▪ Preserve existing indigenous vegetation while removing any foreign introduced species (leopard trees in waterway corridor) ▪ Preserve and establish wildlife corridors (on and off site); ▪ Provide green spaces for public use ▪ Incorporate deep planting for substantial trees ▪ Investigate incorporation of community gardens **Hydrology** Minimise interference with natural site hydrology: ▪ Avoid structures that penetrate and dam water flows below natural ground level. ▪ Use porous paving surfaces to minimise stormwater runoff and re-charge ground water ▪ Consider using infiltration trenches (soakage trenches) ▪ Use swales to channel stormwater runoff **LANDSCAPE** **Soil / Topography** ▪ Provide erosion control measures for all areas that are not going to be covered by building, paving or new planting. ▪ Minimise the amount of grassed areas to reduce future water demands and use hardy grass types where lawn is required; **Biodiversity / Flora & Fauna** ▪ Rehabilitate degraded areas, ▪ Specify endemic/ locally occurring vegetation for all landscaping. This helps to reinstate native vegetation communities, provision of local habitat, and re-establishment of fauna movement corridors ▪ Provide for future growth opportunities and maintenance of ecological processes ▪ Enable fauna corridor connectivity through provision of appropriate fauna furniture **Hydrology / Stormwater** ▪ Investigate collection of runoff from paved areas for treatment through stormwater system before dispersal into waterways. Specify gravel filled trenches and dams for stormwater collection, drainage and storage. Stored water seeps through gravel and earth banks providing natural filtering of stormwater before it flows into local waterways. ▪ Design 'water features' and overland flows that mimic natural situations to manage runoff / overflow. ▪ Investigate use of porous paving to minimise stormwater runoff and re-charge ground water. ▪ Investigate using swales to channel stormwater runoff ▪ Select landscape plantings from site endemic species to avoid / reduce the need for irrigation. ▪ Investigation of solutions to improve local flooding situation through regeneration of existing water way.	▪ Eliminate site run off during construction to prevent soil removal from site.	
WATER (BCC Principle **6. Apply integrated water management)**			
▪ Contact local water authority to investigate: - approvals required - legislation on recycled water (rainwater, stormwater, greywater, blackwater) - any rebates or headworks charge reductions available.	Prepare an integrated water management strategy for the development that considers. - Rainwater - Stormwater - Grey water - water conservation fixtures, fittings and appliances The strategy should focus on minimising water into and out of the site.		
ALTERNATIVE SUPPLY			
▪ Ensure collection, treatment and use complies with EPA and local council requirements. ▪ Determine the overall water balance within the development. ▪ Involve the Fire Department in preliminary stages to establish their water quality and pressure	**Investigate all site water collection and re-use options as well as waste water treatment options:** **Rainwater Collection Tanks** ▪ Investigate collection and use of rainwater from communal tanks for landscape irrigation ▪ Ensure tanks are installed with an appropriate capacity for and connection to suitable uses. All connections should be plumbed in accordance with the Australian Standard 3500 – Plumbing and Drainage 2003 (or the relevant Australian Standard ▪ Investigate using tanks to collect condensation from any cooling tower or air conditioning plant		**Education** ▪ Provide ongoing occupant education on water saving practices.

PRE-DESIGN	DESIGN & DOCUMENTATION	CONSTRUCTION	OCCUPANCY (BCC Principle 15: Inform the end owner and user)
requirements for fire fighting. ▪ Investigate Queensland Health policy guidelines for safe use of rainwater tanks.(soon to be in draft form) ▪ Establish in preliminary stages the best and most acceptable uses for different water sources in terms of public acceptance, cost and environmental implications.	**WATER RECYCLING OPTIONS** **Greywater** ▪ Investigate reuse of grey water for landscape irrigation either on site or in conjunction with sewage treatment plant nearby. **Stormwater** ▪ Investigate collection and reuse of stormwater from roads / paved areas for landscape irrigation.		
CONSERVATION OF POTABLE WATER			
▪ Contact local water authority, state and federal government to investigate: - approvals required - any rebates available	**INFRASTRUCTURE** ▪ Improve water infrastructure installation standards to reduce ongoing maintenance. **BUILDINGS** **Water efficient fittings and appliances** <u>Taps</u> ▪ Min. AAA rated taps and shower roses. - Flow rate of taps adjusted while maintaining spray pattern through flow regulating aerators. - Fit showers with digital readout meters showing water consumed and duration of shower. ▪ Mixer taps with flow control valves. They effectively mix hot and cold water with minimal wastage. ▪ Hands free infra red taps to reduce the duration of flow. (require energy to operate) <u>Toilets</u> *Toilets account for a significant portion of total water demand.* ▪ Dual flush (3/4.5 litre = AAAA Smart Flush) toilet cisterns. ▪ Waterless urinals. <u>Appliances</u> ▪ Min AAA rated appliances. eg dishwashers and washing machines <u>General</u> ▪ Provide car washing areas that drain to the garden, not the stormwater system **Hot water** *(Heat is lost while water sits in the hot water pipe between the heating system and the tap. Water wastage occurs when the user runs tap while waiting for hot water to come through the pipe.)* ▪ Investigate installation of a hot water ring main ▪ Insulate hot water pipes to reduce heat loss and water wastage. ▪ Investigate installation of a heat trace system to keep hot water pipes warm. ▪ Investigate opportunities for stacking wet areas above each other and in close proximity to each other to reduce pipe runs for hot water. **Monitor use** ▪ Investigate installation of smart metering systems and timers for user education in water use and awareness. ▪ Locate meters in highly visible and frequently used areas. They will show information on water use in the current and previous billing period and the associated cost of that use. **LANDSCAPE** ▪ Investigate sourcing water for landscape irrigation from on-site rainwater collection and recycled grey water ▪ Investigate use of irrigation systems that are subsoil drip systems with automatic timers with rainwater / soil moisture sensor control override and set to strategic watering times to avoid excess evaporation. ▪ Ensure landscaped areas are well mulched to - reduce evaporation and - control weeds (weeds take moisture and nutrients from the soil) ▪ Ensure all plant species specified for landscaping will be endemic and suited to the soil type and climatic location. Any high water use plants specified should be located close to stormwater retention areas ▪ Minimise the amount of grassed areas and use hardy grass types where lawn is required. This will; - reduce future water demands and - reduces use of fertiliser, herbicides and pesticides. ▪ Incorporate deep rooted trees to help to maintain the natural water table		

PRE-DESIGN	DESIGN & DOCUMENTATION	CONSTRUCTION	OCCUPANCY (BCC Principle 15: Inform the end owner and user)
ENERGY ▪ **Conservation** ▪ **Passive thermal design** ▪ **Supply** (BCC Principle 7: Manage energy use)			
CONSERVATION			
▪ Contact local, state and federal government to investigate: - any rebates available ▪ consider engaging a specialist environmental engineer ▪ If a number of commercial buildings are being designed / constructed simultaneously investigate sharing mechanical plant with other new surrounding office buildings to provide economies of scale, better shoulder loadings and better redundancy.	**Air-conditioning** ▪ Ensure that all parts of the air-conditioning systems (motor chillers etc) are the most efficient available and that they are well maintained ▪ Ensure that air conditioning systems are on timers set to when occupants are in residence and that they switch off outside these times. Enable manual switching. ▪ Control temperature in zones – zones near glazing having different temperatures to internal zones. ▪ Set air conditioning to a wider temperature range to minimise the cooling energy required. ▪ Change temperature settings in summer and winter to align more closely with outdoor temperatures (warmer in summer and cooler in winter). ▪ Investigate the cost effectiveness of double glazed emissivity rated glazing. ▪ Ensure that the amount of space to be heated or cooled can be controlled and minimised. For example don't try and heat / cool large open plan areas with high ceilings. Heat or cool smaller rooms with doors that can be closed off. ▪ Ensure that the passive thermal performance of the building is taken into account when sizing A/C equipment. ▪ Use ceiling fans or portable fans to improve comfort levels during hot humid summer days – they require very little energy. ▪ Use bar heaters on the wall for room heating. Consider gas or oil. ▪ Consider high or raked ceilings. Ceiling heights of 2700mm minimum to living areas, kitchen and bedrooms to enable heat to rise and enable habitable space in room to remain cool. **Artificial Lighting** ▪ Provide clearly labelled switching that is easily accessible for building occupants ▪ Avoid incandescent lighting where possible ▪ Specify low energy light fittings - fluorescent. Minimum installation of kitchen, laundry and one living area. ▪ Specify low level lighting to the entire room and bright task lighting where light is needed to minimise overall energy used for lighting and improve user control. ▪ Specify dimmers on lights where possible to reduce light output and extend lamp life. ▪ Ensure lights near windows are on a separate switching system from those in dim internal areas **Hot Water** ▪ Investigate energy efficient hot water systems available including: - Solar (with gas or electric off peak booster to heat water on overcast weather) - Heat Pump System - Instantaneous Gas ▪ Locate wet areas in close proximity and locate hot water systems close by to minimise the amount of hot water wasted ▪ Insulate hot water pipes ▪ Connect dishwashers to both hot and cold water. Heating water in a dishwasher consumes a large amount of energy. ▪ Install mixer taps to minimise hot water wastage during temperature adjustment process. Install mixer brands that do not automatically draw on hot water and that enable manual control of flow rate (part flow / full flow). ▪ Investigate using a hot water ring main and heat trace system to maintain water heat in the water pipe to reduce heat lost while water sits in the hot water pipe between the heating system and the tap. **Timers and Metering Systems** ▪ Install timer controls daylight or movement sensors to switch off lights and ventilation systems automatically ▪ Separate lighting and air-conditioning circuits, so they can be monitored independently. ▪ Provide sub-metering to monitor: - all floors - all tenancies - all substantial energy uses individually ▪ Specify sensors or timers on lighting so it turns off automatically when the room is out of use. ▪ Locate meters in a highly visible and frequently used area. Specify meters that show current period and previous energy use and associated cost of that use ▪ Investigate having meters accessible by utility providers to provide remote readings to reduce the need for utility staff to take manual readings		**Energy Performance Improvement** ▪ Establish actual energy performance using a rating tool. Use actual performance to set realistic targets for performance improvement. ▪ Ratings can be used to provide: - An indication of how the building compares in the current market. - a marketing edge through energy efficient building performance. ▪ Have a purchasing policy for energy efficient equipment – min. 4 star energy rating.

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	Energy Efficient Equipment ▪ Where appliances are specified, ensure that they have a high energy star rating. (minimum 4 Energy Star rated). **Outdoor clothes drying areas** ▪ Where possible provide outdoor clothes drying areas that receive sunlight for a minimum of 2 hours per day and is open to breeze. **Natural Lighting** ▪ Optimise use of natural lighting while minimising heat and glare. *(Refer also to HEALTH Visual Comfort)* ▪ Consider use of skylights atriums Light shafts and adjustable shading **Natural Ventilation** ▪ Optimise use of natural ventilation *(Refer also to ENERGY Passive Thermal Design)* **LANDSCAPING** ▪ Investigate low energy lighting systems. eg solar powered street lighting.		
PASSIVE THERMAL DESIGN			
Orientation and Form *Building orientation has a major affect on the energy consumption of the building. Do not overlook orientation in place of competing forces of orientation of the land, the street frontage, optimising floor to wall ratios, views and aspect.*	**BUILDINGS** Reduce the energy required for artificial heating and cooling and lighting through climate focussed building design. **Orientation and plan form** ▪ Passive thermal design is effectively facilitated by a simple long, narrow, rectilinear forms and building layout, including simple roof forms to maximise solar access for natural light and heating as well as cross ventilation. ▪ Preferable building form of longer north and south elevations and shorter east and west elevations. ▪ Where possible locate longer faces of the building facing slightly east of North to enable easier sun control. (15deg west of north through to 30deg East of North is acceptable.) ▪ Consider the position of the building on the site optimise access to light and breeze for indoor and outdoor space ▪ Consider the function of the rooms within the building (North: living areas, South: bedrooms, study, West / East: bathrooms/laundry/ garage). **Sun Control** <u>Sun shading</u> ▪ Provide shading to all windows and walls in summer with large overhangs / eaves ▪ Shading intent. - Summer shade the interior and any communal outdoor areas - Winter: allow winter sun inside and into communal outdoor areas to provide warmth ▪ Design shading devices to suit the orientation (East and west elevations require some screening over the sides / face of windows to prevent low angle summer rising and setting sun. The North elevation requires only awnings over because the sun is high in the sky. South elevations may require awnings over with vertical fins on the east and west sides to prevent low angle rising and setting sun from the South East and South West. The exact angles and dimensions of these sun shades can be calculated by your building designer.) <u>Windows</u> ▪ Design glazing size and location to minimise heat gain in summer and heat loss in winter. - Provide fewer windows on the east and west elevations. Too much unshaded glass on the East and West can cause serious heat load problems. - Aim for a maximum 15% glazing ratio (window to floor area ratio) ▪ Investigate special tinted, thermal glass to allow light and minimise heat transfer for large areas of glazing. Do not rely solely on tinting glass – it is neither economical nor efficient. **Insulation** ▪ Specify bulk thermal insulation and radiant barriers in the roof and walls Use insulation with the highest R-values available ▪ Investigate the thermal transfer properties of the window frame and glazing systems. Eg aluminium framing fitted with thermal bridging can assist in reducing heat transfer. ▪ Investigate using double glazed windows. ▪ Ensure the building envelope (doors and windows) is sealed with durable seals. <u>Reflectivity and Colour</u> ▪ Investigate heat gain issues of colours selected for façade and roof – use highly reflective / light coloured materials They absorb less heat than dark colours ▪ If necessary consider specialist coatings for improving thermal performance of base materials. ▪ Consider using steel roof sheeting because it stores the least heat. **Natural Ventilation** ▪ Use open plan design to promote ventilation. ▪ Design shading devices to control rain penetration to enable windows to remain open in rainy conditions thus maintaining effective ventilation. ▪ Locate doors and windows to facilitate natural ventilation. (don't align openings on opposite sides of room – air moves straight through leaving still air in corners – Offset openings on opposite sides of room to encourage air to move around the room on a path to the other opening.) ▪ Consider using adjustable ventilation openings through to the open living spaces / hallways in rear bedrooms to enable effective cross ventilation where		

PRE-DESIGN	DESIGN & DOCUMENTATION	CONSTRUCTION	OCCUPANCY (BCC Principle 15: Inform the end owner and user)
	external elevations are limited. ▪ Vent high ceiling spaces to remove built up hot air. ▪ Vent hot air from above fridge and oven recesses using insulated vents to exterior. ▪ Install openable windows to provide natural ventilation during the cooler months of the year. Ensure HVAC system is designed to be compatible. ▪ Design carparking spaces to be open sided to allow natural ventilation and natural lighting. **Mass of building materials** ▪ Heavy weight / mass materials store and release heat energy stabilising internal temperatures, providing cooler indoor temperatures during summer and warmer indoor temperatures during winter. ▪ The benefits of mass materials are only achievable in internal areas that are exposed to sun during winter. In multi-residential buildings these areas can be very limited. Locate mass materials in areas where they will be most effective. eg. Living areas where people relax and congregate. ▪ Specify floor coverings that promote heat transfer including: - exposed concrete slab (eg polished concrete) - ceramic/ terracotta/ concrete tiles, - linoleum ▪ Avoid materials that prevent heat transfer including: - timber floor coverings - carpet **Thermal Modelling** ▪ Have passive thermal design modelled – aim to achieve a minimum energy rating of 5 stars. ▪ Provide assessments of thermal comfort levels during the design phase to guide design options. Assess results against benchmarks and targets **LANDSCAPE** **Sun Control** ▪ Investigate using landscape plantings to control solar access and shade to interior and exterior spaces Use trellises and deciduous climbing plants to provide shade in summer and allow sun in winter **Natural Ventilation** ▪ Investigate using landscape plantings to redirect cooling breezes into the house and provide protection from cold westerly winds.		
ALTERNATIVE SUPPLY			
▪ Contact local, state and federal government to investigate: - approvals required - any rebates available	Investigate use of alternative energy supplies including: ▪ Natural gas for; - hot water heating or backup for solar, - cook tops, - oven - heaters and - BBQs. ▪ Solar power for specialised equipment such as; - landscape lighting, - water pumps and - hot water systems.		
MATERIALS (BCC Principle *8: Select appropriate building materials)*			
▪ Avoid any materials containing / using products in the National Pollutant Inventory (NPI).	Investigate implementing the following criteria for selection of building materials to: ▪ reduce the amount of new materials manufactured, ▪ reduce the use of toxic chemicals in manufacture and in the products themselves **DESIGN / DOCUMENTATION MATERIALS** ▪ Use recycled paper or paper alternatives ▪ Reduce the number of coloured inks used ▪ Use low VOC inks or ink alternatives ▪ Recycling toner cartridges ▪ Provide an electronic copy of the application in addition to the required number of hard copy documents ▪ Provide relevant sections of the approved construction drawings on A4 or A3 for use on site as not everything on each A1 page is relevant to each sub contractor. Smaller sizes are more manageable and save paper and ink	**Civil work** ▪ Pipes and conduits - use HDPE not PVC. ▪ Use precast concrete and / or prefabricated elements.	

PRE-DESIGN	DESIGN & DOCUMENTATION	CONSTRUCTION	OCCUPANCY (BCC Principle 15: Inform the end owner and user)
	CONSTRUCTION MATERIALS SELECTION **Design for assembly and disassembly** ▪ Use standard material sizes and components to reduce waste ▪ Avoid hybrid bonded products where possible. ▪ Mechanical fixing typically facilitates end-of-life options and repair – eg bolted rather than welded connections in steel members. Difficulty in separating materials and components is one of the main reasons for low rate of recycling. (modern construction techniques do not allow for future disassembly of materials and components) **Adaptability and appropriate lifespan** ▪ Consider the actual required product life in the design selection – a product may be capable of lasting 20 years in an application, but if churn is going to see the product replaced in less than this (eg 2-5 years in retail) the focus needs to be on minimising waste in churn rather than inherent durability. ▪ Design open plan spaces with minimal interior walls allow for growth and change. **Recycled and Recyclable materials** ▪ Using recycled materials helps create a viable market for recycled products which is beneficial to those involved in the demolition market ▪ Investigate concrete with a significant recycled content: - Replace nature aggregate (stone and sand) with crushed concrete from demolition, slag aggregates and manufactured sands. - Replace cement with industrial waste products such as fly ash, slag and silica fume to replace cement. *Concrete's main environmental impacts are greenhouse gas emissions from cement production and the mining of raw materials. Replacing a proportion of the materials with recycled content can significantly reduce embodied energy, greenhouse gas emissions, decrease landfill and reduce costs.* ▪ recycled steel. ▪ recycled timber ▪ recycled carpet (eg Interface modular carpet) ▪ Work with current recycling capabilities rather than speculating on future technologies in predicting product recyclability. **Multiple functions** ▪ Design to enable elements of the building to have many roles for example structural, climatic and aesthetic creates a reduction of redundancy in the building system and enables the highest environmental benefit to be gained for the dollar value. **Optimal structural efficiency** Design using: ▪ Simple geometrical planning ▪ Modular and regular structure ▪ Optimal spans for materials ▪ seasonal / composite timber elements. ▪ Prefabricated elements ▪ Avoid secondary structure that covers primary structure (eg avoid boxed in eaves or bulkheads). Secondary structures cause problems in relation to durability. **Renewable resources** ▪ Specify timber and composite timber products from: - Forest Stewardship Council (FSC) certified timber (certified environmentally responsible forest management practices) ▪ Specify materials that are renewable and have the least impact on the land **Durable materials to minimise maintenance** ▪ The environmental impact and embodied energy of materials are partially negated where materials are durable and can be reused or recycled. **Minimise Embodied Resources (Energy and water)** ▪ An embodied resource is the sum of a resource that goes into making a material including raw material extraction manufacture packaging transport and installation and maintenance ▪ Durability and embodied lifespan must also be considered **Minimise Material Use** ▪ Use materials in an honest manner with minimal finishing. ▪ Design to ensure optimal room sizes to suit function and minimise wasted space. ▪ Avoid over detailing to conserve materials. **Local materials** ▪ Support the local economy and minimise embodied energy in transport **Passive Thermal Performance** ▪ Select materials that contribute to the passive thermal performance of the building. (Eg heavy mass in floors etc – see Energy Section: Passive thermal performance) **Contamination / Health**		

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	▪ Investigate the manufacture process of materials and where possible use materials that cause the least contamination in manufacture. ▪ Avoid specification of products containing VOC's - Use water based paint finishes - Use joinery materials such as particle board and / or MDF that are the best quality and highest durability and moisture resistance (these off gas less VOCs because glues are more stable, however avoid MDF if possible because it still off gasses for many years) - Use durable material oil finishes in place of clear finishes. (eg Organoil:Tungoil is free of artificial polymers and drying agents) ▪ Avoid specification of PVC products including - vinyl on floors (to minimse VOC's Volatile Organic Compounds off gassing into indoor spaces). Consider use of Linoleum (eg Marmoleum) instead of vinyl. - PVC content of major service elements (conduits pipes and cables) Use HDPE for plumbing pipes. ▪ Avoid insecticide sprays for white any protection. Use physical barriers, visible slab edges and Termi-mesh. Educate staff and develop a simple inspection / management plan.		
WASTE & EMISSIONS (BCC Principle **9: Manage Waste)**			
▪ Contact local waste and recycling contractors for site access advice. ▪ Source alternative uses for waste products to reduce the contribution to landfill.	**Minimise waste** ▪ Waste minimisation is broader than just reducing solid waste sent to landfill. Material selection must consider a wide range of impacts including; - global warming - resource depletion - release of chemicals and toxic substances into the environment. ▪ Investigate reduction of building material off cuts, surplus and packaging through design and construction techniques and procurement packages. ▪ Design to maximise prefabrication off site to minimise double handling of materials. ▪ Re-use building material where possible – this avoids both disposal and generation of new materials. ▪ Ask supplier / manufacturer to provide details about the steps they take to minimise waste. Asking the question puts pressure up and down the supply chain to improve practices. ▪ Start with the end in mind. The best way to minimise waste over the life-cycle is to ensure that the product / material can be 1. Reused, 2. Reconditioned and 3. Recycled in that order. ▪ Use supply and fix contracting agreements ▪ Use materials that can be delivered cut to length ▪ Use materials that employ random jointing systems (ie. Don't require jointing over framing members) ▪ Use standardised designs (ie. Optimised quantity take-offs are known) **Recycling - Allocate storage space** ▪ Provide clearly identifiable and distinct facilities for recycling, general waste and green waste ▪ Provide communal garden spaces for recycling and composting. ▪ Locate waste facilities to allow easy access by the collectors and protection for the residents and the public from odour views and collection noise ▪ Install kitchen waste bins with separate compartments for solids, recyclable and composting to encourage recycling ▪ Avoid specifying in-sink erators to encourage organic waste recycling	**TENDER** ▪ Specify all waste requirements and other environmental management system requirements and make obvious to Tenderers. ▪ Investigate allowing only builders with an EMS in place to Tender for construction. **CONSTRUCTION** **Waste Management** Specify that contractor; ▪ Develop a short, clear construction workers induction course in waste management. Request this as part of Builders Environmental Management System (ISO 14001) ▪ provide and implement a comprehensive waste management plan for each stage of the development aimed at reducing waste to landfill during demolition, infrastructure, building and landscape construction and fitout stages through avoidance, reuse and recycling strategies. ▪ Investigate sorting of recyclable wastes (determined by the local system) on site:	**Education** ▪ Provide an education programme for new residents / owners / tenants regarding the waste minimisation strategies included in the development
SOCIAL SUSTAINABILITY			
▪ **Health** ▪ **Economy / Cost Efficiency** ▪ **Spatial requirements** ▪ **Safety** ▪ **Security** ▪ **Transport** ▪ **Equitable Access** ▪ **Social interactions and privacy**	**URBAN DESIGN** ▪ Consider the broader urban environment beyond the site ▪ Design mixed use developments. Places with a greater variety of use create: - opportunities for 'linked trips' reducing travel needs - greater social interaction increasing accessibility. **BUILDINGS** ▪ Good building design is vital. It must be contextual, recognise heritage values and affordable.		

PRE-DESIGN	DESIGN & DOCUMENTATION	CONSTRUCTION	OCCUPANCY (BCC Principle 15: Inform the end owner and user)
▪ **Sense of community** ▪ **Aesthetics**			
HEALTH (BCC Principle 11: Create healthy indoor environments)			
▪ Prioritise health, well-being, comfort and social amenity of the residents.	**Visual Comfort / Natural lighting** ▪ Provide natural lighting with minimal glare control and heat penetration to indoor environments Consider - Skylights to light dark internal areas Ensure they allow light without heat - light shafts - atriums with daylight sensors - shading on windows (adjustable or designed to suit orientation), - 600mm minimum eaves overhang ▪ Where possible consider building plan forms that maximise the access of natural daylight. Avoid deep floor plates in order to allow plenty of natural light. ▪ Paint interiors in light colours – dark colours absorb light, increasing the amount of lighting needed. ▪ Provide accommodation with attractive external views where possible of parkland or vegetation. **Natural ventilation** ▪ provide natural cross ventilation ▪ separate garages and carparks from habitable or communal areas Consider use of weather sealed doors. exhaust fans in garages on a timer or sensor or distance separation ▪ Install air filters where developments are on main roads or in industrial areas **Air quality** ▪ Maximise hard floor surfaces to inhibit parasites such as sand mites ▪ Use mechanical fixings rather than adhesives to minimise VOCs ▪ Specify finishes meeting low VOC content benchmarks including: - painted surfaces to be low VOC - carpets to be low VOC - adhesives and sealants to be low VOC ▪ Avoid specifying composite wood products containing formaldehyde glue or ensure they have very low formaldehyde emissions. ▪ Vent all gas appliances to the exterior. ▪ Consider using plants in communal indoor areas to improve air quality **Access to outdoors** Provide strong connection with the outdoors Consider ▪ provide balconies off main living areas in apartments ▪ provide indoor / outdoor rooms ▪ locate private / communal outdoor space where it will not be exposed to traffic noise levels Commercial ▪ Provide connection through communal outdoor spaces which are shaded and sheltered and non-commercial ▪ Commercial uses such as cafes should be provided at ground level / first floor with indoor outdoor connection		
ECONOMY / COST EFFICIENCY (BCC Principle **10: Consider cost efficiency)**			
▪ Aim to maintain economic competitiveness in the community. ▪ Commit to the philosophy that greater overall returns can be produced by a higher upfront investment. ▪ Investigate alternative development financing options to enable upfront capital cost to be offset against long term savings.	▪ Provide employment opportunities to meet the projected needs of the local community by specifying locally made products and materials. **Lifecycle assessment** ▪ Assess the impact and performance of individual materials products or services over the life of the building ▪ Consider adaptable housing design to enable houses to be readily converted to suit the needs of residences of an extended lifespan **Cost efficiency in construction** ▪ Minimise construction costs by - Designing to suit the site - Specifying standard sizes - Using locally available materials - Using recycled materials **Operating Costs**	▪ Provide employment opportunities to meet the projected needs of the local community by employing a local construction company, trades and labour during construction.	▪ Provide employment opportunities to meet the projected needs of the local community by employing local staff. ▪ Monitor ongoing energy and water costs and make information available to the public (ie via internet) to provide a case study example for future use by

PRE-DESIGN	DESIGN & DOCUMENTATION	CONSTRUCTION	OCCUPANCY (BCC Principle 15: Inform the end owner and user)
	▪ Minimise ongoing operational costs - Through passive solar design - Locating high water-use areas (kitchen, bathroom and laundry) together to minimise plumbing - Using water conservation fittings and fixtures - Using water conservation practices in the garden - Using energy efficient appliances and fittings - Solar hot water systems - Rainwater tanks ▪ Minimise long term maintenance and repair costs - By using self finishing materials (eg bricks, colour render) rather than painted external finishes - Include rainwater tanks		others.
SPATIAL REQUIREMENTS			
Refine design brief to ensure all spaces are: - flexible - have multiple uses. - Are an optimal minimal size to suit function.	▪ Design to minimise wasted space in plan (corridors etc). ▪ Further investigate adaptability of spaces to suit a number of functions and minimisation of spaces to be an optimal size to suit the function.		
TRANSPORT (BCC Principle **12: Support green transport)**			
	URBAN DESIGN ▪ Provide access to existing and planned land uses ▪ Allow for higher densities where development is close to services and facilities ▪ Ensure that accessibility through the development and management of the network is considered in conjunction with location of activities <u>Walking & cycling routes</u> ▪ Non-vehicular access routes to be of primary importance ▪ Provide walking and cycling routes that are direct, pleasant and subject to frequent overlooking or surveillance ▪ Investigate opportunities to implement pedestrian only precincts. ▪ Provide safe access for non-vehicular traffic. ▪ Provide access to existing and proposed cycle and pedestrian networks. ▪ Ensure connectivity of land uses (e.g. paths linking land uses encouraging people to walk and meet), <u>Vehicular routes</u> ▪ Vehicular routes to be of secondary importance to discourage vehicle use (particularly single occupancy journeys) ▪ Provide roads that are a little less direct than walking / cycling routes. ▪ Consider making roadways and traffic less prominent within the streetscapes (narrow roads, mews). ▪ Establish transport links within the neighbourhood to local amenities, to other local communities and to regional centres **BUILDINGS** ▪ If the development is planned close to an existing or planned public transport stop, ensure that the design provides direct and safe access for pedestrians and cyclists. ▪ Design carparking areas to be adaptable for other uses. Consider: - Structural issues such as ceiling height and column locations - Services issues such as ventilation and natural light ▪ Reduce traffic speeds to provide improved road safety and personal security for pedestrians and cyclists **Carparking** Encourage use of alternative forms of transport by providing: ▪ the minimum number of carparking spaces allowed under the local planning provisions. ▪ priority parking for disabled parents with children car poolers bicycles and motorcycles ▪ Increased car parking spaces for smaller fuel efficient vehicles (eg. small cars, mopeds, motorbikes) **Cyclist facilities** ▪ Provide facilites to encourage cycling including secure bike storage, accessible showers, changing facilities with secure lockers. **LANDSCAPE** ▪ Provide comprehensive shading along cycling / walking networks to provide climatic comfort ▪		**Education** ▪ Provide occupant education to promote use of public transport, cycling and walking.

PRE-DESIGN	DESIGN & DOCUMENTATION	CONSTRUCTION	OCCUPANCY (BCC Principle 15: Inform the end owner and user)
ADAPTABILITY AND EQUITABLE ACCESS BCC Principle 13: Develop adaptable buildngs and spaces)			
	URBAN DESIGN ▪ Accessible Amenity (self sufficiency): Establish communities able to support basic facilities and neighbourhoods with well designed public spaces. Ensure there is equitable distribution of resources and access to them. ▪ Ensure d stinct walkable and well defined neighbourhoods incorporating a mix of uses and activities **BUILDINGS** ▪ Design the built environment to provide equitable, safe and sheltered access to all facilities. ▪ Provide for different abilities and ages in one building or space ▪ Design all communal and public areas to comply with disability discrimination legislation and AS1428. Residential ▪ Design buildings that enable future alterations to accommodate a wider range of people's needs. **Universal access** ▪ Minimum of one accessible bathroom containing a semi-recessed or wall hung vanity and a hobless shower with adjustable shower rose. ▪ Minimum of one accessible room suitable for conversion to a bedroom with a minimum clear dimension of 3 6m x 3 6m and entry door 870mm min wide ▪ Accessible hallways and entries – level thresholds, min door width 870mm, door handles between 900 and 1100mm above finished floor level, min hall width of 1200mm ▪ Footpaths to the house is 1200mm min wide, level (max crossfall 1:40), max ramp gradient 1 14 with no steps ▪ Sufficient space for wheelchair bound person to use the kitchen ▪ All doors to have catches to secure them open ▪ All internal and external swing doors to have lever handles. ▪ Powerpoints to be located a minimum of 600mm off the floor and 500mm from a corner ▪ Large rocker type electrical switches. ▪ Window in each bedroom with sill a max. of 600mm from floor **Services** ▪ provide adaptable conduits and cabling in all new buildings to allow connection to multiple providers ▪ Provide inground services in common trenches **LANDSCAPE** ▪ Ensure public spaces - are located for appropriate shade - are located for appropriate surveillance - are screened or sheltered from any wind-tunnelling effects - are equipped with appropriate lighting and furniture - have attractive and safe plant selection, water features and public art.		
SAFETY (BCC Principle 13 cont.)			
	▪ Slip resistant flooring to all wet areas ▪ Lockable childproof cabinet for storage of poinsons and medicine ▪ Windows and doors fitted with insect screens ▪ Sun shade structures to 50% of out door play areas ▪ Self closing and latching garden gates ▪ Driveway separated from childrens play areas ▪ Kitchen does not double as a passage way ▪ Oven and cooktop located for safety. ▪ All bathroom fittings (soap holders towel rails etc) capable of supporting body weight ▪ Building house number sized and located for clarity		
SECURITY (BCC Principle 13 cont)			
▪ Integrate environmental design to reduce the opportunities for crime.	**URBAN DESIGN** ▪ Provide a sense of security for community members by creating open spaces between main roads and buildings to discourage crime.		

PRE-DESIGN	DESIGN & DOCUMENTATION	CONSTRUCTION	OCCUPANCY (BCC Principle 15: Inform the end owner and user)
	• Encourage passive surveillance and amenity of pedestrian and cycle paths by having active frontages and activity at street level **BUILDINGS** • Specify external door locks with double cylinder deadlocks and keyed alike • Prevent entry through external doors by breaking glass through specification of safety glass • Design external doors to be visible from the street or neighbours property • Provide peephole or safety glass to enable visitors to be seen prior to opening door • Secure external electricity meter box against tampering. • Illuminate external entries at night		
SOCIAL INTERACTIONS & PRIVACY			
	• Design to limit of unwanted physical, visual and acoustic interactions and encourage social interactions of inhabitants. **BUILDINGS** • Include awnings, active frontages and pedestrian amenities to encourage social interaction. • Ensure interactive links between indoor and outdoor spaces by providing covered balcony spaces to all units that link directly with indoor living areas • Provide interactive links between individual houses and community facilities in overall masterplan. • Use adjustable screening for privacy. Screening can also double as sunshading.		
SENSE OF COMMUNITY & PLACE			
This area already contains a large aging population so provision of a retirement village and nursing home facility in this neighbourhood enables locals to relocate within the same suburb and maintain their social network.	**URBAN DESIGN** • Encourage community interaction. - Provide places that facilitate and contribute to community interactions. - Designate and beautify areas to provide people with opportunities for social interaction, sports, entertainment and other identified needs. - Establish community gardens that incorporate environmentally friendly ventures such as vermiculture, composting and recycling; • Integrate artwork: Encourage local art displays/monuments to provide a unique character and focal points to the development. • Address community needs and expectations -Take into account community expectations and acceptability • Design contemporary buildings that are in keeping with local character **BUILDINGS** • Protect, incorporate and re-use existing heritage, character or cultural features **LANDSCAPING** • Provide a sense of identity and place through landscaping, incorporating and recognising the heritage of the site or local area		
AESTHETICS			
• *Aesthetic outcomes are largely determined by achieving the objectives of sustainability through resolution of the biophysical and social impacts.* • *This approach provides a set of quantitative, measurable criteria for the assessment of development proposals. It allows for a diversity of stylistic preferences (reflecting social diversity) thereby creating a more individual and vibrant streetscape.*	**URBAN DESIGN** Preserve and enhance scenic amenity through • Retain or incorporate significant landscape trees and existing vegetation • Maintain and enhance waterway corridors **BUILDINGS** • Expression of climate responsive practices and technologies develop a building style that is very suited to the climatic location. • The implementation of the initiatives discussed will make the development a better place to work rather than a totally conventional non-responsive development / building. • Responses to the sun, breezes and light with practices such as overhangs, controlled plantings, screens, natural day lighting etc will communicate the environmental consideration in the design of the facility. • Use of the visual devices such as solar panels, ventilators, skylights, energy efficient lighting etc will strengthen this communication, providing potential marketing advantages. **General Aesthetics** • Create identifiable and distinctive entries • Protect and enhance streetscape amenity		

APPENDIX I

Servicing Response

Prepared by

BMD and Brisbane Water

MEMORANDUM

Brisbane City

Brisbane Water

To:	[redacted]	Date:	30/8/05
Attn:	[redacted]	Ext:	
CC:	[redacted]		
From:	[redacted]	Ext:	33825
Re:	**15 Cansdale St, Yeronga** **File ref. S2-FFLD 05/01-02**		

System Planning
Level 2, TC Beirne Centre
315 Brunswick Street Mall
Fortitude Valley Qld 4006
GPO Box 1434
Brisbane Qld 4001
Ph.: 07 3403 3825
Fax: 07 3403 3404

This is in response to your email dated 18/8/05, with an inquiry about the sewer alignment for the above development.

In principle, Brisbane Water has no objection to the alignment of the new 225mm sewer being to the west of the existing 300mm sewer. There are, however, some considerations that the developer should be aware of:

- Consent from each property owner, affected by the new sewer alignment, will be required.
- There is an open stormwater drain near the existing 300mm sewer to the north of the development, which may be affected by the new sewer alignment. Advice from Brisbane City Council's City Design section should be sought.
- As the new alignment locates the sewer within the park area, there may be environmental issues to be considered.

I trust this has been of assistance. Please contact me if you have any further queries regarding this matter.

Regards,

[redacted]

Ben Lindeboom,

Supervising Engineer,

System Planning.

Stephen Matthews

From: [redacted]
Sent: Thursday, 18 August 2005 2:23 PM
To: [redacted]
Cc: [redacted]
Subject: BCC Draft Report 15 Cansdale St. Yeronga - Servicing Report
Attachments: image001.wmz

[redacted]

As per your draft report (noted above) we wish to confirm that the 225 dia. Augmentation of the Yeronga Branch Sewer can run parallel to the west of the existing 300 dia, Yeronga Branch Sewer. (subject to detail design & costings.) This would have less disruption to the community and would also be generally in accordance with the report compiled by BCC Water.

Regards,

[redacted]
Senior Civil Supervisor
Ph. [redacted]

BMD CONSULTING
Civil Engineers
Structural Engineers
Project Managers

5/09/2005

1.0 INTRODUCTION

1.1 Background

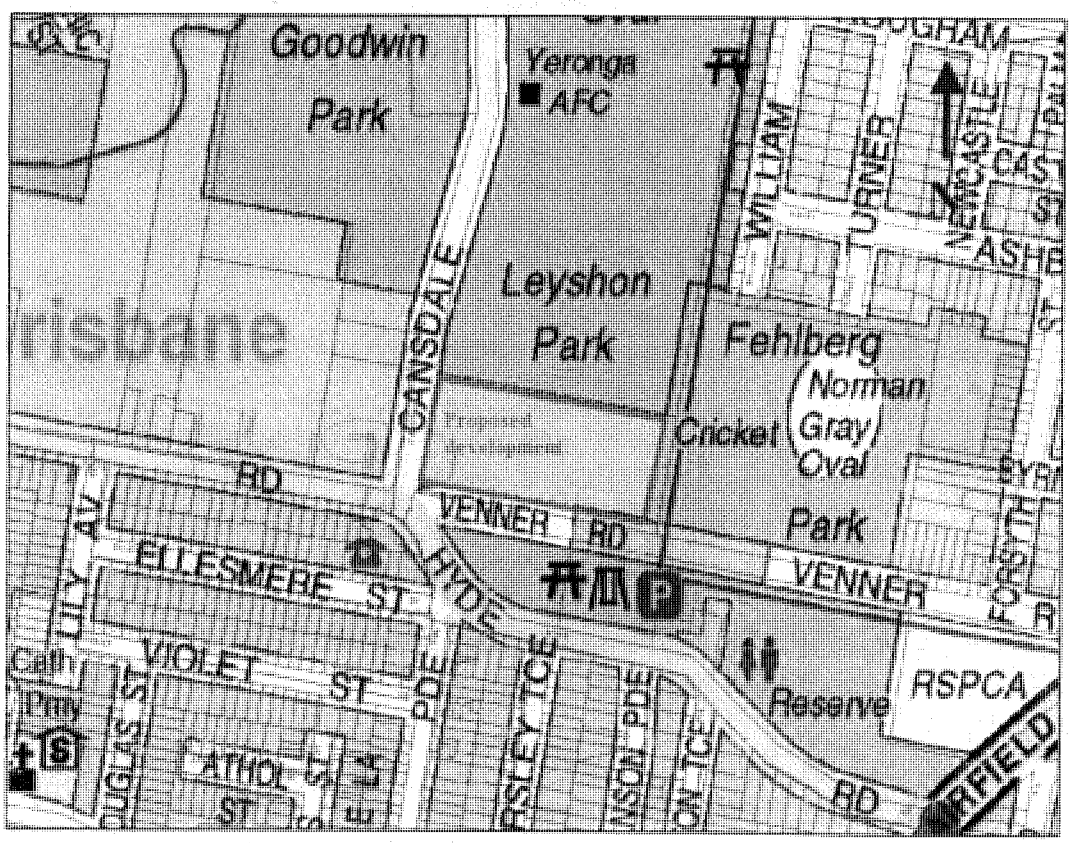
Brisbane Water has been commissioned by BMD Consulting Pty Ltd to carry out an investigation in order to determine water supply and wastewater disposal requirements for a proposed development at 15 Cansdale St, Yeronga.

The development site is located at the intersection of Cansdale Street and Venner Road, 108m wide west side fronting Cansdale St and 237m wide south side fronting Venner Rd. The area consists of a single block of land, lot plan 1 RP 150512, having an area of 2.792 hectares. Current land zoning is Light Industry, meaning a range of light industries and warehouses that are of low environmental impact.

The topography of the development site has a very mild slope towards east with ground elevations vary from approximately 5 mAHD to 6 mAHD.

The development proposal is a retirement village comprising 360 units and retail shops mainly to cater for the in house residents.

1.2 Figure 1 - Location map of the site



BCC.058.8605

2.0 SCOPE OF WORK

The scope of this investigation is limited to the study of Water Supply and Waste Water Disposal requirements, as follows.

Water Supply

- Assessment of potable water supply demands generated by the new development and determination of ultimate demands and loadings on the system.
- Using the demands, assess the impact the proposed development will have on the existing water supply reticulation.
- Identify options for the provision of water supply services, if there are many.
- Identify any augmentation works required to ensure water services meet Brisbane Water's Standard of Services.

3.0 WATER SUPPLY INVESTIGATION

3.1 Existing water supply infrastructure

The development site falls within the Yeronga PRV zone, which receives potable water from the Mount Crosby Water Treatment Plant.

There is a 150mm reticulation main at road frontage in Cansdale St, which terminates shortly after passing the development property boundary. There is another 150mm main in Venner Rd, from which a fire service connection has been given to the existing building in the development site. This main terminates at that location.

The development site is situated in the boundary of the Yeronga PRV zone, that the water mains exist to north and east direction are supplied from a different supply zone, Tarragindi reservoir.

3.2 Water demands

The water demands generated by the proposed development have been determined using the lot plan information supplied by the Consultants. The total peak hour demand rate for potable water equates to 21.7 L/s, calculated in accordance with the "Guidelines for Planning and Design of Urban Water Supply Schemes" and with Brisbane Water's "Standard Design Guidelines for Water Supply Master Planning Studies"

Brisbane City Council's Standard of Services sets two supply criteria for all developments. Firstly, minimum pressure requirements during peak demand periods and secondly, minimum pressures and flows during a fire-fighting event. As the development includes some retail developments, the area is

BCC.058.8606

considered as commercial for the fire fighting requirements, and the fire flow requirement will be 45L/s.

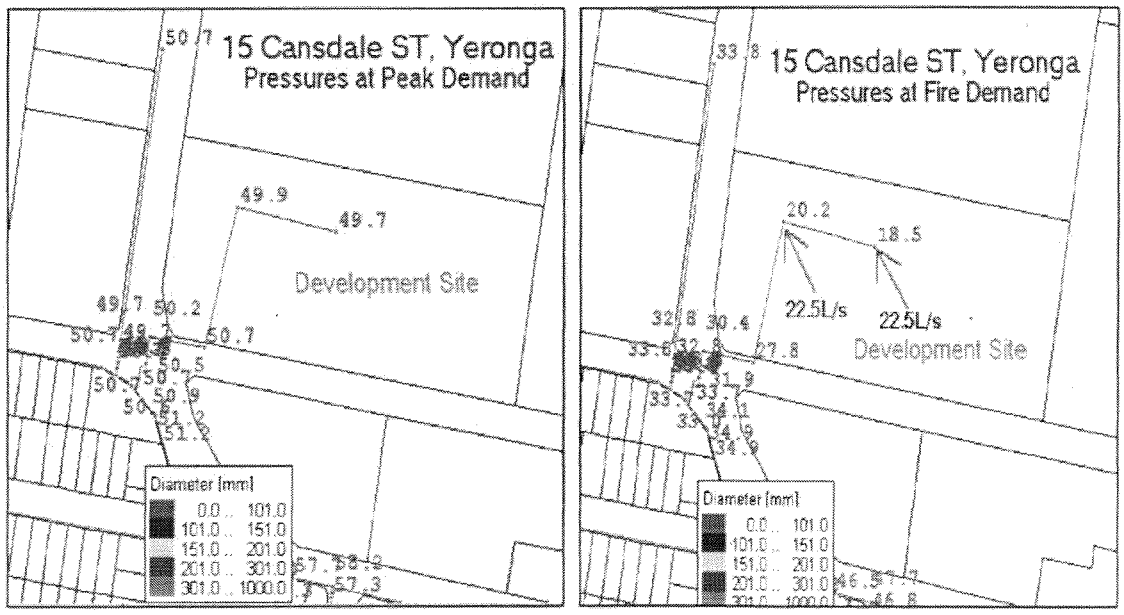
3.3 Hydraulic modelling results

To determine the hydraulic characteristics of the water supply infrastructure surrounding the site, a computer model of the system was created and analysed using the computer simulation hydraulic analysis program Mikenet.

The results indicate that the existing infrastructure has the capacity to supply water services meeting the BCC standards.

3.4 Model Run Results – Screen Plots

Fig. 2 - Pressures at Peak and Fire Demands



3.5 Water supply requirements

The existing building in the development site is serviced from Veneer Rd. The service location for the future development could be from the same location. The proposed development, likely to be a group title development, will need a 150mm service connection, in order to satisfy the fire-fighting criterion. Although the BCC requirements are satisfied, there exist a higher risk of security of supply as the site is supplied from one side only. However, the Council is unlikely to impose conditions on this issue.

The development will not need to do any external augmentation works.

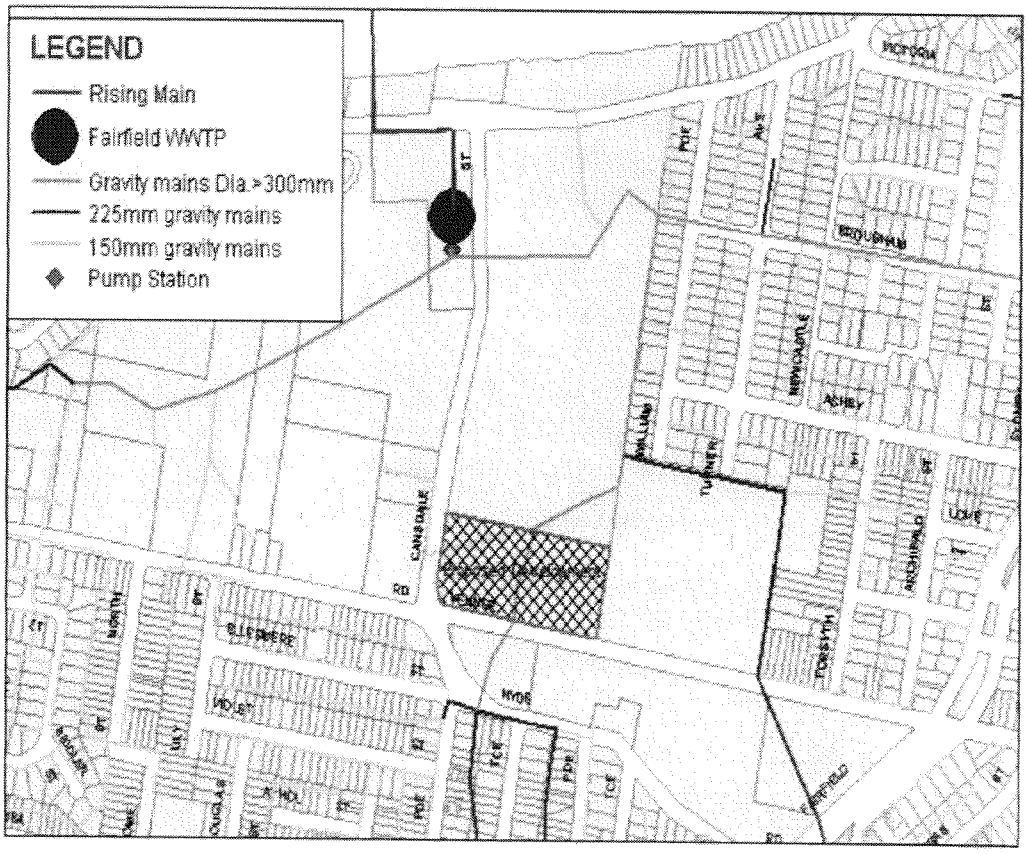
BCC.058.8607

4.0 WASTE WATER INVESTIGATION

4.1 Existing System

The proposed development site falls within Fairfield WWTP sub-catchment of the S2 Sewer Catchment.

Fig. 3 – Development site with nearby sewers



The development can be connected to 300mm Yeronga Sewer Branch traversing the development site. This sewer main discharges into 300/375 Fairfield Branch Sewer, which ends up at Fairfield Waste Water Treatment Plant.

4.2 Estimated Flows from Proposed Development

The proposed development is a retirement village comprising 360 units and a retail commercial area of 1500 GFA. Based on Brisbane Water's guidelines, the calculated total discharge of waste water expected from the development is 12.8L/s

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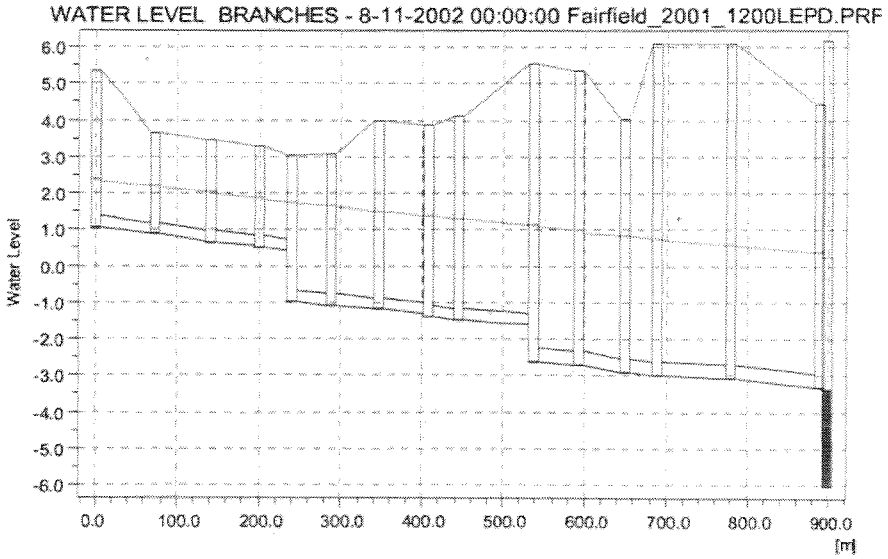
4.3 System Capacity

The 300mm Yeronga Sewer Branch and 300/375mm Fairfield Branch Sewer are surcharging at current Peak Wet Weather Flows. There are two overflow structures located downstream of the development site, one at the southern end of the William Parade and the other near William parade- Brougham St intersection. The one at the southern end of William Pde is discharging waste water at current peak wet weather flow events but the other is unlikely.

The development is adding another 12.8L/s on top of the already surcharging sewer system, which worsens the existing situation. The Master Plan proposes augmentation of Yeronga Sewer Branch and Fairfield Branch Sewer in 2007 and 2008 respectively.

Fig. 4 – Water Level from development site to Fairfield WWTP at current PWWF



The dotted red line is the water level. Surcharge levels at the development site is about 1m above obvert of the pipe and near the treatment plant it is about 3m above obvert.

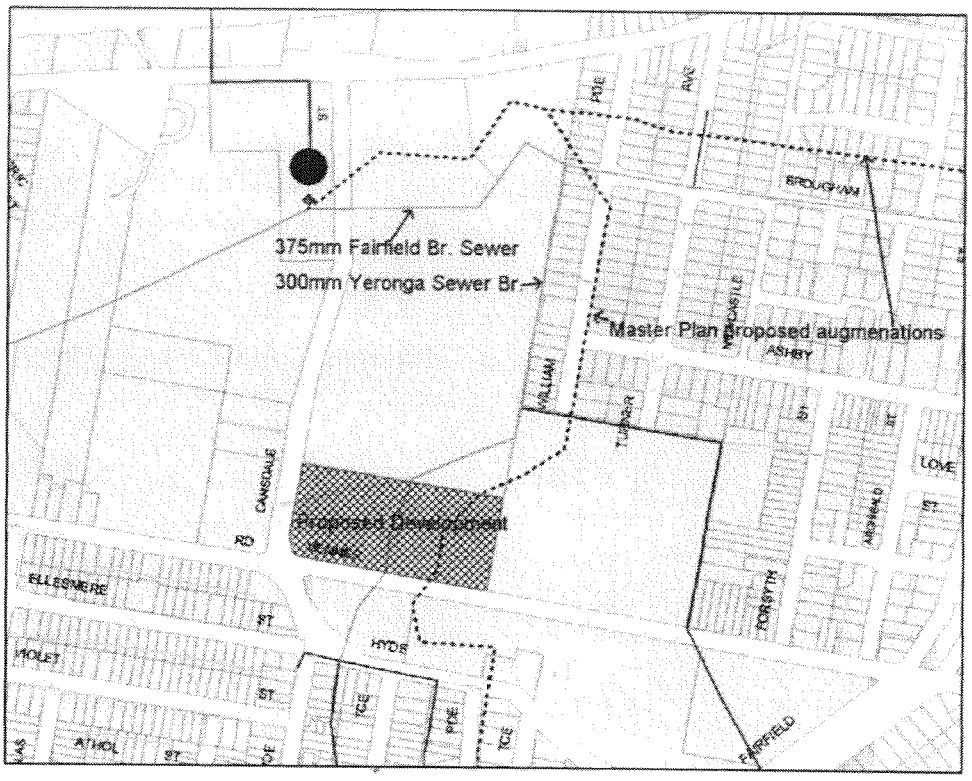
4.4 Master Plan Proposals in the downstream system

- 225mm duplicate main parallel to 300mm Yeronga Sewer Branch – 2007
- 300mm duplicate main parallel to Fairfield Branch Sewer – 2008/09

Fig. 5 below shows these proposals in plan.

BCC.058.8609

Fig. 5 - Master plan proposals

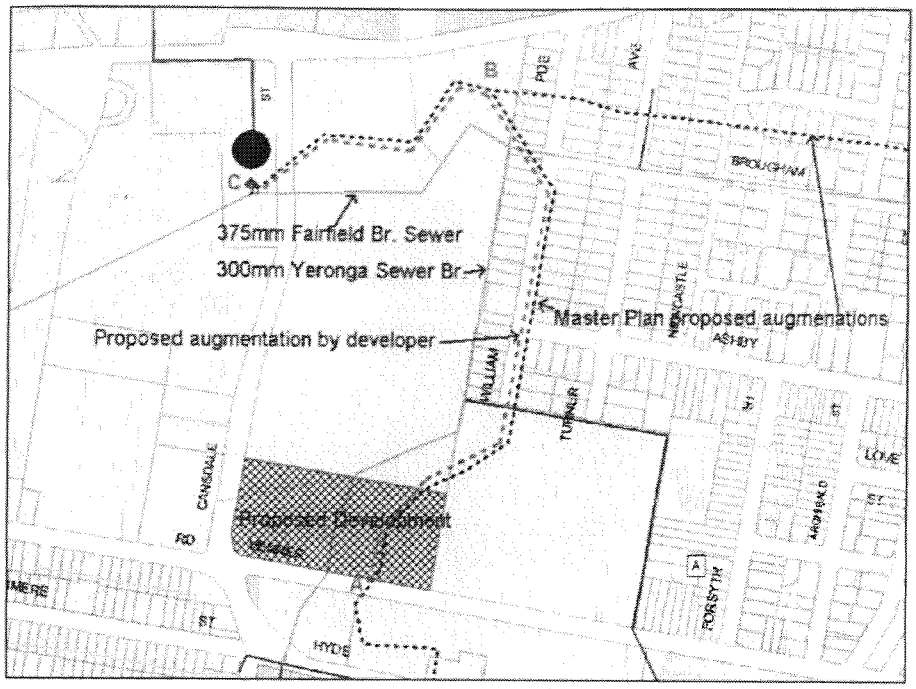


4.5 Suggested Augmentation by the Development

As the discharge from the development is quite significant, in order to connect the development into the existing system augmentation of the downstream pipelines are required. Therefore the Council will most likely to impose the Master Plan proposals as conditions to the development. That will be, construction of 225mm gravity main from the upstream side of the development up to Fairfield Branch Sewer and from there 300mm gravity main up to Fairfield Waste Water Treatment Plant. The approximate lengths are 225mm 680 metres (A to B in fig.6) and 300 mm 328 metres (B to C).

BCC.058.8610

Fig 6 – Proposed augmentations



5.0 SUMMARY OF INVESTIGATION

5.1 Water Supply

The existing infrastructure has the capacity to provide water services to proposed development and therefore no external augmentation works are required.

5.2 Waste Water Disposal

External augmentation works are required in order to connect the development site to the existing gravity system. That is,

AB – 225mm pipe - 680 metres
BC – 300mm pipe - 328 metres

BCC.058.8611

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PO Box 1559 Fortitude Valley Q 4006 743 Ann Street Fortitude Valley Q 4006 Australia

pmm
GROUP

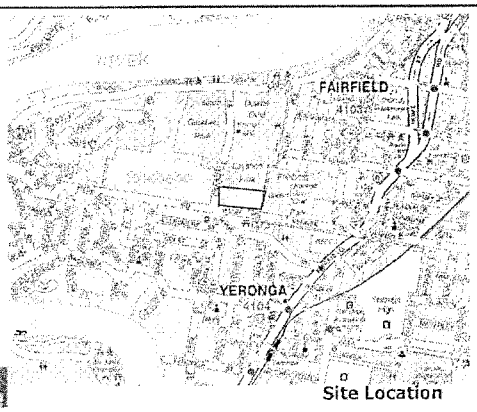
urban designers
townplanners
land surveyors

34

Development Assessment Committee Presentation

15 Cansdale St, Yeronga

3 August 2005



15 Cansdale St, Yeronga

Purpose:

Seek endorsement that the application for Preliminary Approval;

- override the Planning Scheme
- all subsequent applications Code Assessable

Proposal

Preliminary Approval Overriding the Planning Scheme for a Material Change of Use for a Retirement Village at Yeronga

BCC.100.3750

Proposal

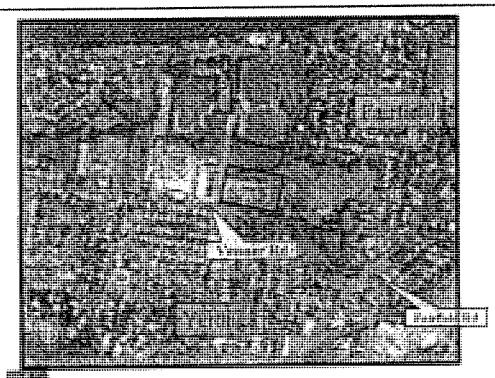
- **Tri-care residential facility - 310 units and 135 beds**

  (135 bed nursing home, 80 serviced apartments, 230 independent living units)

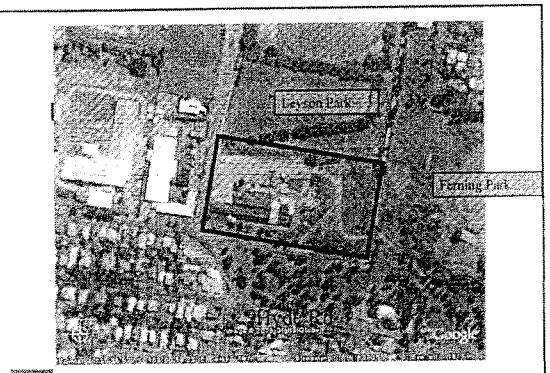
- **Reconfiguration** (4 lots based on staging)
- **GFA - 36,000m2** (Plot Ratio 1.3)
- **Parking - 400 vehicles** (incl. 40 spaces in Venner & Carnsdale roads)
- **Height - 3 to 5 storeys** (above Q100 flood level)
- **Staged Development** (over 5 to 7 years)
- **Ancillary Uses -**

  (dining facility, health facilities, recreational area, swimming pool, lawn bowls, café and shop)





Aerial Photo



Aerial Photo

BCC.100.3751

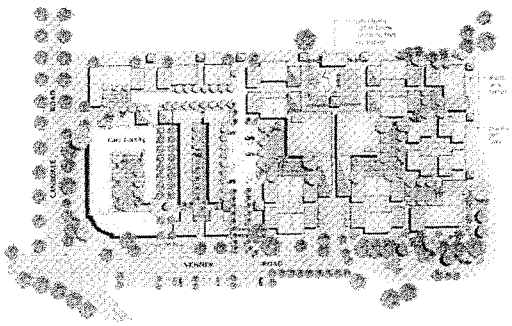
15 Cansdale St, Yeronga

Proposal
Preliminary Approval Overriding the Planning Scheme for a Material Change of Use for a Retirement Village at Yeronga

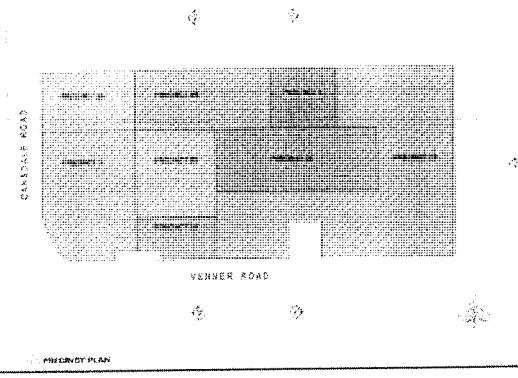
City Plan 2000:
Area Designation - Light Industry
Level of Assessment - Impact
Stephens District Local Plan

Consultation:
Referral Coordination - DMR (Concurrence); Energex, QUM (Advice)
City Planning - Manager
Urban Management

Site Layout Plan



Precinct Plan



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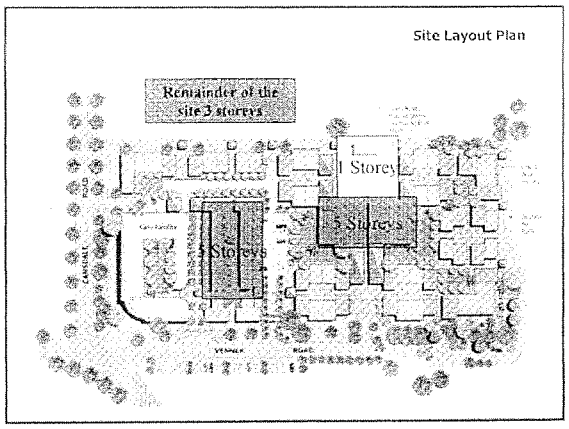
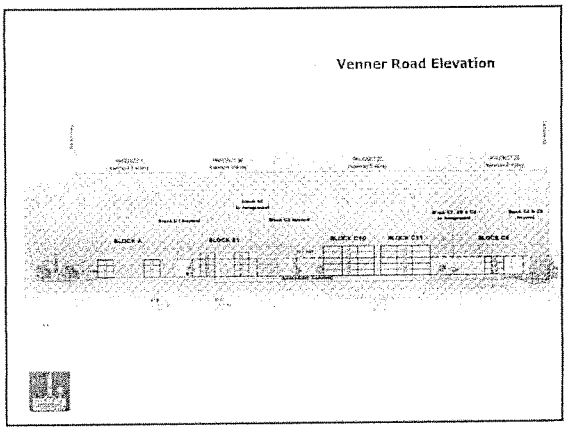
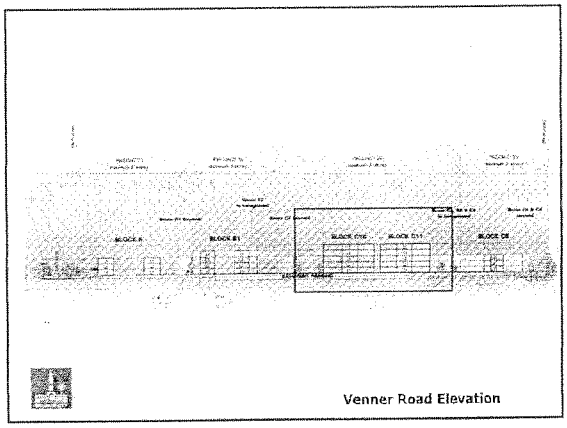
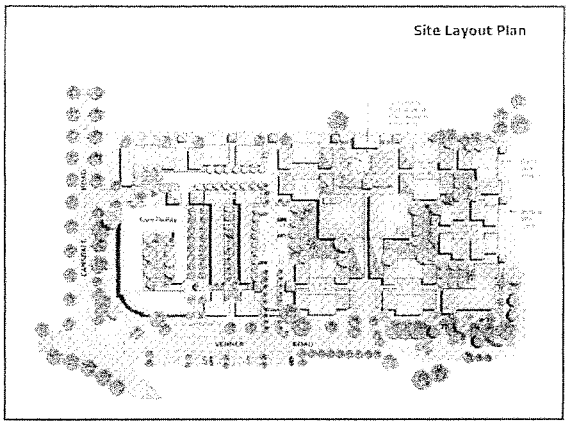
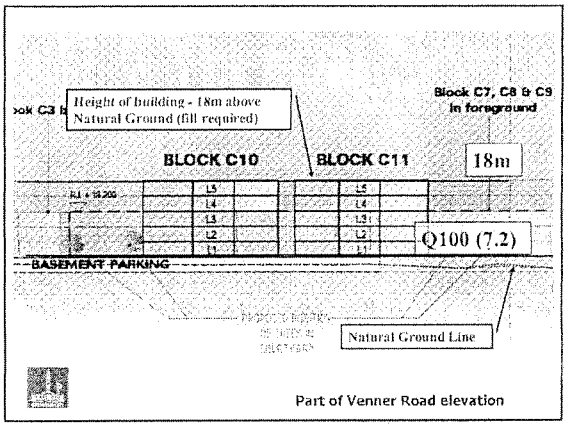
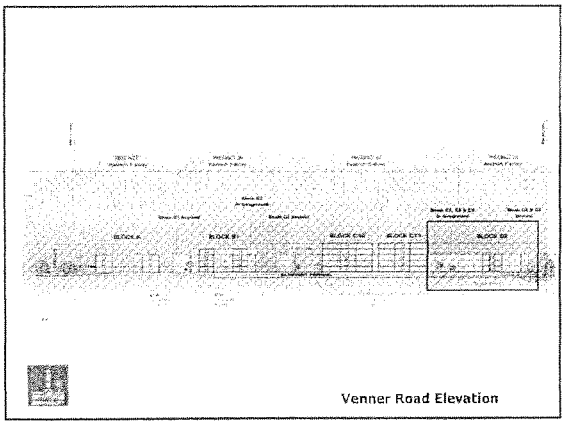

Site Layout Plan
Remainder of the site 3 storeys
1 Storey
5 Storeys
3 Storeys

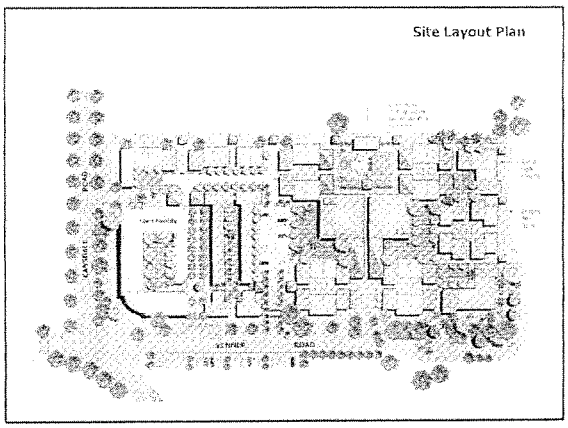

Venner Road Elevation

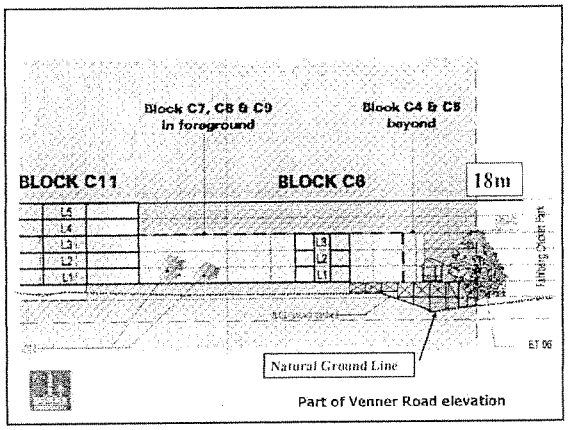

Venner Road Elevation

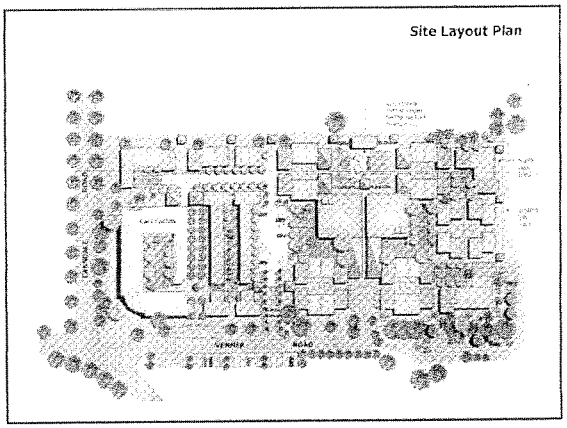

Site Layout Plan

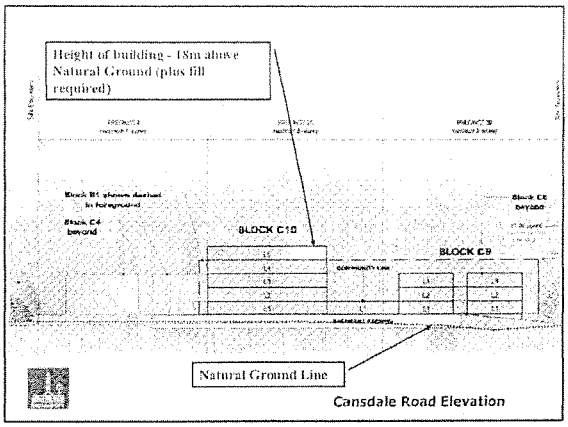

Height of building - 18m above Natural Ground (fill required)
Block C7, C8 & C9 in foreground
BLOCK C10
BLOCK C11
18m
Q100 (7.2)
BASEMENT PARKING
Natural Ground Line
Part of Venner Road elevation


Venner Road Elevation


Site Layout Plan


Block C7, C8 & C9
in foreground
Block C4 & C5
beyond
BLOCK C11
BLOCK C8
18m
Natural Ground Line
Part of Venner Road elevation


Site Layout Plan



8 KEY ISSUES

Planning Process

(Level of Assessment, Level of detail, precedents, staging and sequencing of development)

Hydraulic

(overland flow, flooding, lawful point of discharge,)

Bulk and Scale

(shadowing, setbacks, site layout, height, plot ratio, landscape treatment, parkland interface)

Environmental

(vegetation management, waterway corridor, contamination, stormwater quality, air quality, noise)

Infrastructure

(water supply, sewerage, external works)

Traffic

(access, on street parking, car park allocation, external works)

Consultation

(local councillor, referral coordination, statutory)

Sustainable Development Principles

KEY ISSUE

Planning Process

(Level of Assessment, Level of detail, precedents, staging and sequencing of development)

Principles for overriding the Planning Scheme

Use existing City Plan Codes
Avoid Particular Development Zone with site specific code
Amend existing code by conditions ie height or GFA as applicable

Level of Assessment/Level of detail required

Insufficient detail provided to reduce level of assessment
Requires assurance that MUD code addressed

Level of Assessment for Multi-unit Dwelling - Precedents

Bulimba Local Plan- Impact
West End/Woolloongabba Draft Local Plan - Impact
Milton Draft Local Plan- Impact
Norman District Local Plan - Code where complying with Local Plan and LMR Codes

Staging/Sequencing of Development

BCC.100.3756

Recommendation:

That the Committee endorse the following recommendation:

(a) That there is in principle support for the residential use on the site and at the plot ratio and height proposed;

(b) That the applicant has not provided sufficient information and detail to ensure that:

(i) residents in the local area would be sufficiently informed to properly consider all impacts of the development, and

(ii) based on current information subsequent development applications could be Code Assessable;

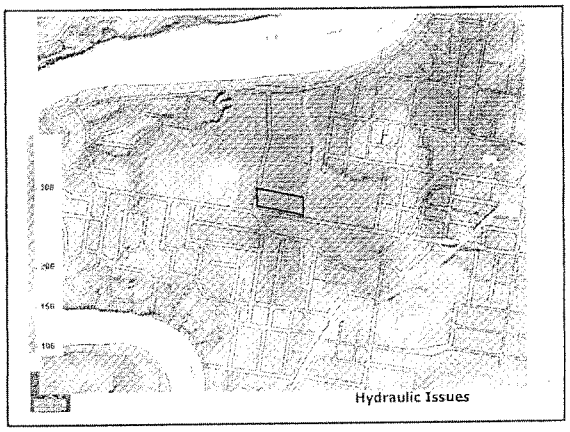
(c) That the principles for overriding the Planning Scheme be adhered to in the assessment of the application; and

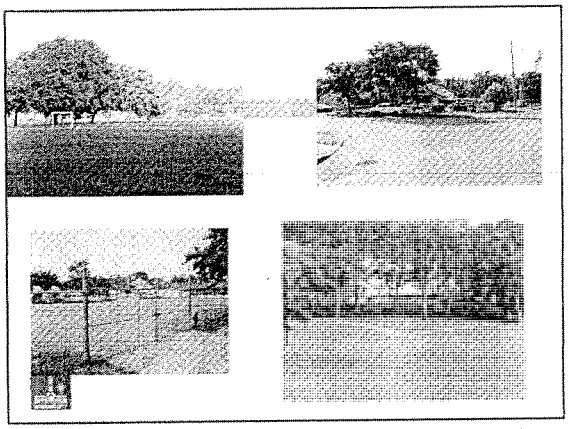
(d) Furthermore, were the applicant to:

(i) provide sufficient information and details to clearly demonstrate the impact of the development for the residents; then

(ii) the development could be conditioned such that subsequent residential applications could be code assessable







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Our Reference: RCU 1837
Enquiries: [redacted]
Extension: 323[redacted]
Address: PO Box 15031 City East Qld 4002
E-mail address: [redacted]

Queensland Government

Planning Services

Department of
Local Government, Planning,
Sport and Recreation

21 June 2005

M E Harrison Investment Co Pty Ltd
C/- PMM Group
PO Box 1559
FORTITUDE VALLEY QLD 4006

Attention: [redacted]

RE: REFERRAL COORDINATION — *INFORMATION REQUEST*

Dear [redacted]

I refer to your letter dated 9 May 2005 and received in this office on 9 May 2005, requesting referral coordination under the *Integrated Planning Act 1997* (IPA) for the following application —

APPLICANT:	**M E Harrison Investment Co Pty Ltd**
APPLICATION TYPE:	**Material Change of use and Reconfiguring a lot**
REFERRAL COORDINATION TRIGGERS:	**Preliminary approval overriding a local planning instrument**
LOCATION:	**15 Cansdale Street Yeronga QLD, described as Lot 1 on RP 150512**
LOCAL GOVERNMENT:	**Brisbane City Council**

I wish to advise that after preliminary assessment of your application additional information is required to fully assess the proposal. Details of the information requested are contained in pages 3 – 7 attached to this letter.

The following agencies were consulted in the preparation of this information request —

- Brisbane City Council (Assessment Manager)
- Department of Main Roads (Concurrence agency)
- Energex (Advice Agency)
- Office of Urban Management (Third Party)

The Department of Main Roads, as a concurrence agency, Energex, as an advice agency and the Office of Urban Management, as a third party advice agency, requires no further information.

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The Act requires the applicant to provide a copy of the response to the information request to the Assessment Manager and any IDAS concurrence or advice agency. It is also recommended that copies of your information response be forwarded to the third parties listed above. Please note, under section 3.3.8 (3) of the IPA you are not required to send a copy of your information response to this Department.

Please note, you have 12 months to respond to this information request. The response must be made in one of the following three ways —

- Provide all the information requested; or
- Provide part of the information requested together with a notice asking the assessment manager and each IDAS referral agency to proceed with the assessment of the application; or
- Provide a notice —
  (i) Stating that the applicant does not intend to supply any of the information requested; and
  (ii) Asking the assessment manager and each IDAS referral agency to proceed with the assessment of the application.

It should be noted that in the event of an appeal against a decision on a development application, costs may be awarded against an applicant if the court considers the applicant did not give all information reasonably requested in the information request (s4.1.23(2)(g) of the IPA).

Further information or assistance may be obtained by contacting the above contact officer by telephone or e-mail.

Yours sincerely

[redacted]
Principal Planner
SEQ-WBB Planning Division

CC:
Brisbane City Council
Department of Main Roads
Energex
Office of Urban Management

MATTERS OF INTEREST TO THE ASSESSMENT MANAGER

The Brisbane City Council, as assessment manager for the application, raises the following matters of concern and requests the following additional information:

INFORMATION REQUESTED

The Council has carried out an initial review of the above application and requires the applicant to provide further information that satisfactorily addresses the key issues outlined below:

1. Please submit appropriate wording varying the provisions for Gross Floor Area and height for the various precincts, as the creation of a new Code particular to this development is not favoured. The preferred manner to manage the proposed development of the site is as discussed in the prelodgement meetings, that is, to use the existing Residential Design Codes, with the provisions with regard to Gross Floor Area and Height being varied by conditions inserted in the conditions package.

2. Demonstrate that the proposal:

(i) complies with section 4.2 P1 of the Stormwater management Code. Specifically, demonstrate that the proposed stormwater management system or site works do not adversely impact on flooding or drainage of properties that are upstream, downstream or adjacent to the subject site.

(ii) complies with section 4.2 P2 of the Stormwater management Code. Specifically, demonstrate that the drainage network provides adequate capacity to safely convey stormwater run–off resulting from relevant design storm events taking into account increased run–off from roof drainage.

(iii) complies with section 4.2 P3 of the Stormwater management Code. The development design must reduce property damage and, where applicable, ensure public safety by ensuring that the development levels are set above the relevant design flood level or storm surge level.

(iv) complies with section 4.2 P4 of the Stormwater management Code. Demonstrate that the channel works, major drainage works and flood mitigation works maintain and/or enhance the environmental values of the waterway corridor or drainage corridor.

In addition, there is an overland flow path through the south-eastern corner of the site, which has been identified in the **Yeronga Local Stormwater Management Plan**.

3. Demonstrate that the proposal complies with the following performance criteria of the Biodiversity Code:

(i) P1 – Ecological features and processes on or adjacent to the site, including those identified in the Natural Assets Planning Scheme Policy, are protected, managed and restored, where necessary to ensure their long term viability.

(ii) P5 – Ecological Features and processes associated with waterways and wetland are not significantly and adversely impacted by changes in the hydrological regimes, including wet/dry regimes

(iii) P6 – Ecological assessment accompanying applications must be comprehensive, competent and adequate.

4. Demonstrate that the proposal complies with 4.1 P1 of the Waterway Code. Specifically, demonstrate that the natural functions of waterways as landscape and environmental corridors must be preserved.

5. Demonstrate that from Venner Road, Cansdale Road, the residential precincts and the surrounding parklands, the proposed three storey components will have the appearance of three storey buildings and the five storey components will have the appearance of five storey buildings. This is required, as due to the proposed filling on the site, the proposed three storey and five storey components, have the appearance of four and six storey buildings, respectively.

6. All car parking is to be provided on the application site.

7. Demonstrate how it is intended to control the extent of buildings in Precincts 3b and 2c and provide details of the proposed future tenure of the various types of accommodation. In addition, please indicate, on any amended plans that are to be submitted, the buildings in Precinct 3b as being five storeys so that the overall scale and bulk of the building can be seen and provide the ultimate height of the proposal

8. Provide amended plans and perspective's which incorporate the following:

   a). Design recognises this 'urban opportunity' which could be promoted by simply including a pronounced urban 'all of site' character achieved through:
      i) Enhancing legibility through 'urban scaled' continual linked thoroughfares and urban public spaces with strong linkages between public and graduated private open spaces;
      ii) Concerted 'hierarchal internal streetscapes' and 'public open space' linking precincts;
      iii) Enhancing urban fabric with visually prominent on route 'node' sites of built forms with immediate entry points;
      iv) Visually enhanced, physically linked and socially/pedestrian active streets and upper level building frontages;
      v) A strongly developed urban village character;
      vi) A diversity in design and variety in building form- domestic in language and detailing, reflecting its suburban context;
      vii) Enhanced 'open space' access promoting social, passive and recreational activity within, and external to the site.
      viii) Detailed interface treatment of the site bounding edges to streets and parks of the setbacks and facades and the external patios/immediate internal planning diagrams.

   b). Provide shadow diagrams which indicate the extent of the shadows cast within the proposed development and on the surrounding parklands and residential development, by the proposed buildings at 10am, noon, 2pm and 4pm on 22nd June and provide a commentary on how any overshadowing will be addressed.

   c). The proposed development is not integrated with the surrounding area. In this regard it should include:
      i) Siting of appropriate development along Cansdale Road and Venner Road to encourage *interaction* between the development and the surrounding neighbourhood, not just to provide surveillance.
      ii) A clear pedestrian 'address'/entry visible from the Cansdale Road/Venner Road intersection.
      iii) Distinct pedestrian 'addresses' on public streets for various precincts within the development, where this contributes to legibility. For example, the Care

Facility may have a clearly distinguishable 'address' that is quite distinct from the 'address' of an independent living block. This would help break down the perceived unity, and therefore scale, of the development.

iv) Where gates are absolutely necessary for security, these should be as minimal a feature as possible, to avoid creating the impression of a gated community.

v) Legible, attractive pedestrian accesses to and from the development and along Cansdale Road and Venner Road, particularly to link with parkland and bus stops.

vi) Direct access for residents between residential buildings and public streets, where possible.

vii) Residential buildings offering residents views to parkland (particularly from upper levels) and providing surveillance for park users (in keeping with CPTED principles).

viii) Direct access to residential buildings, to activate frontages and provide residents with easy access to parkland and paths, as well as de-institutionalise the development.

d). Amended basement parking as necessary to ensure that large trees can be planted in the site as necessary to balance and soften building bulk, cool the site, contribute to pedestrian comfort, and act as a structural element along circulation routes.

e). In connection with the interface of the proposed development with the parkland:

i) Demonstrate the proposed treatment of the boundary between the application site and Leyshon Park.

ii) Along the southern site boundary, buildings are to have a habitable floor at the ground level of the adjacent streetscape or parkland.

iii) Encourage ground level activity and overlooking of the streetscape and parkland to integrate with the surrounding area, maximise amenity for residents, and accord with CPTED principles.

iv) Demonstrate that there are no remediation works proposed outside of the site.

Whilst some of the above mentioned information may have been provided in the application, it is not readily apparent.

9. Provide a Landscape Concept Plan for high level approval, as outlined in Information Sheet 1 – Landscape Concept Plan.

10. Provide details of the proposed staging of the development and whether the proposed stages and precincts are interrelated or dependent.

11. Demonstrate that Performance Criteria P4 of the Residential design – Special Needs Code has been met ie Appropriate access and circulation routes for emergency entry and exit have been highlighted.

12. Submit a Vegetation Management Plan (VMP) in the form of scaled plans and supporting documentation that includes at least the following information:

i) The extent of the VMP is to include evaluation of all areas including, proposed road reserves, external works and development areas;

ii) The location and description of existing vegetation on and adjacent to the site including species and botanical name plus the height and canopy spread;

iii) The location and extent of all site works including all proposed infrastructure and areas of earthworks.

iv) Detail design of all civil works is to be cognisant of environmental values. Alternative solutions may be required in some instances, to protect significant vegetation (eg alternative service alignments, variations to batter slopes and tunnel boring);

v) The location and description of all vegetation to be retained and that to be removed;

vi) A description of all measures to be used to protect and enhance vegetation and habitat features to be retained during construction;

vii) A description of all pruning and tree surgery works (to AS 4373/96) to maintain health and stability of trees and reduce potential hazards for future residents;

viii) The location and extent of storage and stockpile areas for cleared vegetation and site mulch;

ix) A description of all methods to salvage and/or re-use cleared vegetation. Generally cleared vegetation is to be mulched for reuse in landscape/rehabilitation works; and

x) Details of all measures to protect and recover fauna during clearing operations, including; presence of a qualified wildlife officer during clearing operations, preclearing inspections, staging and sequence of clearing and recovery procedures.

12. With regard to traffic and transport issues there is to be no pedestrian crossing in Hyde Road as shown on the proposal and all street parking is to remain as is ie parallel. Please demonstrate how the proposal can meet this requirement.

13. Please provide additional air quality modelling, to determine the effects of the industrial activity in the area, on the proposed Retirement Village.

14. Demonstrate that the proposal meets the Council's fifteen sustainable development principles, including consideration being given to rooftop greening to reduce radiation from the proposed buildings.

15. Demonstrate how the proposal can be serviced from with regard to water supply and disposal of sewage, for the various stages and the overall development. The application has been referred to Brisbane Water for comment with regard to water supply and sewerage disposal and their comments will be forwarded to you as soon as they are received.

Should you want to discuss the matter, please do not hesitate to contact Roger Greenway on telephone number 07 3403 6605.

A copy of the response to the information request can be forwarded to:

Brisbane City Council
Development South Assessment Team
PO Box 1434
BRISBANE QLD 4001

MATTERS OF INTEREST TO DLGPSR

The Department of Local Government, Planning, Sport and Recreation as third party for the application, raises the following matters of concern:

ADVICE

Concerns are raised with the workability of the proposed code in particular:

- A number of the acceptable solutions are not precise and therefore self assessment by an applicant and enforcement by Council will be difficult;
- The location of the Tables of Assessment in the 'design guidelines' which are not a statutory document;
- The inclusion of Desired Environmental Outcomes (the provisions of s3.1.6 of the IPA do not envisage the inclusion of DEOs – a 3.1.6 PA may only state the level of assessment and the applicable codes for the development).

INFORMATION SHEET 1

Landscape Concept Plan

Requirements for the preparation of submissions for Development Applications

What is a Landscape Concept Plan?

A Landscape Concept Plan (LCP) is a scaled drawing of a development showing the proposed treatment of external spaces as detailed in this Information Sheet.

It is expected that a Landscape Concept Plan submitted as part of a high level development application will adequately demonstrate that the proposal will address Council's requirements for open space provision and enhancement, recreational needs of users, and retention and enhancement of scenic amenity. The Landscape Concept Plan should also demonstrate a satisfactory Performance Solution to any Code criteria for which the Acceptable Solution has not been met.

When is a Landscape Concept Plan Required?

An LCP may be requested by a Council officer as part of an Information Request for a Material Change of Use (MCU) or Reconfiguration of a Lot (RQL) application. The submission of an LCP can assist in expediting the assessment of a development application from a landscape and open space point of view, particularly where it demonstrates that the new proposal will retain or replace existing vegetation, and will provide attractive, useable recreation and open space areas.

An LCP provides valuable supporting information for residential and commercial development applications (including child care centres and aged care facilities). An LCP will always be requested for applications within areas undergoing transition (such as South Brisbane and New Farm) or the City Centre. An LCP will often be requested where a development proposal suggests performance solutions to Code requirements relating to open space and site planning. It is far more efficient to have the LCP prepared as part of the original application than to have Council officers request it as part of the assessment process.

An LCP may also be requested for Reconfiguration applications involving provision of park, particularly where parkland will include stormwater management devices or waterway/wetland elements; or where indicative treatment of acoustic fencing is required.

What Are the Benefits of Submitting a Landscape Concept Plan?

In most cases, an LCP is required by Council before an application will be progressed further. In this instance, provision of a well-resolved, professionally prepared LCP can expedite the approval of an application, and save time and money further down the track.

For developments which have a lesser impact on amenity or landscape values and which do not propose performance solutions for the majority of Code elements, provision of an LCP is likely to result in less stringent documentation requirements after approval has been issued, and a more rapid progression through the assessment process. In these cases, a private certification condition may be applied, which means that a Detailed Landscape Plan does not need to be lodged as an Operational Works application, saving time and money. A Detailed Landscape Plan will still need to be prepared, but can be submitted as an 'as-constructed' document (this is discussed in more detail in the section of this Information Sheet entitled 'Certification').

Examples of this sort of development are smaller multi-unit developments, single unit dwellings, small commercial developments.

For more complex developments, the submission of the LCP will assist the assessing officer to determine that the

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proposal has met all of the relevant landscape criteria contained within Council's development Codes, Local Plans or other documentation. As a result, it is usually less likely that there will be an Information Request relating to landscape issues – a saving in time and consultant's fees at a critical stage in the application process.

Sometimes it is more efficient to prepare a Detailed Landscape Plan rather than an LCP as part of the high level approval. This is discussed in more detail in the section of this Information Sheet entitled 'Detailed Landscape Plan".

Who Can Prepare a Landscape Concept Plan?

An LCP should be prepared by an experienced and qualified landscape architect. Plans prepared by other persons will be accepted if they meet the documentation and content requirements, however using a practitioner who has previous experience in meeting Council's requirements is often the most efficient means of progressing the application. Ask your consultant for examples of their work, and to demonstrate that they have a good understanding of Council's planning scheme (including Codes and their applicable Performance Criteria and Acceptable Solutions) and what is required to demonstrate compliance.

A competent landscape architect will also be able to advise you on site layout changes that may be required in order to satisfy Council's planning requirements, or work with your other consultants to suggest a Performance Solution that Council may consider appropriate.

What Documentation is Required?

Where applicable, the following information is required as part of any LCP:

Existing Site Conditions:

- Existing contours.
- Built structures on the site and on adjoining properties (including the footpath) which may affect, or be affected by, construction or planting on the subject site;
- Location of existing services where these will be retained/relocated.
- Location of drainage pathways, including designated overland flow paths.
- Waterway corridors, including the Brisbane River, and High Water Mark (where applicable).

Existing Vegetation:

- Accurate (up to 500mm) survey information of existing vegetation on the site, or adjacent to the site and potentially affected by the proposal (including street trees and vegetation on road reserves). The applicant is to certify the level of accuracy of the survey.
- Vegetation is to be identified by botanical name, diameter at breast height (DBH), spread and health. Clusters of vegetation can be identified generically in terms of plant species composition, height, spread and condition.
- Vegetation is to be identified as being retained or removed, with reasons provided for removal.
- Details of existing vegetation are best summarised in an Existing Tree Schedule included as part of the drawing.
- Standard specification notes for the protection of vegetation to be retained during construction activity on site.

Proposed Site Form and Hard Works:

- Any earthworks (cut or fill) proposed within the vicinity of existing vegetation to be retained.
- Building footprints (existing to be retained, and proposed), and where applicable basic internal layout (location of doors, windows etc.) including finished surface levels.
- Roof overhangs and extent of basement.
- Location, surface treatments and indicative finished levels of proposed landscape structures and outdoor areas (eg. driveways, car parking areas, pathways, courtyards, paved areas, field gullies, services, enclosed planters, bin storage areas, clothes drying areas etc. as applicable).
- Proposed amenities within recreation areas (eg. seating, BBQ, shade structures, clothes lines etc.).
- Location, height and type of fences, retaining walls and batters, stabilisation of steep areas, interface with adjoining land uses and the footpath etc.

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- Critical gradients (eg. to demonstrate compliance with AS1428 (Design for Access and Mobility).
- *For streetscape works, parks and other development where there is the potential for safety and amenity impacts:* location and type of external lighting.
- Sections and elevations where necessary to illustrate more complex design solutions.

Location, Function and Character of Areas Subject to Soft Landscaping:

- Proposed plant massing to meet Council requirements for character (eg. streetscape planting, buffer planting between incompatible land uses and/or at critical interface points, amenity planting in recreation areas etc.).
- Tree planting (differentiate shade, screen and feature planting).
- Soft surface treatments (turf, gravel, mulched gardens beds).
- Proposed maintenance access.
- Critical gradients (eg. batters, maintenance access).

Indicative Planting Palette

- Indicative tree, palm, shrub, ground cover and accent plant species.

Typical Construction Details and Specification Notes for Critical Elements:

- Sections or notes describing depth of topsoil, mulch and drainage medium for proposed enclosed planters.
- Particular measures for retaining vegetation.
- Stabilisation measures for batters.
- Treatment of fence and retaining wall combinations.
- Any other construction details that may be necessary to demonstrate that recreation and open space issues are adequately addressed.
- Specify the provision of hosecocks, irrigation, field gullies etc. to future detail.

Documentation Standards

The documentation of LCPs must meet certain minimum requirements, noted below:

- **Title block:** correct site address, high level development application number (if known), plan name and sheet number, contact details, date, version.

- **Scale:** 1:100 or 1:200 depending on the use (in some instances park plans will be accepted at 1:500).
- **Legend and notations:** North point, drawing scale, legend to plan symbols and notation, labelling of development components (eg. drying court, common recreation area, private court, buffer etc.)

- **Site identification:** existing and proposed real property boundaries and easements.

- **Graphic standards:** Clear, easy to read graphic symbols and representations. Symbology should be a reasonably accurate representation of the proposed treatment (ie. trees shown at close to mature spread, shrubs/groundcovers shown at realistic widths).

- **Plan Size:** Plans should be submitted with at least one 'at-scale' copy. Plans should be prepared at maximum A1 size – if the entire drawing cannot be included on a single A1 sheet at an appropriate scale, multiple sheets should be provided.

Submission of the Landscape Concept Plan

Seven (7) copies of the LCP should be submitted together with the application documentation. This provides Council with five (5) copies for use in the approval package, and two for assessment purposes. Seven (7) copies of any revisions to the LCP should be submitted for the same reasons.

Copies submitted as part of the original application should be included with all other application documentation at the time of lodgment. Plans prepared as a response to an Information Request should be submitted to the assessment manager as soon as practical after the Information Request has been issued. However Council acknowledges that it can take longer to prepare an LCP than other items, particularly where the LCP is dependent on site planning and architectural changes. Assessment of the balance of the Information Response may often commence pending the lodgment of the LCP, however this should be discussed with

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the assessment manager when the Information Request is received.

Relevant Council Statutory Documents

The following Council Codes, Planning Policies, Local Laws and documents may need to be addressed when developing the LCP. Please refer to the check sheets for each type of development for more information.

Codes

- Centre Amenity and Performance Code
- Child Care Facility Code
- Community Use Code
- Filling and Excavation Code
- Industrial Design Code
- Landscape Code
- Particular Development Code
- Waterway Code
- Residential Design - Low Density, Character and Medium Density Code
- Residential Design - Medium Density Code
- Residential Design – Single Unit Dwelling Code
- Residential Design – High Density Code
- Residential Design - High Density Code
- Residential Design - Single Unit Dwelling Code

Other Documents

- Local Plans
- Planning Scheme Policy 1 – Contributions for Parks
- Planting Species Planning Scheme Policy
- Natural Assets Local Law ((access from *www.brisbane.qld.gov.au*, select "Environment", then "Laws and Regulations", then "Natural Assets Local Law").
- Centres Detail Design Manual
- Brisbane River Corridor Planning Scheme Policy
- Draft Pest Management Plan (access from *www.brisbane.qld.gov.au*, select "Environment", then "Pests and Weeds").

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Dedicated to a better Brisbane

MEMORANDUM

Brisbane City Council

City Planning Branch
Urban Management

Level 16, 69 Ann Street
GPO Box 1434
Brisbane Qld 4001

Phone: 07 3403 ****
Facsimile: 07 3403 ****
Email: ******@brisbane.qld.gov.au

Internet: www.brisbane.qld.gov.au

To: [redacted] Development Assessment Team South Date: 12 May 2005

CC: Michael Papageorgiou, [redacted]

From: Geoff Ahmet

Re: **15 Cansdale St Yeronga**
Reconfguration of a lot (1 into 4) and Preliminary Approval for Retirement Village

DRS/USE/H05-917956

I refer to your request for strategic advice on the above development application. This response is an integrated response from Urban Management Division. Input was received from City Planning,Transport & Traffic, Water Resources, Environment & Parks, Community & Lifestyle, Pollution Prevention, Health & Safety, Economic Development.

1.0 PROPOSAL

- The proposal is for Reconfiguration of a lot (1 into 4) and Preliminary Approval for a Retirement Village. The proposal is for 36,000m^2 of GFA with a maximum height of 5 storeys.

2.0 CONTEXT

- The site is used for industrial purposes. District Sport and Recreation fields adjoins to the north while LDR and LMR Area Classifications and detached housing exist to the south.

3.0 DISCUSSION

- The site has an Area Classification of Light Industry and is within the Stephens Local Area Plan. The Local Plan doesn't indicate any specific provisions for this location. An application for residential development in the Light Industry Area Classification triggers an Impact Assessable Generally Inappropriate application.
- The height and intensity of the proposal is unlikely to significantly impact on surrounding uses. It is a reasonably suitable location for such a development. However, the proposed Yeronga Retirement Village Code and Design Guidelines do not adequately address (trigger assessment of) all the potential impacts associated with the development. Incorporating a code that sits on a file in a planning approval lacks transparency and brings the planning assessment process into disrepute. This aspect of the application is strongly opposed.

Water Resources

- The proposal has not adequately addressed river and local flooding as the site is subject to Q100 river flooding and a section is subject to Q100 local overland flow.
- Relocation of the stormwater channel to the adjacent parkland will result in a loss of public parkland and is not supported. Council intends to retain the open channel and are not supportive of piping the flow as stated in the report.

Environment and Parks

- Development in the waterway corridor is not supported. A more sensitive interface with the waterway needs to be provided which ensures adequate setbacks from the waterway centreline.
- A monetary contribution in lieu of parkland is preferred for this application.

Pollution Prevention, Health and Safety

- The site is located in close proximity to existing industrial uses such as a paint manufacturer, sewage treatment and timber production. The submitted air quality assessment does not adequately address potential air quality impacts caused from the surrounding uses upon the aged care facility. In addition the proposal may detrimentally impact on the existing current lawful light industry uses in the area.

- Noise impacts from the adjacent sporting fields are not adequately addressed. The report hasn't considered noise impacts associated with night time sporting and social activities such as patron noise and live/amplified music. The significance of the sporting fields and cultural activities are due to intensify in the area as a result of the El Salvadorean Football Club relocation within close proximity.
- Light impacts from the sporting fields are not adequately addressed in the report. Evidence suggests major lighting for the sporting fields is either currently in operation or is about to be installed.
- It is expected that the nearby marine paint manufacturer has potential for storage of large quantities of flammable and combustible liquids. In the event of a fire, evacuation of aged residents/patients is to be considered and is of concern.

Community and Lifestyle

- The location and design of the retirement community should be in accordance with the Residential – Special Need Code.
- A community needs assessment is to be undertaken as per the Planning Scheme Policy indicating the mix of community facilities on site, their location and accessibility for the wider community. Some community gain should be offered such as a community hall and other community infrastructure.
- Community consultation undertaken has been limited to local residents and sporting groups. Consultation is to include government and human service agencies, public transport providers and other such agencies.
- The retirement communities recreational and community facilities are best sited abutting the park with the minimal number of residential units facing the sporting area. Stepping the buildings back from the sporting area is supported.
- Dense landscaping and other measures within the site is to be improved to reduce the incidence of glare and noise for residents.

Transport and Traffic

- The two intersections within close proximity may require upgrading to improve operations, including for pedestrian and bicycle movements.
- Pedestrian paths will be required to the bus stops and bikeway provision on Cansdale St and Hyde Rd.
- Venner Road is not be connected through, but should be appropriately terminated

4.0 CONCLUSION

Urban Management Division supports the development of a retirement village on the site subject to the above issues being addressed.

Regards,

I concur

[redacted]

Geoff Ahmet
Program Officer
City Planning

[redacted]

Principal Program Officer – Strategic
City Planning

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(16)

E-MAIL

To:	Roger Greenway	Date:	10 May 2005
Attn:		E-Mail:	
CC:		Pages:	1
From:	Bruce McArthur Senior Engineering Officer Development Assessment Team South		
Re:	Development Application over land at 15 CANSDALE ST, YERONGA QLD 4104		

Brisbane City Council
Development & Regulatory Services
Customer & Community Services

Development Assessment Team South
69 Ann Street
GPO Box 1434
Brisbane Qld 4001
Phone: (07) 340[redacted]
Facsimile: (07) 340[redacted]
Email: [redacted]@brisbane.qld.gov.au
Internet: www.brisbane.qld.gov.au

Application No *DRS/USE/H05-917956*
Project No *DRS/PRO/P05-107231*

Roger,

I have reviewed the above and have the following comments:

Flooding / Stormwater / Hydraulic Study.
There is an overland flow path through the south-eastern corner of the site, which has been identified in the **Yeronga Local Stormwater Management Plan**. The applicant is proposing to fill the affected area and divert it into the road reserve. I have discussed the situation with Bob Adamson in major projects and this is not to occur as they are redirecting stormwater and worsening the situation. Hence the proposal (figure 6, proposed drainage strategy) does not comply with the Stormwater Management Code, 4.2 Flooding:
P1 (The proposed stormwater management system or site works must not adversely impact on flooding or drainage of properties that are upstream, downstream or adjacent to the subject site.
P4 Any channel works that are part of the development, major drainage works or flood mitigation works must maintain and / or enhance the environmental values of the waterway or drainage corridor. (A4 states that the design and construction of channel works incorporate water sensitive design features which will comply with Council's Subdivision and Development Guidelines and where applicable any SMP, **LSMP** or WMP prepared by Council).
I would also say that P2 & P3 have not been meet but the above are the greatest concern.
(I do not have a problem with the proposed Habitable and Non Habitable floor levels – River Flooding).

Water Supply and Sewerage
These have been referred to Brisbane Water for comment.

Traffic and Transport
The traffic report has been discussed Cyril Godwin (major projects). He has advised the following issues are to addressed:

- There is to be no pedestrian crossing in Hyde Road as shown on their proposal.
- There are no roadworks or road widening required. (The Hyde Rd / Cansdale St link will probably be down graded to a District Access in the distant future (ie. When Green Bridge is complete)
- There is no bike facility required. (There is an existing bike track along the eastern boundary of the site, which is to be maintained).
- Verner Road is to remain as is with a turning area at the end.
- All street parking is to remain as is – parallel.
- The applicant is to provide visitor parking wholly within the property.

Bruce McArthur
Senior Engineering Officer
Development Assessment Team South
Development and Regulatory Services
Customer and Community Services

BRISBANE CITY COUNCIL

Record of Conversation

File No. 911941

4

Contact Name [redacted]	Time 2 a.m. p.m.	Date 15/03/05
Division/Firm/Private Residence 15 Cansdale St		Phone No.
☐ Personal Interview ☐ Telephone Conversation	Subject	

Details

Flooding issues upstream - apposite Hyderoad

- works needed to alleviate flood issues

- Their engineers are wanting to hear from our guys.

Coming up with solutions

- demonstration of net biodiversity gain.

- plenty of opportunity for rehabilitation.

- improve biodiversity values

Interviewing Officer's Name	Signature [redacted]	Officer Code [redacted]

Officer's Present	
Distribution	

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PRELODGEMENT RECORD

APPLICANT		REFERENCE NUMBER: DRS/USE/P05-911941
Name:	P M M Group	PROPOSAL: Multi Unit Dwelling
Phone:	(07)3237-8899 x	Date: 1 March 2005 Time: 9.00 am
Fax:	(07)3237-8833	Location: 12th Floor Brisbane Administration Centre
Company:	P O Box 1559 FORTITUDE VALLEY QLD 4006	Attendance:
SITE		Rory Kelly, Roger Greenway, [redacted] Kevin Matthews, [redacted] Melissa Collie, [redacted]
Address:	15 Cansdale St, Yeronga Qld 4104	
RPD:	Lot 1 on RP150512, Parish of Y'pilly	
Ward:	Dutton Park	

ISSUES/ADVICE/ACTION

General Comments

Follow up meeting from previous prelodgement meeting held on 8 October 2004 to discuss proposed development.

Scale of development reduced particularly in terms of commercial content.
Height and bulk similar as are set backs and car parking provision.

Community Consultation

- Some consultation carried out to date over 3 separate occasions
- Responses from some 100 residents received
- Issues identified are predictable for proposal of its height size and bulk
- Support also received for retirement living
- Main concern seems to be precedence for similar development in area

- Height -in terms of the number of storeys - 5 storeys proposed and Community Consultation carried out by the applicant indicates residents are concerns are:
  - Noted that there is no similar building heights in suburb?
  - Impact from height needs to be internalised to minimise reverse amenity impacts on surrounding community;
  - Impacts of shadowing on adjoining lands uses
  - Loss of community landscape views
  - Need also to provide height limits in terms of AHD

City Planning Advice (Attached)

- Issue arising from City Planning Advice based on proposal discussed at the meeting held on 8 October 2004

Water supply and Sewerage

- External works and any upgrading need to be further investigated by Brisbane Water once concept closer to finalisation.

- If not carried out prior to lodgement application will; need to be referred to Brisbane Water for an investigation. This investigation is likely to take 3 to 4 weeks.

Traffic

- Traffic report required addressing all movement issues into and out of site;
- Balance of visitor and tenant car spaces required;
- Impact on intersections in particular Cansdale and Venner and Hyde Road and the intersection at Hyde Road and Fairfield Road
- Pedestrian movements in the areas to and from the site;

Flooding

- Q100 flood levels 6.7m AHD, Q50 5.5m AHD, Q20 3.7m AHD
- Applicant indicated that they have the Council flood modelling data and can demonstrate that there will be no worsening ;
- Competing issue identified being " Flood improvement works vs Waterway Corridor works

Landscape Concept Plan

- Preparation of a landscape concept Plan required as part of any high level application.
- This plan is to be prepared by a Landscape Architect and is to demonstrate compliance with the Special Needs Code in the City Plan.

Waterway

- No agreed direction given on how development should interface waterway corridor to the east
- Need to address waterway, wetland and biodiversity codes;
- Minor encroachment may be allowed into waterway if a net biodiversity gain is demonstrated and existing values protected;
- 40 metre setback to wetland may be reduced if maintenance of existing values (identified through an ecological assessment and a net biodiversity gain is demonstrated

Sustainable Development

Council would strongly encourage the design to incorporate a range of sustainable development aspects.

The conceptual planning and design and future development allotments should adopt the 15 Principles for Sustainable Development developed by Council.

These Principles include:

- Establishing an agreed set of sustainable design values;
- Applying an integrated design and construction process
- Appropriate land use mix;
- Vegetation retention and a minimisation of cut and fill;
- Integrated water management including the harvesting, storage and re-use of rainwater and the management of storm and waste water;
- Reduced energy consumption during operation and incorporating renewable energy resources such as solar energy for hot water where possible;
- Select durable, low energy materials;
- Manage waste during development, building and operation; and
- Consider the whole of life cycle cost of development.

Further meetings to discuss specific aspects with relevant Council officers are encouraged once

the tender process is completed.
Level of assessment The level of assessment for subsequent application is Impact Inappropriate. The development application fee applicable for any subsequent development application is the Major Project Fee as outlined the Development Assessment Fee Schedule. Where a combined development application is lodged for say: Reconfiguration; Preliminary Approval (Material Change of Use); and a Structure Plan; individual fees for each component are not required as these fees are all included within the one Major Project fee. The delegate for these applications will be "Full Council".

Attachment City Planning advice

Signed _____ Date / /

Disclaimer
The aim of a prelodgement meeting is to provide initial advice on likely major issues relevant to a development proposal to assist in the timely processing of applications. It can not replace the in-depth interviews normally associated with the formal assessment of an application and consideration of any public submissions. While the advice is given in good faith, it in no way binds a decision by the Council.

City Planning Advice December 2004

1.0 CONTEXT/PROPOSAL
The site is within the Light Industry Area Classification and is currently used as an auction warehouse. The site is within the Stephens District Local Plan area, however it is not identified in any precinct. Residential dwellings, sport and recreation facilities and some light industry activities surround the site.

The proposal is for a retirement village, including retail and commercial. No supporting information has been provided with the pre-lodgement submission. Two Master plan options have been submitted. Masterplan option 1 proposes a plot ratio of 1.2, equating to 33,504sqm over 236 units and commercial/retail and community facilities. Masterplan option 2 proposes a similar plot ratio and breakdown of units/facilities, however differ only slightly in design. Both designs incorporate up to 5 storeys.

2.0 DISCUSSION
Considering the small pocket of industry that exists in its context of residential and sport & recreation, there is in principle support for the facility proposed. However, there are a number of matters that must be addressed before full support can be given to the proposal.

2.1 Intensity
There is no planning merit for the proposed plot ratio of 1.2. The site is not in any strategic location that would suggest that this is an appropriate density. It is the reasonable expectation of the neighbouring community that if residential development were supported, it would be of a similar bulk and scale to that within the vicinity. As a result, the proposed GFA of 120% is not supported. The bulk, scale and density requirements of the nearby residential neighbourhood (ie. 30% - 50% GFA, 8.5 metres in height, 2-3 storeys) should apply to the site.

2.2 Adjoining Sport and Recreation
The viability and ongoing use of the sports fields in the area must not be jeopardised by the development. Council recently spent over $1.5 million relocating the El Salvadoreans to Leyshon Park from Dutton Park to make way for the Green Bridge. The El Salvadorean community will also use this facility as a prominent cultural and community gathering space on a regular basis. Competition standard lighting will be installed. Intensification of Leyshon and other nearby parks is anticipated due to a shortfall of sporting parkland and other community facility land in inner southern suburbs, combined with increased demand.

The development must not impinge upon Leyshon and adjoining Parks developing to their full capacity as significant district sports parks. The development should ensure the range of sporting and community activities does not adversely affect it (day or night). The proposed aged care facility must be designed and constructed to address the 'ultimate development' scenario presented by the El Salvadoreans sporting complex with regards to frequency and intensity of use by both participants and spectators alike. The impacts of high intensity sports and cultural activities (eg. regular use of competition standard lighting and significant traffic movement) must be addressed **within the retirement community allotment.** An alternative site configuration is requested that pushes the living units to the southern part of the site, with private recreational areas and communal facilities being located on the northern and eastern parts of the site. Significant setbacks, dense buffer planting on the northern and eastern boundaries, acoustic measures (eg. double glazing) must be incorporated into the design to ensure the harmonious co-existence of the development and its sporting neighbour.

The location and design of a retirement community is to be in accordance with the Residential- Special Needs Code and involve the preparation of a needs assessment and community consultation as per the Community Impact Assessment and Community Consultation Planning Scheme Policies. It is critical that there is consultation with government and human service agencies, public transport providers etc. and that those agencies can service the retirement community. Crime Prevention Through Environmental Design (CPTED) issues should be considered in the site layout and building design, in particular the interface between the development site and the park.

2.3 Air and Noise – Adjoining Industry

Until the adjoining industrial uses relocate, the developer of the proposed aged care facility will have to demonstrate how the potential air and noise impacts on the proposed development from the industrial uses will be managed. This information must also be submitted in terms of the nearby Taubmans' site. This site is classified as a dangerous goods location (storing flammable and combustible liquids). A risk and hazard assessment will be required to assess the potential hazard and risk of fire/explosion/etc. on the proposed aged care facility.

2.4 Present a Community Gain

The development should present some community gain. For example, the community hall and other communal infrastructure could be located on the northwestern part of the site and made available to the wider community for use. Also, the construction of a pedestrian path in the park near to subject site's northern boundary that links up with Cansdale St and the new clubhouse should be considered. Park contribution (ie. monetary or land) is yet to be determined.

2.5 Consultation

Public consultation should occur in accordance with the Community Consultation Planning Scheme Policy. Aspects of community consultation should be determined at the team level in collaboration with the Local Councillor.

2.6 Transport and Infrastructure

Comments were specifically requested with regards to the extension of Venner Rd and possible infrastructure charges. Transport & Traffic have advised that there are no plans to complete Venner Rd. The Infrastructure Coordination Unit have advised that the site is not within an ICP.

3.0 RECOMMENDATION

Should a proposal be presented that reduces its scale and is redesigned to address the above concerns, Urban Management Division supports the development of a retirement village in this location. Please ensure Urban Management Division is consulted upon the lodgement of any application.

SPRS

DRS/USE/ POS-911941
X.REF NH095/15
2

FACSIMILE

pmm GROUP

INFORMATION MANAGEMENT
ATTACH NO. 05 19899

Date:	9 February 2005	Reference:	7203
To:	Rory Kelly	Fax Number:	3403 5379
Company:	BCC – DA South Team		
Cc:	[redacted] – Harrison Real Estate		[redacted]
From:			
SUBJECT:	15 Cansdale Street, Yeronga		
Number of Pages:	2	(Including Cover Sheet)	
Mail Original:	☐ Yes	☒ No	

Dear Rory,

With reference to discussions yesterday, we now write to provide a list of the items that we intend to raise during the Prelodgement Meeting for the Yeronga Retirement project.

- **City Planning Feedback** – It would be appreciated if we could be provided with the feedback obtained regarding the project from the City Planning Department.

- **Community Consultation** – The community consultation program has been conducted. Council has been provided with a copy of the report prepared following the process. We wish to discuss the outcomes and any of the further issues raised during this process.

- **Structure of the Application** – A Preliminary Approval application to override the Planning Scheme is intended to be lodged with Council. As part of this application, a Precinct Plan with a series of Level of Assessment Tables and Development Codes will also be included. This application strategy seeks to enable the staged development of the retirement community. Subsequent applications will be either Self of Code Assessable.

- **Hydraulics and Flood Concerns** – We advise that Cardno MBK have been engaged to conduct investigations into the potential hydraulic and flood issues associated with the site. We note that a request has been lodged with Council to get the flood model for the area, however to date this has not been received. We would appreciate any assistance that can be provided with obtaining this model.

- **Traffic** –
  - We advise that traffic counts have been conducted in the area. The results of these counts have indicated that the capacity of existing roads is sufficient for the development.
  - Parking provided to date within the plans is in the order of 400-450 parking spaces.
  - Approximately 40 on-street parking spaces are proposed. As part of this on street provision some streetscaping work is to be conducted to improve the appearance for the area for existing and future residents.

- **Environmental and Occupational Health** –Stormwater and refuse collection. A meeting is to be scheduled with John Love from City Wastes to ensure the location of refuse collection is to the satisfaction of Council.

743 Ann Street, PO Box 1559, Fortitude Valley QLD 4006 Phone 07 3237 8899 Facsimile 07 3237 8833

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- Amenity and Urban Form – Height
- Confirmation of Application Fees
- Contaminated Land – currently arranging quotes from consultants for a Phase 1 Contaminated Land Search
- Referral Agencies – Referral Coordination
- Out of Centre Development – will an economic needs assessment be required? Current plans include approximately 1,400m² of retail/ commercial floor space, which is to involve uses such as doctor's surgery, pharmacy, newsagent, and coffee shop. It would be appreciated if Council could provide some indication of whether uses of this scale would be supported.

It would be appreciated if Council could either advise on a preferred date for the Prelodgement Meeting (we suggest Wednesday, 16 February 2005, if possible), or provide responses to the above items as soon as possible. Should you require any further information, please do not hesitate to contact either Melissa Collie on 3237 8898 or myself on 3237 8808.

Kind regards,

[redacted]

Senior Town Planner

SAS
AAS

DRS/USE/P04-904283
X.REF NH095/15
19 OCT 2004
INFORMATION MANAGEMENT
ATTACH No. A 041133764

16

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Fortitude Valley Q 4006
Australia

Our Ref: 7203
Date: 18 October 2004

Attn: Rory Kelly – Senior Planner

RECEIVED
18 OCT 2004
DRS CUSTOMER SERVICE AREA
CENTRAL

Development Assessment - South Team
Level 10
Brisbane Administration Centre
69 Ann Street
BRISBANE QLD 4000

Via: Mail

Dear Sir / Madam

RE: REFERRAL TO THE URBAN MANAGEMENT DIVISION
15 CANSDALE ROAD, YERONGA, DESCRIBED AS LOT 1 ON RP150512

We write with reference to discussions with Council during a Prelodgement Meeting on 8 October 2004. During this meeting it was identified that several divisions of the Council, including Brisbane Water, Sports and Recreation and Economic Development may have an interest in the development of this proposal. We now write to take up Council's offer of referring this proposal through the Urban Management Structure to obtain the appropriate direction prior to lodgement of the application. Accordingly we have listed below some potential issues that were raised during the Prelodgement Meeting and note that Council are already in receipt of concept plans.

The proposal involves the establishment of a Retirement Village, which will feature a variety of levels of aged care, ranging from low, essentially independent living, to high level care, including a nursing home. The village will also include a variety of commercial uses including post office, medical services, and recreational facilities. It is intended that this commercial area will contribute to the revitalisation of the existing commercial area that exists on the opposite side of Hyde Road. Please refer to the proposal plans for further detail.

During the Prelodgement meeting, several items were raised that we believe require comment from Council's various departments, these items are listed below:

- Extension of Venner Road – the site is located on the corner of Venner Road and Cansdale Road. The current proposal includes access from Venner Road. Venner Road is partially unconstructed from the site east towards Forsyth Street. This portion of unconstructed road is currently used as parkland area. We seek confirmation that this portion of road will remain unconstructed.
- Access from Venner Road – The design of the proposal currently includes access to the site being from Venner Road. During the Prelodgement Meeting, this was raised as a potential issue considering the possibility of upgrading the intersection of Hyde Road, Venner Road and Cansdale Road in order to provide access to the site.
- Traffic impacts – general consideration must be made into the potential traffic impacts of a development of this scale.

Directors: Jim McKnoulty B App Sc (Surv) LS MIS Aust Graham Dunlop B Surv MIS Aust JP (C Dec) GDURP MPIA Jeffrey Evans B App Sc (Surv) GDURP MPIA
Gregg Purcell B App Sc (Surv) LS MIS Aust C Dec Peter Egerton BRTP MPIA
PMM Group Pty Ltd ACN 010 370 448 ABN 81 591 046 588

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- Flood – the site is currently identified as being in a waterway corridor in the City Plan. A drain runs from the River along the eastern boundary of the site. Investigations are necessary into the upgrades of the drain and water levels around the site may also be an issue.
- Height – consideration of the height of the current proposal and its impact on the visual amenity of the area;
- Plot ratio – consideration of the plot ratio of the proposal.
- Strategic Direction – the site is currently classified as Light Industrial. There are other remaining light industrial uses in the vicinity, however clarification is sought in relation to the intent for development in the area.
- Location – The site is located adjacent to open space sport and recreation facilities. Consideration must be made relating to the relationship between the proposed use and the existing recreational facilities;

We advise, in accordance with discussions held during the Prelodgement Meeting, that a community consultation program has been developed for the project by Performance Frontiers. A brief overview of the proposed process is attached, and we ask Council to assess the methodology of the process proposed and provide the appropriate feedback on this approach.

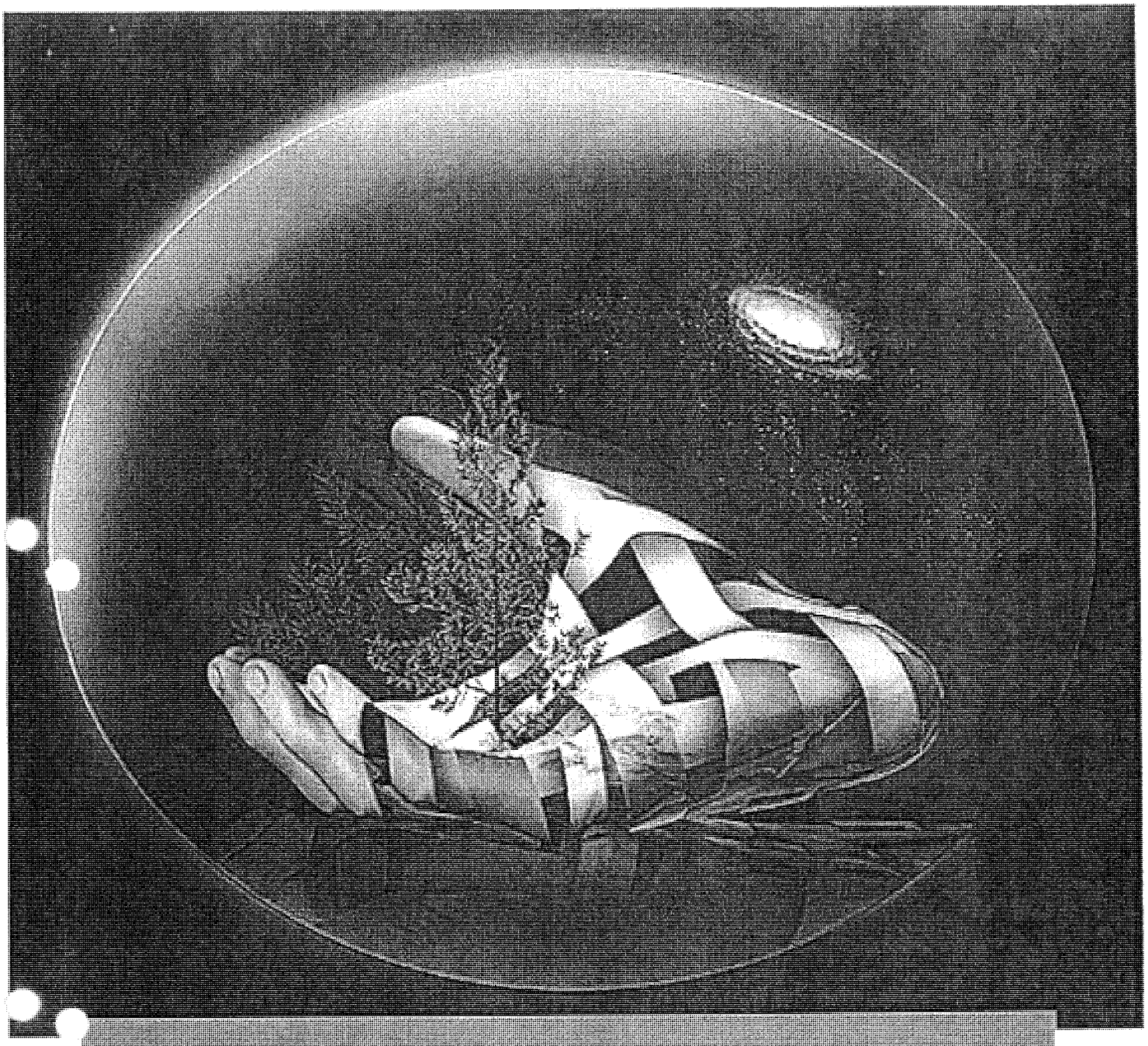
We would appreciate the consideration of this proposal, the above issues and any other items that may be associated with this development. We trust this information is sufficient for your purposes, however should you require any further details or clarification, please do not hesitate to contact the writer on [redacted]

Yours faithfully
PMM GROUP PTY LTD

[redacted]
Senior Town Planner

Enc Community Consultation proposed methodology

cc [redacted] – Harrison Real Estate Development (letter only)



YERONGA CARE
COMMUNITY CONSULTATION PROGRAM

A proposal to design and manage a community consultation program for Harrisons Real Estate Development

BCC.141.0664

1. Introduction

Harrison Real Estate Development is planning an aged care development on the corner of Venner Road and Cansdale Street at Yeronga.

Following discussions with Brisbane City Council, it has been recommended that a targeted community consultation be undertaken with people who are potentially impacted by the proposed development as part of the development planning and assessment process.

This proposal outlines the proposed consultation process including objectives, methodology, deliverables, fees and expenses and timing.

The consultation process has been developed in accordance with the Brisbane City Plan 2000 Consultation Scheme Policy principles as outlined in Appendix One.

2. Purpose

The overall objective of the community consultation program is to inform people affected by the proposed development and identify issues or concerns that need to be addressed in the development planning and assessment process.

At this stage, the consultation program will focus on:

- Informing the community about the nature and scale of the development
- Educating the community about the need and benefits of the development
- Obtaining specific and broad feedback from the community about key issues or concerns that they have with the development
- Involving the community in discussions or forums that potentially resolve issues and concerns
- Exchanging information about the progress and status of the development and how issues and concerns have been dealt with.

These objectives will be further refined during the project scoping stage of the program.

3. Methodology

The community consultation programme will comprise three stages:

1. Program scoping to clarify and refine the purpose, key objectives, expected outcomes, decision making processes and most appropriate level of consultation.

2. Community dialogue with people who are affected by the development to raise awareness and inform them about the need and benefits of the development, and to encourage them to participate in positive, constructive discussion about their issues, concerns and potential solutions.

3. Reporting of outcomes from community dialogue activities for inclusion in development planning and assessment processes.

BCC.141.0665

The activities and processes for each stage are as follows:

3.1 Stage One – Program scoping

The first stage of the community consultation programme is to identify the scope of consultation and communication, in particular the residential areas, community groups and other key stakeholders that should be included in the consultation program to ensure that the development planning and assessment process is a success and the most effective ways to communicate and reach these audiences.

A series of up to ten face to face interviews would conducted with the following individuals to determine the scope of the consultation:

- Local Councillor
- State and Federal MPs
- Chair of the Planning Committee
- Representatives of the newly elected Lord Mayor
- Representatives from the BCC Development Assessment Team
- Representatives from the Office of Urban Management
- Representatives from local community groups, in particular resident action groups and progress associations

Based on the outcomes of these interviews, a three hour meeting would be conducted with the client and project team to agree on the parameters of the consultation process. A consultation and communication plan would be finalised detailing the business, community, government and advisory groups and individuals who can assist with or who should be involved in the consultation process.

The design and co-ordination of communication activities that are needed to reach these target audiences would be undertaken on completion of this meeting.

It is envisaged that a mix of communication mediums would be utilised to maximise communication effectiveness and to ensure that people affected by the development have the opportunity to be aware of, informed and participate in the consultation process.

At this stage the preferred mediums would include local newspaper editorial and advertising, signage on site, community noticeboards, targeted letterbox drops and personal interviews with key local opinion leaders.

3.2 Stage Two – Community dialogue

Effective community consultation requires dialogue rather than debate.

Our approach to designing and facilitating community consultation programs is based on promoting dialogue with the people affected by the development that encourages them to be open to understanding and exploring a diversity of views and opinions and collaborating with project team consultants to find solutions to issues and concerns.

The first step in establishing the foundations for dialogue is to ensure that target audiences identified for the consultation process are reached through communication activities and are represented in and throughout the consultation process.

BCC.141.0666

Consultation and communication activities will be designed to incorporate a registration of interest and a feedback mechanism so that people affected by the development have the opportunity to be informed and remain informed regardless of their level of participation in the process.

To this end, it is proposed that a physical site office be established in vacant shops opposite the development site to act as a point of contact and information source about the development and the consultation process. In addition, we propose establishing a website with a bulletin board for announcements and information updates to the community with a community forum area on the site where participants can exchange information, views and ideas about the development.

The second step in developing community dialogue is to create events that will attract people's attention, interest and participation.

We propose a series of three integrated events that maximise awareness, access and opportunity for participation:

- *A Community Sunday Brunch* to explain the proposed development and the consultation process to the community and encourage ongoing participation and support for the process. The event would be held on-site or at a nearby high traffic location from 10.30am-12.30pm and feature keynote presentations from the project team and a discussion forum to identify preliminary perceptions and attitudes towards the development. A feedback survey would be distributed to people at the event.
- *A Community Workshop* to better understand the need and benefit of the development and to identify key issues and concerns that need to be considered as part of the development planning and assessment process. The workshop would be held on two different weekday evenings from 7.00pm–9.00pm at a local community facility (eg. Yeronga RSL, community hall or school hall). The event would be interactive and experiential to build dialogue and ownership of the consultation process. Outcomes of both evenings would be posted on the community information board at the physical office and on the website.
- *Community Forums* where individuals or groups can meet with the Project Team at the site office at pre-agreed times to discuss particular aspects or concerns about the development; or engage in an online forum on the website with the Project Team where other people can views comments and information exchanged.

3.3 Stage Three – Reporting of community dialogue

On completion of the Community Sunday Brunch and Community Workshop, a preliminary report would be prepared outlining the outcomes of the consultation at that point and comments that need to be considered or adopted in the development planning and assessment process. The outcomes would be reported using Brisbane City Plan 2000 guidelines.

A final report incorporating feedback from the Community Forums would be prepared and submitted on completion of the consultation.

BCC.141.0667

4. Expected outcomes

Based on the preliminary briefing from PMM Group, the expected outcomes for this consultation program are:

- People affected by the development will have the opportunity to be made aware of and to be informed about the proposed development.
- People affected by the development will have the opportunity and be encouraged to participate in community consultation activities.
- A cross-section of people representing the broad range of community groups and interests will be involved in the consultation process at some point.
- Key issues and concerns of people affected by the development by will clearly identified and recorded.
- Potential solutions/acceptable outcomes will be identified to address key issues and concerns.
- A preliminary report will be prepared and included in the Development Application
- A final report will be prepared and submitted following completion of the consultation program.

5. Timing

The proposed timing of the project is as follows:

- Stage One: Project Scoping Weeks 1-2
- Stage Two: Community Forum Weeks 3-7
- Stage Three: Reporting Weeks 6-8

BCC.141.0668

APPENDIX ONE

Program alignment - Brisbane City Plan 2000 Consultation principles

Consultation principle	Proposed actions
People affected by a development proposal or project have the right to be informed and to have the opportunity to participate and this may include tenants affected by the development for example.	Multiple mediums for informing people potentially affected – local newspaper, site signage, highly visible shop front display, letterbox drop, personal interviews with key local opinion leaders
The consultation program should be interesting, equitable (in terms of physical access and access to information), inclusive (of all stakeholders, particularly marginalised groups) and adequately resourced.	Interactive, experiential community workshops and public meetings. Multiple information mediums used. Marginalised groups identified in project scoping and contacted directly. Investment in shop front to encourage ongoing information exchange.
Consultation should commence early and form part of the development formulation and assessment process rather than being a one-off event	Community consultation to occur prior to lodgement of development application. Consultation program forms part of development formulation and assessment process.
The history of previous consultation programs should be taken into account	BCC to advise on success and failure of previous consultations in this area as part of project scoping stage.
The purpose, expected outcomes and decision making process should be clearly communicated to all parties participating.	Purpose, expected outcomes and decision making process to be finalised during project scoping stage. Process to be clearly articulated to and reinforced with participants during each program activity.
A diversity of consultation techniques should be implemented to maximise opportunity for participation	Proposed techniques include personal interviews, community workshops, community meetings, media releases, street meeting, signage on land and community notice boards.
Consultation objectives should be matched with appropriate techniques as outlined in the plan	Finalisation of most effective techniques on completion of objective setting in program scoping stage
The consultation program should be constantly evaluated against its objectives and modified accordingly to meet changing needs	Program review on completion of each stage/key activity
Participants should be informed how the issues raised through consultation have been addressed in the development proposal/outcome	Community forums Shop front bulletin/information board Shop front community meetings with project team

BCC.141.0669

(41)

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Australia

DRS/USE/H05 - 917956
XREF
22 SEP 2005
ATTACH No. A05 1147373

Our Ref: 7203
Date: 22 September 2005

Attn: [redacted]

Development Assessment Team South
Brisbane City Council
Level 10
Brisbane Administration Centre
69 Ann Street
BRISBANE QLD 4000

Via: Mail and Email [redacted]

Dear [redacted]

RE: YERONGA RETIREMENT VILLAGE
15 CANSDALE STREET, YERONGA
COUNCIL FILE REFERENCE: DRS/USE/H05-917956

We write with reference to recent detailed discussions with Principal Planner, Rory Kelly and yourself relating to the proposed Retirement Village development on the site at 15 Cansdale Street, Yeronga, in particular in relation to the structure of the application.

Further to these discussions, we write to request the withdrawal of the Reconfiguration of a Lot component that formed part of the original application to Council, lodged 11 April 2005.

It is noted that this is a minor change to the application and accordingly believe that this modification does not require the IDAS timeframes to recommence.

We trust this information is sufficient for your purposes, however should you require any further details or clarification, please do not hesitate to contact Simon Forsyth on 3237 8808 or the writer on 3237 8898.

Yours faithfully
PMM GROUP PTY LTD

[redacted]
Town Planner

Cc [redacted] – Harrison's Real Estate Development

Directors: [redacted] B App Sc (Surv) LS MIS Aus [redacted] B Surv MIS Aust JP (C Dec) GDURP MPIA [redacted] B App Sc (Surv) GDURP MPIA [redacted] B App Sc (Surv) LS MIS Aust C Dec [redacted] RTP MPIA
[redacted] Pty Ltd ACN 010 370 448

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Fortitude Valley Q 4006
743 Ann Street
Fortitude Valley Q 4006
Australia

Our Ref: 7203
Date: 11 April 2005

Attn: The Team Leader – Development Assessment Team South

The Chief Executive Officer
Development Assessment Team South
Brisbane City Council
Level 1 BAC
69 Ann Street
BRISBANE QLD 4000

VIA: MAIL

Dear Sir / Madam

RE: **DEVELOPMENT APPLICATION**
MATERIAL CHANGE OF USE / RECONFIGURING A LOT
15 CANSDALE STREET, YERONGA

We write on behalf of our Client, M. E. Harrison Investment Co. Pty Ltd, in lodging this development application for a ***Development Permit*** for ***Preliminary Approval Overriding the Planning Scheme – Material Change of Use*** (Multi-Unit dwelling (Retirement Village) and Shop, not greater than 250m²) and the Reconfiguration of a Lot (one into four).

The application is lodged in respect of the property located at 15 Cansdale Street, Yeronga more properly described as Lot 1 on RP150512.

Pre-lodgement meetings were held with Council on the 29 September 2004, 8 October 2004, and 1 March 2005. A summary of how these matters have been addressed in conjunction with this development application is documented in the attached report.

The following is a summary of the relevant site details:

Street Address	15 Cansdale Street
Suburb	Yeronga
Real Property Description	Lot 1 on RP150512
Site Area (ha)	2.792
Area Classification	Light Industry
Name of Owner	Jukasupe Pty Ltd
Name of Ward	Dutton Park

pmm GROUP
urban designers
townplanners
land surveyors

In support of this application we enclose the following information:

- IDAS **Development Application Forms Parts A, D, F, Referrals Checklist and Attachment 2** duly completed;
- **Letter of Consent** executed by Jukasupe Pty Ltd;
- Seven (7) copies of the **Town Planning Assessment Report** prepared by PMM Group dated April 2005, including proposal plans and supporting information;
- Our client's **cheque** to the value of **$46,000**, which we understand to be the appropriate application fee for the 2003/2004 financial year, applicable as at 1 July 2003. The fee is calculated on the category of a:

  - Major Project;
  - Impact Assessable; and
  - Performance Solution.

We trust this information is sufficient for your purposes, however should you require any further details or clarification, please do not hesitate to contact the writer on 3237 8899.

Yours faithfully
PMM GROUP PTY LTD

[redacted]

Senior Planner

enc

Form 1 Development Application

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12 APR 2005

A 05 / 51821

Common details

The completion of **all *applicable* questions** on Part A is **mandatory** for all applications.

Part A must be accompanied by one (1) or more other completed parts of the Form.

Any information requested in the form may be provided in an attachment to the application.

For further information about completing the following details, refer to **Guide 1 *Making an IDAS Application***.

Description of land

All land the subject of the application, must be identified.

A description of the land is not required in relation to a mobile or temporary environmentally relevant activity.

Advice for completing Q2
Q2 applies if development is proposed within a water body or watecourse.

Advice for completing Q3
Most land can be identified by a lot on plan description. These details can be obtained from title documents or through the local government.

However, if the land on which the development is proposed does ***not*** have a lot on plan description *(i.e. the development is proposed in a water body or watercourse)* provide –

(i) the lot on plan description for the adjoining/adjacent land; or

(ii) GPS coordinates where there is no adjoining/adjacent land *(eg. in Moreton Bay)*.

1. Street address: *(including house number, street name, suburb/locality name & postcode) (if applicable)*
   15 Cansdale Street, Yeronga
2. Name of water body or watercourse, within which the development is proposed: *(if applicable)*
   N/A
3. Lot on plan description *(eg. Lot 123 on RP 4567)* / GPS coordinates:
   Lot 1 on RP150512
4. The above description is for: *(tick applicable box)*
   - ☒ (i) the land on which the development is proposed; or
   - ☐ (ii) the land adjoining the water body or watercourse, within which the development is proposed; or
   - ☐ (iii) the water body or watercourse.
5. Shop / tenancy number: *(if applicable)*
   N/A
6. Storey / level: *(if applicable)*
   N/A

Advice for completing Q7
Q7 does not apply if the development is proposed within a water body or watercourse.

7. Total area of land: *(m² or ha) (if applicable)*
   2.792ha

Advice for completing Q8
Q8 applies if development is proposed within a local government area.

Note: Areas below high water mark are ***not*** within a local government's area unless provided for under the *Local Government Act 1993*.

8. Local government area in which the land is situated: *(eg. Brisbane, Esk, Hervey Bay, Woocoo etc.) (if applicable)*
   Brisbane

Advice for completing Q9
Q9 applies if development is proposed on strategic port land or a strategic port land tidal area.

For more information refer to Guide 11 *Development on strategic port land*

9. Port authority for the strategic port land or strategic port land tidal area on which the development is proposed *(eg. Port of Brisbane, Port of Townsville) (if applicable)*
   N/A

Proposal details

10. Existing use of the land: *(eg. vacant, single house, shop etc.)*
    Auction warehouse and storage
11. Proposed use of the land: *(eg. 6 unit apartment building, 30 lot residential subdivision, ERA for aquaculture in ponds with a total area of 7 ha for which wastes are released into waters etc).*
    Integrated Retirement Village

Project No. 107231
Application No. 917956
Commence No. HL

Other applicable parts of Form 1

Part A of Form 1 must ***always*** be accompanied by other completed parts of Form 1.

For information about when a part of Form 1 may apply for an application refer to Guide 1 *Making an IDAS development application.*

12. Other parts of Form 1 completed as part of this application: *(eg. Part D, Part I, etc)*
Part D, F and Referrals Checklist

Applicant details

Clearly identify who is making the application. The applicant need not be the owner of the land.

When signing and lodging this application
The applicant is responsible for ensuring the information provided is correct. The assessment manager, any referral agency and the Chief Executive *(where applicable)* will rely on this information when assessing and deciding the application.

If the applicant is a company
A contact person must be shown. All correspondence will be mailed to this address.

13. Name:
M.E. Harrison Investment Co Pty Ltd c/o- PMM Group

14. Postal address:
PO Box 1559 Fortitude Valley 4006

15. Signature: [redacted]

16. Date: 8/4/05

17. Contact person: [redacted]

18. Telephone number:
3237 8808 / 3237 8898

19. Mobile phone number: *(if applicable)* [redacted]

20. Facsimile number: *(if applicable)*
3237 8833

21. Email address: *(if applicable)* [redacted]

Land owner's consent *(if applicable)*

Section 3.2.1(10)(a) of the IPA prescribes that an application can **not** be taken to be properly made without the land owner's consent.

For more information about land owner's consent refer to Guide 1 *Making an IDAS development application.*.

An application ***must*** be supported by the consent of the land owner if the application involves:

(i) a material change of use;
(ii) reconfiguration of a lot;
(iii) work on land below high-water mark & not within a canal as defined under the *Coastal Protection and Management Act 1995*;or
(iv) work on rail corridor land defined under the *Transport Infrastructure Act 1994*.

For a mobile or temporary ERA
Land owner's consent is ***not*** required.

If an owner has signed this form as applicant
Their signature is not required again in this section.

If there are multiple owners
The consent of each owner is required.

If the owner is a company
Refer to Guide 1.

22. Name/s:
Please refer to attached owner consent

23. Signature/s:

24. Date:

Resource entitlement *(if applicable)*

Section 3.2.1(10)(b) of the IPA prescribes that an application can ***not*** be taken to be properly made without evidence of the resource entitlement.

Advice for completing Q26
Refer to schedule 10 of the *Integrated Planning Regulation 1998* that prescribes the nature of evidence required by the State in support of the lodging of this development application.

25. Does this application involve taking or interfering with *(other than interfering with quarry material on State coastal land under the Coastal Protection and Management Act 1995)* a State resource?

☒ NO - *go to Q28* ☐ YES - *go to Q26*

26. This application is required by regulation to be accompanied by: *(tick the applicable box)*

☐ (i) evidence of the **allocation** of, or entitlement to, the resource – *attach evidence*

☐ (ii) evidence the chief executive of the department administering the resource is satisfied the development **is consistent with an allocation** of, or entitlement to, the resource – *go to Q 27*

☐ (iii) evidence the chief executive of the department administering the resource is satisfied the development application **may proceed in the absence of an allocation** of, or

entitlement to, the resource – *go to Q 27*

Advice for completing Q27

The information in (i) – (v) is mandatory if evidence is required under Q26 (ii) or (iii) above.

The official stamp of the Department of Natural Resources and Mines is mandatory where the application involves taking or interfering with water or riverine quarry material under the *Water Act 2000*.

27. Evidence of the resource entitlement:

(i) Resource entitlement / authority details

(ii) Name of delegated officer

(iii) Position of delegated officer

(iv) Signature of delegated officer

(v) Date

(iv) Official stamp of the department administering the resource *(if applicable)*

Referral triggers

The Referrals Checklist must be completed and lodged with all IDAS development applications, other than those requiring the completion of Parts A and B of the Form only.

28. Is the Referrals Checklist completed and attached to this application?

☒ YES

☐ NO – *the assessment manager may refuse to accept this application on the grounds that the application has not been properly made*

Plans / drawings / reports

An application should be accompanied by details to support the proposal & enable the assessment manager, referral agencies and any person viewing the application during public scrutiny or public notification to understand the scope of the proposal and any potential impact.

29. Plans/drawings/reports accompanying this application:

Plan / Drawing / Report Number	Title	Date
(i)	Refer to Appendix C - Proposal Plans	
(ii)		
(iii)		
(iv)		
(v)		
(vi)		
(vii)		
(viii)		
(ix)		
(x)		

PLEASE NOTE

The assessment manager may refuse to accept an application that, at the time of lodgement, fails to provide all applicable information required by Part A and any other relevant part of Form 1.

OFFICE USE ONLY *(applicable to assessment manager's)*

FEE ($)	DATE RECEIVED		RECEIVING OFFICER'S NAME/S		REFERENCE NUMBER/S	

Form 1 Development Application

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Material change of use

assessable against a local government's planning scheme

Completion of **all *applicable* questions** on Part D is **mandatory** for all applications involving assessment of a material change of use (MCU) assessable against a local governments planning scheme.

Nature of the application

A development permit authorises development to occur, while a preliminary approval is a step in the approval process and does not authorise development to occur.

1. This application is for: *(tick 1 or both if applicable)*

☒ **Preliminary approval** for a material change of use of premises including conceptual design for any associated works that require approval under the planning scheme *(i.e. consideration of the proposal concept)*

AND / OR

☒ **Development permit** for a material change of use of premises including conceptual design for any associated works that require approval under the planning scheme.

The subject land

For the definition of "gross floor area" go to the planning scheme against which the application will be assessed.

2. How the subject land is identified in the planning scheme *(name the zone, precinct etc.)*

Light Industry

3. Existing gross floor area: *(if applicable)* N/A

4. Are there any existing easements on the land?

☒ NO
☐ YES – *attach plans of the location and details of the purpose of the easement*

Material change of use details

5. Details of the change to the use of the land: *(eg. vacant land to shopping centre, house to apartment building, vacant land to industry (tyre manufacturing) etc.)*

Auctionhouse to Integrated Retirement Village

6. Number of employees: N/A

7. Operating days and hours: N/A

Associated building works details *(if applicable)*

For the definition of "site cover", "gross floor area" and "storey" go to the planning scheme against which the application will be assessed.

8. Site cover:

9. Gross floor area:

10. Number of on-site car parking spaces:

11. Number of storeys / maximum height above natural ground:

12. Number of employees

13. Hours and days the use will operate

Associated operational works details *(if applicable)*

14. Details of associated operational works *(eg. landscaping, cut and fill, drainage, road works etc.)*

N/A

PLEASE NOTE

This application **cannot** be accepted unless accompanied by Part A of Form 1.

The assessment manager may refuse to accept an application that, at the time of lodgement, fails to provide all applicable information requested by Part A and any other relevant part of Form 1.

OFFICE USE ONLY *(applicable to assessment manager)*

DATE RECEIVED		REFERENCE NUMBER/S	

Form 1 Development Application

idas

Reconfiguring a lot

Completion of **all *applicable* questions** on Part F is **mandatory** for all applications involving the reconfiguring of a lot *(including freehold subdivision, community title subdivision, subdivision by lease, etc.)*.

Nature of the application

A development permit authorises development to occur, while a preliminary approval is a step in the approval process and does not authorise development to occur.

1. This application is for: *(tick one (1) or both if applicable)*

☒ **Development permit** - *provide details below eg. stage 1: freehold subdivision of 25 lots, realignment of a boundary, creation of an access easement)*

subdivision 1 into 4 lots

AND / OR

☐ **Preliminary approval** -*provide details below eg. stages 2, 3 and 4: freehold subdivision of 75 lots, realignment of a boundary, creation of an access easement)*

The subject land

The information requested in Q2 & 3 is necessary for statistical and planning purposes.

2. Number of existing lots: 1

3. Total area of land in application: *(if staged, total area of the land in this stage)*

2.792ha

4. How the subject land is identified in the planning scheme: *(name the zone, precinct etc.)*

Light Industry

5. Current use of the land: *(if vacant, also identify the previous use)*

Auction warehouse

6. Are there buildings or structures existing on the land?

☐ NO

☒ YES – *complete Q 7*

7. Indicate which one of the following circumstances applies:

☒ **All** existing buildings and structures on the land will be **demolished** as part of the development / redevelopment of the site; or

☐ **Some** existing buildings and structures on the land are proposed to be **retained** as part of the development / redevelopment of the site - *indicate on the plans prepared in response to Question 6 above, those buildings or structures proposed to be retained*

8. Existing services on the land:*(eg. water & sewerage) - attach plan identifying location if appropriate)*

water, sewerage, telecommunications

9. Are there any existing easements over the land?

☒ NO

☐ YES - *attach plan identifying easement location & purpose*

The proposal

The information requested in Q10-13 is necessary for statistical and planning purposes.

10. Total area of land in the development permit minus any balance area

2.792ha

11. Number of proposed lots: 4

12. Number of additional **residential** lots proposed in development permit: *(if applicable)*

4

13. Estate name & stage number: *(applicable if the application is for a stage or stages of an overall subdivision proposal)*

N/A

14. Area of land to be contributed for community purposes: *(if applicable)*

N/A

15. Length of new road to be constructed: *(if applicable)*

N/A

PLEASE NOTE

This application **cannot** be accepted unless accompanied by Part A of Form 1.

The assessment manager may refuse to accept an application that, at the time of lodgement, fails to provide all applicable information requested by Part A and any other relevant part of Form 1.

OFFICE USE ONLY *(applicable to assessment manager)*

DATE RECEIVED		REFERENCE NUMBER/S	

Form 1 Development Application idas

Referrals checklist

Completion of **all questions** on the Referrals Checklist is **mandatory** for all applications, other than those requiring the completion of Parts A & B only.
It is the responsibility of the applicant to work with the assessment manager to correctly identify if an application involves referral to an IDAS referral agency for their assessment and determination, or comment and / or the coordination of any information request by the Chief Executive DLGP through the referral coordination process. The checklist contains a number of questions to aid in this determination. If your application does involve referral, the assessment manager will confirm in the acknowledgement notice the referral actions required. To assist you in answering the following questions a series of guides are available free from www.ipa.qld.gov.au.

REFERRALS THAT CAN APPLY TO DEVELOPMENT

- other than building work assessable against the Standard Building Regulation 1993

Environmentally relevant activity

For more information refer to Guide 4, schedule 8A of the IPA & schedule 2 of the IP Regulation.
Unless you answered "none of the above" to Q1, the application requires assessment by the administering authority[1]. If an agency other than the administering authority is the assessment manager for the application, the administering authority is a concurrence agency for the application in relation to this matter.
***Note**: An application involving ERA 19 and/or 20 will also require completion of Part K[2] of Form 1 for approval **where** an allocation under the Water Act 2000 is required.*

1. The application involves *(tick applicable box/es)* –
   - ☐ (i) an environmentally relevant activity (ERA) for which a code for environmental compliance has ***not*** been made- *complete Part G of Form 1*
   - ☐ (ii) a mobile or temporary ERA for which a code of environmental compliance has ***not*** been made - *complete Part G of Form 1*
   - ☒ (iii) none of the above

State-controlled road matters

For more information refer to Guide 3, schedule 8A of the IPA & schedule 2 of the IP Regulation.
Unless you answered "none of the above" to Q2, the application triggers referral to Main Roads as referral agency.
In certain circumstances Main Roads will be an advice agency, while in other circumstances Main Roads will be a concurrence agency. Schedule 2 of the IP Regulation will assist you to determine where Main Roads is an advice or concurrence agency for the application.

2. The application involves development on land: *(tick applicable box/es)* -
   (a) ***contiguous***[2] to a State controlled road that is for -
   - ☐ (i) a material change of use assessable against the planning scheme;
   - ☐ (ii) reconfiguring a lot - unless the number of lots does not increase and the number of lots abutting the State-controlled road does not increase;
   - ☐ (iii) operational work not associated with a material change of use assessable against the planning scheme or reconfiguring a lot that–
     - is associated with access to a State-controlled road;
     - is for filling or excavation;
   - ☐ (iv) operational work or building work *(for a non-residential purpose and not associated with an assessable reconfiguration or a material change of use assessable against a planning scheme)* that involves the redirection or intensification of site stormwater from the site, through a pipe with a cross-sectional area greater than 250mm² that directs stormwater to a State-controlled road;

   (b) ***not contiguous*** to a State-controlled road that is –
   - ☐ (iv) proposed within a local government area that has a transitional planning scheme and is for development -
     - mentioned in schedule 5 of the IP Regulation and exceeds the thresholds set in that schedule
   - ☒ (v) proposed within a local government area that has an IPA planning scheme and is for development -
     - mentioned in schedule 5 of the IP Regulation and exceeds the thresholds set in that schedule
     - inconsistent with plans for State-controlled road infrastructure

   (c) ☐ none of the above

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[1] The administering authority may be either the Environmental Protection Agency, the relevant local government (for a devolved ERA) or the Queensland Department of Primary Industries and Fisheries (for a delegated ERA).

[2] Land contiguous to a State-controlled road is defined in schedule 14 of the IP Regulation to mean land if part of the land is within 100m of the State-controlled road or land that is part of a future State-controlled road)

Clearing vegetation

For more information refer to Guide 12, schedule 8A of the IPA & schedule 2 of the IP Regulation.

Unless you answered "none of the above" to Q3, the application requires assessment by NR&M[3]. If an agency other than NR&M is the assessment manager for the application, NR&M is a concurrence agency for the application in relation to this matter.

3. The application involves: *(tick applicable box)* -

☐ (a) ***operational work*** for the clearing of native vegetation where the vegetation clearing is made assessable under Schedule 8 of the IPA - *complete Part J of Form 1*

☐ (b) a ***material change of if*** –

(i) the lot contains –
- a category 1, 2 or 3 area shown on a property map of assessable vegetation; or
- if there is no property map of assessable vegetation for the lot - remnant vegetation; &

(ii) the existing use of the land is a rural or environmental use; and

(iii) the size of the land is 2 hectares or larger - *complete Part J of Form 1*

☐ (c) ***reconfiguration of a lot*** if –

(i) the lot contains –
- a category 1, 2 or 3 area shown on a property map of assessable vegetation; or
- there is no property map of assessable vegetation for the lot - remnant vegetation; &

(ii) the size of the lot before the reconfiguration is 2 hectares or larger; and

(iii) 2 or more lots are created; and

(iv) the size of any lot created is 25 hectares or smaller - *complete Part J of Form 1*

☒ (d) none of the above

Strategic port land

For more information refer to Guide 11, schedule 8A of the IPA & schedule 2 of the IP Regulation.

If you answered "YES" to Q4, the relevant Port Authority is the assessment manager and Queensland Transport is a concurrence agency for the application.

4. Does the application involve a material change of use on strategic port land that is ***inconsistent*** with the approved land use plan under the *Transport Infrastructure Act 1994?*

☒ NO

☐ YES - *complete Part I of Form 1*

Acid sulfate soils

For more information refer to Guide 10 & schedule 2 of the IP Regulation.

Unless you answered "none of the above" to Q5, the application requires assessment by NR&M. If an agency other than NR&M is the assessment manager for the application, NR&M is an advice agency for the application in relation to this matter.

5. The application involves assessable development *(other than building work only assessable against the Standard Building Regulation)* on land situated in an identified[4] local government area and where the surface of the land is: *(tick applicable box)* -

☐ (i) below 20m AHD[5] and the development involves the excavation of 1000m^3 or more of soil or sediment at or below 5m AHD; or

☐ (ii) at or below 5m AHD and the development involves filling the site with 1000m^3 or more of material

☒ (iii) none of the above

Major hazard facilities or possible major hazard facilities

For more information refer to Guide 17, schedule 8A of the IPA & schedule 2 of the IP Regulation.

If you answered "YES" to Q6, the application requires assessment by DES[6]. If an agency other than DES is the assessment manager for the application, DES is a concurrence agency for the application in relation to this matter.

6. Does the application involve a material change of use for a major hazard facility or possible major hazard facility as defined under the *Dangerous Goods Safety Management Act 2000?*

☒ NO

☐ YES - *complete Part L of Form 1*

Water related development

For more information about items (i) – (iv), refer to Guide 15, schedule 8A of the IPA & schedule 2 of the IP Regulation.

For more information about item (v), refer to Guide 14 *Does my application involve assessment of a referable dam?*, schedule 8A of the IPA & schedule 2 of the IP Regulation.

Unless you answered "none of the above", the application requires assessment by NR&M. If an agency other than NR&M is the assessment manager for the application, NR&M is a concurrence agency for the application in relation to this matter.

7. The application involves:

☐ (a) operational work that is: *(tick applicable box/es)*

☐ (i) in a watercourse *(eg. a pump, gravity diversion, stream re-direction, weir or dam)*

☐ (ii) for an artesian bore anywhere in the State, no matter what the use

☐ (iii) for a subartesian bore, in declared groundwater area[7], for use for purposes other than stock and/or domestic use

☐ (iv) for a subartesian bore, in certain declared groundwater area, for use for stock and/or domestic purposes

☐ (v) for a referable dam[8]

☐ (vi) for taking overland flow water;

☒ (b) none of the above.

---

[3] Department of Natural Resources and Mines

[4] The identified local government areas are: Aurukun, Bowen, Brisbane, Broadsound, Bundaberg, Burdekin, Burke, Burnett, Caboolture, Cairns, Calliope, Caloundra, Cardwell, Carpentaria, Cook, Cooloola, Douglas, Fitzroy, Gladstone, Gold Coast, Hervey Bay, Hinchinbrooke, Isis, Johnstone, Livingstone, Logan, Mackay, Maroochy, Maryborough, Mirium Vale, Mornington, Noosa, Pine Rivers, Redcliffe, Redland, Rockhampton, Sarina, Thuringowa, Tiaro, Torres, Townsville, Whitsunday.

[5] Australian Height Datum (AHD)

[6] Department of Emergency Services

[7] The declared ground water areas are listed in Guide 13 *Development in a declared catchment area*

[8] Referable dam is defined under the *Water Act 2000*

Removal of quarry material from a watercourse

For more information refer to Guide 16, schedule 8A of the IPA & schedule 2 of the IP Regulation.

If you answered "YES" to Q8, the application requires assessment by NR&M. If an agency other than NR&M is the assessment manager for the application, NR&M is a concurrence agency for the application in relation to this matter.

***Note**: Part G of Form 1 is required to be completed as the activity of removing quarry material from a watercourse is also an Environmentally Relevant Activity (ERA).*

8. Does the application involve development for the removal of quarry material from a watercourse[9] under an allocation notice given under the *Water Act 2000*?

☒ NO

☐ YES - *complete Part K, and G of Form 1*

Operational works in a tidal area or coastal management district

For more information refer to Guide 18, schedule 8A of the IPA & schedule 2 of the IP Regulation.

If you answered "YES" to Q9, the application requires assessment by EPA. If an agency other than EPA is the assessment manager for the application, EPA is a concurrence agency for the application in relation to this matter.

9. Does the application involve operational works in a tidal area or coastal management district as defined under the *Coastal Protection and Management Act 1995*?

☒ NO

☐ YES – *complete Part M of Form 1*

Tidal works and coastal management

For more information refer to Guide 18, schedule 8A of the IPA & schedule 2 of the IP Regulation.

Unless you answered "none of the above", the application triggers referral to QT[10](Maritime Safety Qld) as concurrence agency.

10. The application involves operational work that is: *(tick the applicable box/es)*

☐ (i) tidal work[11] – *complete Part M of Form 1*

☐ (ii) disposing of dredge spoil or other solid material in tidal water – *complete Part M of Form 1*

☐ (iii) reclaiming land under tidal water – *complete Part M of Form 1*

☐ (iv) constructing a canal[12] if the canal is associated with reconfiguring a lot – *complete Part M of Form 1*

☒ (v) none of the above.

Coastal management

For more information refer to Guide 18, schedule 8A of the IPA & schedule 2 of the IP Regulation.

Unless you answered "none of the above", the application requires assessment by EPA. If an agency other than EPA is the assessment manager for the application, EPA is a concurrence agency for the application in relation to this matter.

11. The application involves: *(tick the applicable box/es)*

☐ (i) a ***material change of use involving operational work*** carried out completely or partly in a coastal management district[13] and assessable under a planning scheme

☐ (ii) a ***material change of use involving building work*** carried out completely or partly in a coastal management district and assessable under a planning scheme that is –

- the construction of a new premises with a GFA[14] of at least 1000m²
- the enlargement of the GFA of an existing premises by more than 1000m²

☐ (iii) assessable ***reconfiguration*** of a lot where the land is situated completely or partly in a coastal management district

☐ (iv) assessable ***reconfiguration*** of a lot[15] in connection with the construction of a canal – *complete Part M of Form 1*

☒ (v) none of the above

Development below high water mark

For more information refer to Guide 18, schedule 8A of the IPA & schedule 2 of the IP Regulation.

If you answered "YES" to Q12, the application triggers referral to the Port Authority.

The Port Authority is concurrence agency if the development is –

- within 200m of a shipping channel or an entry and exit shipping corridor for the port
- within 1000m of a swing basin, a commercial shipping wharf, a mooring, anchorage or spoil grounds;
- within 1000m of a planned port facility identified in a land use plan approved under the *Transport Infrastructure Act 1994*.

In all other situation the Port Authority is advice agency.

12. Does the application involve development below high water mark[16] and within the limits of a port under the *Transport Infrastructure Act 1994*?

☒ NO

☐ YES – *complete Part M of Form 1*

Marinas

For more information refer to Guide 18, schedule 8A of the IPA & schedule 2 of the IP Regulation.

If you answered "YES" to Q13, the application triggers referral to Queensland Fire and Rescue Service as an advice agency.

13. Does the application involve operational work that is tidal work for a marina[17] with more than 6 vessel berths?

☒ NO

☐ YES - *complete Part M of Form 1*

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9 Watercourse is defined in sch 10 of the IPA

10 Queensland Transport

11 Tidal work is defined in sch 10 of the IPA

12 Canal means canal as defined under the *Coastal Protection and Management Act 1995*

13 Coastal management district is defined in sch 10 of the IPA and means a coastal management district under the *Coastal Protection and Management Act 1995*, other than an area declared as a coastal management district under section 47(2) of that Act

14 GFA is defined in sch 14 of the IPA to mean the gross floor area. For a definition of how to calculated GFA, go to the planning scheme against which the application is being assessed.

15 Under s117 of the *Coastal Protection and Management Act 1995*, an application for reconfiguration, where the reconfiguration is associated with the construction of an artificial waterway, must be accompanied by the application for the operational works to construct the artificial waterway.

16 High water mark is defined in the *Coastal Protection and Management Act 1995* and means the ordinary high water mark at spring tide

17 Marina is defined in the *Transport Operations (Maritime Pollution) Regulation 1995*

Tidal works in strategic port land tidal areas

For more information refer to Guide 18, schedule 8A of the IPA & schedule 2 of the IP Regulation.

If you answered "YES" to Q14, the relevant port authority is the assessment manager for the application and EPA and Queensland Transport are concurrence agencies for the application.

14. Does the application involve tidal works within the limits of strategic port land tidal areas[18]?

☒ NO

☐ YES - *complete Part M of Form 1*

Heritage

For further information refer to Guide 19, schedule 8A of the IPA & schedule 2 of the IP Regulation.

If you answered "YES" to Q15, the application triggers referral to the Queensland Heritage Council as concurrence agency for the application.

15. Does the application involve development in a heritage registered place as defined under the *Queensland Heritage Act 1992*?

☒ NO

☐ YES – *complete Part C of Form 1*

Declared catchment areas

For more information, including a list of the declared catchment areas within Queensland, refer to Guide 13, schedule 8A of the IPA & schedule 2 of the IP Regulation.

Unless you answered "none of the above", the application requires assessment by NR&M. If an agency other than NR&M is the assessment manager for the application, NR&M is a concurrence agency for the application in relation to this matter.

16. The application involves development in an areas declared to be a catchment area under the *Water Act 2000* for: *(tick the applicable box/es)*

☐ (i) reconfiguration of a lot, if any lot resulting from the reconfiguration is less than 16 hectares;

☐ (ii) the establishment or expansion of a waste water disposal system, other than a disposal system for carrying out an environmentally relevant activity under the *Environmental Protection Act 1994*

☒ (iii) none of the above

Contaminated land

Applications involving material change of use and / or reconfiguring a lot may trigger this referral.

For more information refer to Guide 5, schedule 8A of the IPA & schedule 2 of the IP Regulation.

If you answered "YES" to Q17, the application requires assessment by EPA. If an agency other than EPA is the assessment manager for the application, EPA will be a concurrence agency for the application in relation to this matter.

17. This application involves: *(tick the applicable box/es)* –

☐ (a) ***reconfiguring a lot*** for which all of part of the premises are –

(i) premises mentioned in the IPA, schedule 8, part 1, table 2 –

- item 5, including the exemption otherwise provided for by paragraph (d);
- item 6, including the exemption otherwise provided for by paragraph (e); or
- item 7,
- including the exemption otherwise provided for a mining activity or petroleum activity; or

(ii) in an area for which an area management advice has been given for unexploded ordnance - *complete Part N of Form 1*

☐ (b) a ***material change of use*** –

(i) made assessable under the IPA, schedule 8, part 1, table 2, items 5 to 7; or

(ii) if all or part of the premises is in an area for which an area management advice has been given for unexploded ordnance - *complete Part N of Form 1*

☒ (c) none of the above

Electricity infrastructure

For more information refer to schedule 2of the IP Regulation

Unless you answered "none of the above", the application triggers referral to the agency to which the easement is granted in favour of as advice agency.

18. The application involves: *(tick the applicable box/es)*

☐ (i) reconfiguration of a lot where any part of the lot is –

- subject to an easement in favour of a distribution entity or transmission entity under the *Electricity Act 1994* and the easement is for a transmission grid or supply network under that Act; or
- situated within 100m of a substation site;

☐ (ii) a material change of use, assessable against a planning scheme and not associated with reconfiguring a lot if –

- any part of the premises is subject to an easement in favour of a distribution entity or transmission entity under the *Electricity Act 1994* and the easement is for a transmission grid or supply network under that Act; and
- any structure or work that is the natural and ordinary consequence of the use is, or will be, located wholly or partly in the easement;

☐ (iii) a material change of use, assessable against a planning scheme and not associated with reconfiguring a lot if any part of the premises is situated within 100m of a substation site

☐ (iv) operational work that is filling or excavation, not associated with reconfiguring a lot, if –

- any part of the premises is subject to an easement in favour of a distribution entity or transmission entity under the *Electricity Act 1994*; and
- the work is located wholly or partly in the easement

☒ (v) none of the above.

[18] Strategic port land tidal areas are the areas generally 50 meters seaward of high water mark adjacent to strategic port land.

Land designated for community infrastructure

Applications involving development on land designated for community infrastructure may trigger this referral.

For more information refer to schedule 2 of the IP Regulation.

If you answered "YES" to Q19, the application requires assessment by the chief executive of the department administering the Act authorising the development for the designated purpose. If an agency other than the designator is the assessment manager for the application, the designating agency will be a concurrence agency for the application in relation to this matter.

19. Does the application involve development on land designated for community infrastructure –
    (i) intended to be supplied by a public sector entity; and
    (ii) on land not owned by or on behalf of the State; and
    (iii) other than development –
    - for the designated purpose; or
    - carried out by, or on behalf of, the designator

☒ NO
☐ YES

SEQ Regional Plan

For more information refer to schedule 2 of the IP Regulation.

If you answered "YES" to Q20, the application requires assessment by the chief executive of the department administering the IPA.

20. Does the application involve a material change of use for urban purposes[19] in the SEQ Region[20], other than for a single dwelling on an existing lot, for which all or part of the premises, the subject of the development, is in the –
    (i) Regional Landscape and Rural Production Area;
    (ii) Rural Living Area;
    (iii) Investigation Area; or
    (iv) Mt Lindesay/North Beaudesert Investigation Area, unless the premises is designated or zoned for urban purposes in the relevant planning scheme.

☒ NO
☐ YES

Referral coordination

An information request requires referral coordination if the application involves –
(i) 3 or more concurrence agencies; or
(ii) a facility or area assessable under a planning scheme and prescribed in schedule7 or 8 of the IP Regulation; or
(iii) development which is subject to an application for preliminary approval mentioned in section 3.1.6 of the IPA.

For more information go to Guide2 & Guide 6.

21. Does the application trigger referral coordination?

☐ NO
☒ YES, as the application:
☐ (i) triggers 3 or more concurrence agencies;
☐ (ii) involves a facility made assessable under a planning scheme and prescribed in schedule 7 of the IP Regulation;
☐ (iii) involves development made assessable under a planning scheme and in an area prescribed in schedule 8 of the IP Regulation;
☒ (iv) is for a preliminary approval mentioned is section 3.1.6 of the IPA

Referral agency responses prior to lodgement

Under section 3.3.2 of IPA a referral agency may give a referral agency response on a matter within its jurisdiction about a proposal before an application for the proposal is made to the assessment manager.

This is commonly the case where an application requires referral to a building referral agency *(eg. Qld Fire and Rescue Service)*.

22. Did a referral agency give a referral agency response under s3.3.2 of the IPA ***before*** the application was made to the assessment manager?

☒ NO
☐ YES - *attach a copy of the referral agency/s response/s*

PLEASE NOTE: **The assessment manager may refuse to accept an application, which, at the time of lodgement, fails to provide the completed Referrals Checklist** (if applicable).

OFFICE USE ONLY *(applicable to assessment manager)*

DATE RECEIVED	REFERENCE NUMBER/S

[19] Urban purposes is defined in schedule 10 of the IPA. To make it clear, urban purposes does not include rural residential purposes as defined in schedule 2 of the Draft South East Queensland Regional Plan

[20] Local Governments within the SEQ Region are identified in the Draft South East Queensland Regional Plan as Beaudesert Shire, Boonah Shire, Brisbane City, Caboolture Shire, Caloundra City, Esk Shire, Gatton Shire, Gold Coast City, Ipswich City, Kilcoy Shire, Laidley Shire, Logan City, Maroochy Shire, Noosa Shire, Pine Rivers Shire, Redcliffe City, Redland Shire and Toowoomba City.

BUILDING REFERRALS (*advice only*)

Below is a list of the referrals that can apply to an application involving building work assessable against the Standard Building Regulation. This information is provided for **advice purposes only** and this section of the referrals checklist if **not** required to be completed and lodged with an application.

Fire safety For more information go to schedule 2 of the IP Regulation	1. An application may trigger referral to Qld Fire and Rescue Services as an advice agency if the building work the subject of the application requires the installation of a fire safety system.
Fire safety for budget accommodation For more information go to schedule 2 of the IP Regulation	2. An application may trigger referral to Qld Fire and Rescue Services as an advice agency if the building work the subject of the application requires the installation of a fire safety system for a budget accommodation building.
Spray painting For more information go to schedule 2 of the IP Regulation	3. An application may trigger referral to the Chief Executive under the *Workplace Health and Safety Act 1995* as a concurrence agency in the application involves a workplace incorporating spray painting.
Retail meat premises For more information go to schedule 2 of the IP Regulation	4. An application may trigger referral to Safe Food Qld as a concurrence agency if the application involves a retail meat premises.
Private health facilities For more information go to schedule 2 of the IP Regulation	5. An application may trigger referral to the Chief Executive under the *Health Act 1937* as a concurrence agency is the application involves a private health facility.
Workplace area less than 2.3m² For more information go to schedule 2 of the IP Regulation	6. An application may trigger referral to the Chief Executive under the *Workplace Health and Safety Act 1995* as an advice agency if the application involves a work place area less that 2.3m².
Land contiguous to a State-controlled road For more information go to schedule 2 of the IP Regulation	7. An application may trigger referral to the Chief Executive under the *Transport Infrastructure Ac 1994* as a concurrence agency or advice agency if the application involves land contiguous to a State-controlled road.
Pastoral workers accommodation For more information go to schedule 2 of the IP Regulation	8. An application may trigger referral to the Chief Executive under the *Pastoral Works' Accommodation Act 1980* as a concurrence agency is the application involves pastoral workers accommodation.
Child care centre For more information go to schedule 2 of the IP Regulation	9. An application may trigger referral to the Chief Executive under the Child Care Act 2002 as a concurrence agency if the application involves a child care centre.
Coastal development For more information go to schedule 2 of the IP Regulation	10. An application may trigger referral to the Chief Executive under the *Coastal Protection and Management Act 1995* as a concurrence agency if the application involves land completely or partly seaward of a coastal building line[21].
Heritage For more information go to schedule 2 of the IP Regulation	11. An application may trigger referral to the Heritage Council as a concurrence agency if the application involves a heritage registered place.

[21] Coastal building lines are prescribed under the *Coastal Protection and Management Act 1995*.

Form 1 Development Application

idas

Preliminary approval overriding the planning scheme

The completion of Attachment 2 is **mandatory** where an applicant is seeking approval under s3.1.6 of the IPA to vary the effect of a local planning scheme.

Proposed level of assessment A preliminary approval may state that any development that may take place on the land, the subject of the approval, may be either assessable (requiring code or impact assessment), self-assessable or exempt development or any combination of assessable, self-assessable or exempt development.	1. It is proposed that development resulting from this approval be: ☒ (i) Code assessable development - *provide details below* Light Industry to Residential (Retirement Village) - Refer attached report ☐ (ii) Self-assessable development - *provide details below* ☐ (iii) Exempt development - *provide details below*
Proposed applicable codes A preliminary approval may identify any codes applying to development on the land.	2. List below the codes proposed to be applicable to any development resulting from this approval - *details of these codes must be attached to this application.* Refer attached report

PLEASE NOTE

ATTACHMENT 2 of Form 1 **cannot** be accepted by the assessment manger unless accompanied by PART A of Form 1.

The assessment manager may refuse to accept an application that, at the time of lodgement, fails to provide all applicable information requested by Part A and any other relevant part of Form 1.

OFFICE USE ONLY *(applicable to assessment manager)*

DATE RECEIVED		REFERENCE NUMBER/S	

Our Ref: 7203

The Chief Executive Officer
Brisbane City Council
Level 1 BAC
69 Ann Street
BRISBANE QLD 4000

Via: Mail

Dear Sir / Madam

RE: LETTER OF CONSENT OF OWNER FOR APPLICATION

We, the undersigned, on behalf of Jukasupe Pty Ltd, hereby consent to the lodgment by PMM Group on behalf of Harrisons Real Estate Development of the necessary Applications for the establishment of a Multi-Unit Dwelling (Retirement Village) over, Lot 1on RP 150512.

Yours faithfully

[redacted] Date: 21/2/05

[redacted] Date: 21st. Feb. 2005

The ACN must be included and accompanied by -

- the signature of either-
  - Two directors of the company
  - A director and a company secretary of the company or
  - If a proprietary company that has a sole director who is also the sole company secretary, that director

OR

- The company seal (if the company has a common seal) witnessed by-
  - Two directors of the company
  - A director and a company secretary of the company or
  - For a propriety company that has a sole director who is also the sole company secretary, that director.

BCC.100.3923

Brisbane City Council
ABN: 72 002 765 795
69 Ann Street
Brisbane QLD 4000

Brisbane's Integrated Development System

Remittance Document

COPY

TOTAL
$ 46,000.00

Enquiries
☎(07) 3403-8888

Remittance Number
6000 0000 6977 667

M E HARRISON INVESTMENT CO PTY
C/- PMM GROUP
PO BOX 1559
FORTITUDE VALLEY QLD 4006

1.02.1120.210.000.900.481.078.00
0000006977667 F 60
R4-1495 11-Apr-2005
R4019070 BIDS - DRS $46000.00
Lesley CHEQUE

Site Details

Primary Parcel ID: RP150512/L1

Primary Site Address:

15 CANSDALE ST
YERONGA 4104 QLD

COPY

Application Details

Application Number: 917956

Application Type: HIGH LEVEL

This document becomes a **TAX INVOICE** only when paid. The document is not a valid certificate until it has been paid and the funds clear the BCC bank account.

	Fee	Amount
1	MAJOR PROJECTS	$ 46,000.00

Total **$ 46,000.00**

COPY

**GST Total Included in this Tax Invoice $ 0.00

Present this entire document with your payment to any Brisbane City Council business centre or customer service centre.

OFFICE USE ONLY

Transaction Number: 697766
Record Date: 11/04/2005
Template Type: USE

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BCC.100.3924

pmm GROUP
urban designers
townplanners
land surveyors

TOWN PLANNING REPORT

Preliminary Approval Overriding the Planning Scheme & Reconfiguration of a Lot Application

15 Cansdale Street, Yeronga

Yeronga Retirement Village

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A – IDAS Forms, Certificates of Title and consent letters
B – Pre-Lodgement Minutes & Correspondence
C – Proposal Plans
D – Design Guidelines
E – Codes
F – Traffic Assessment
G – Ecological Assessment
H – Hydraulic Assessment
I – Noise & Air Quality Assessment
J – Community Consultation Report
K – Servicing Assessment
L – Detailed Survey

FIGURES

Figure 1 – Site Location Plan
Figure 2 – Area Classification
Figure 3 – Site Photographs

EXECUTIVE SUMMARY

This proposal relates to the intended establishment of an Integrated Retirement Village at 15 Cansdale Street, Yeronga. The opportunity to redevelopment "brownfield" sites such as this are important in the strategic redevelopment of the city's residential product mix. As such the proposed Retirement Village seeks to maximise the development potential of the land whilst integrating into the pre-dominantly residential character surrounding.

The site currently operates as Strophairs Auction House. Vehicles, construction and office equipment are sold from the site on regular auction days.

The proposed development comprises a range of aged care facilities, including nursing home, assisted living and independent living units. The development will also include recreational and social facilities ancillary to the Retirement Village use including living rooms, dining areas, and recreational areas and sporting facilities including a swimming pool and lawn bowls playing area. A small area will also be provided to enable health care provisions, for example for doctors visiting patients. A small café or shop facility is also proposed to provide local facilities to the residents and staff.

Specifically, this application seeks approval for the following –

- Development Permit for Reconfiguring a Lot (1 into 4)
- Preliminary Approval Overriding the Planning Scheme for a Material Change of Use (Multi-Unit Dwelling (Retirement Village) and Shop not greater than 250m^2)

This structure will enable the development of the site in a logical manner through a series of subsequent Code Assessable Applications for the establishment of the entire village.

Technical reports have been prepared to address the issues associated with the proposed development and include hydraulic, ecological, traffic and air quality and noise assessments. These reports are discussed through this planning report, and are also included as Appendices for Council reference.

The proposed development provides the necessary facilities to serve an aging population with the appropriate facilities and care through establishment of a high quality facility that provides a quality lifestyle for its residents in a development that integrates with the existing community. The site is considered suitable for development of this kind, and a maximisation of the site's use potential.

APPLICATION DETAILS

Refer: Appendix A – IDAS Forms, Certificates of Title and Owner Consent Letters.

Street Address	15 Cansdale Street Yeronga *Refer Figure 1*
Real Property Description **Site Area (ha)**	Lot 1 on RP150512 Site area – 2.792ha
Area Classification	Light Industrial
Name of Owner	*Refer Figure 2* Jukasupe Pty Ltd *Refer Appendix A*
Name of Ward	Dutton Park
Aspects of Development	1. Preliminary Approval Overriding the Planning Scheme - Material Change of Use (Multi-unit dwelling (Retirement Village) & Shop, not greater than 250m²) 2. Development Permit for Reconfiguring a Lot (One into Four)
Applicant	M.E. Harrison Investment Co Pty Ltd C/- PMM Group
Contact Person	[redacted] P: F: M: [redacted] [redacted] P: 07 F: 07 [redacted]

SITE CHARACTERISTICS

Refer: Figure 3 – Site Photographs

The site comprises 2.792ha of land, located on the corner of Cansdale Street and Venner Road, Yeronga. Access to the site from the south and east is along Hyde Road as Venner Road is partially unconstructed to the east of the site. The section of Venner Road that borders the site is constructed and provides access to the subject site and the surrounding open space network.

The site is currently used by Strophairs Auctions for auctioning a variety of goods including motor vehicles, construction equipment and office equipment. The auctions are understood to draw significant traffic volumes to the area.

The subject site is essentially level across the site, with a gentle slope towards the eastern property boundary. Along the eastern boundary and partially inside the subject site lies a drainage line that is characterised by an open concrete drain bordered by some trees and a pedestrian footpath/ bicycle way. This drainage infrastructure forms part of the stormwater drainage infrastructure for the surrounding urban areas to the south. Council have identified this drainage infrastructure as being a waterway.

An expanse of passive and active recreational open space and corridors has been preserved in the general locality and region surrounding the site. In more immediate proximity to the site is:

North: Leyshon Park is located immediately north of the subject site. This park is used by the El Salvador Soccer Club and the Yeronga Australian Football Club. Beyond the park are the Brisbane Corso and the Brisbane River.

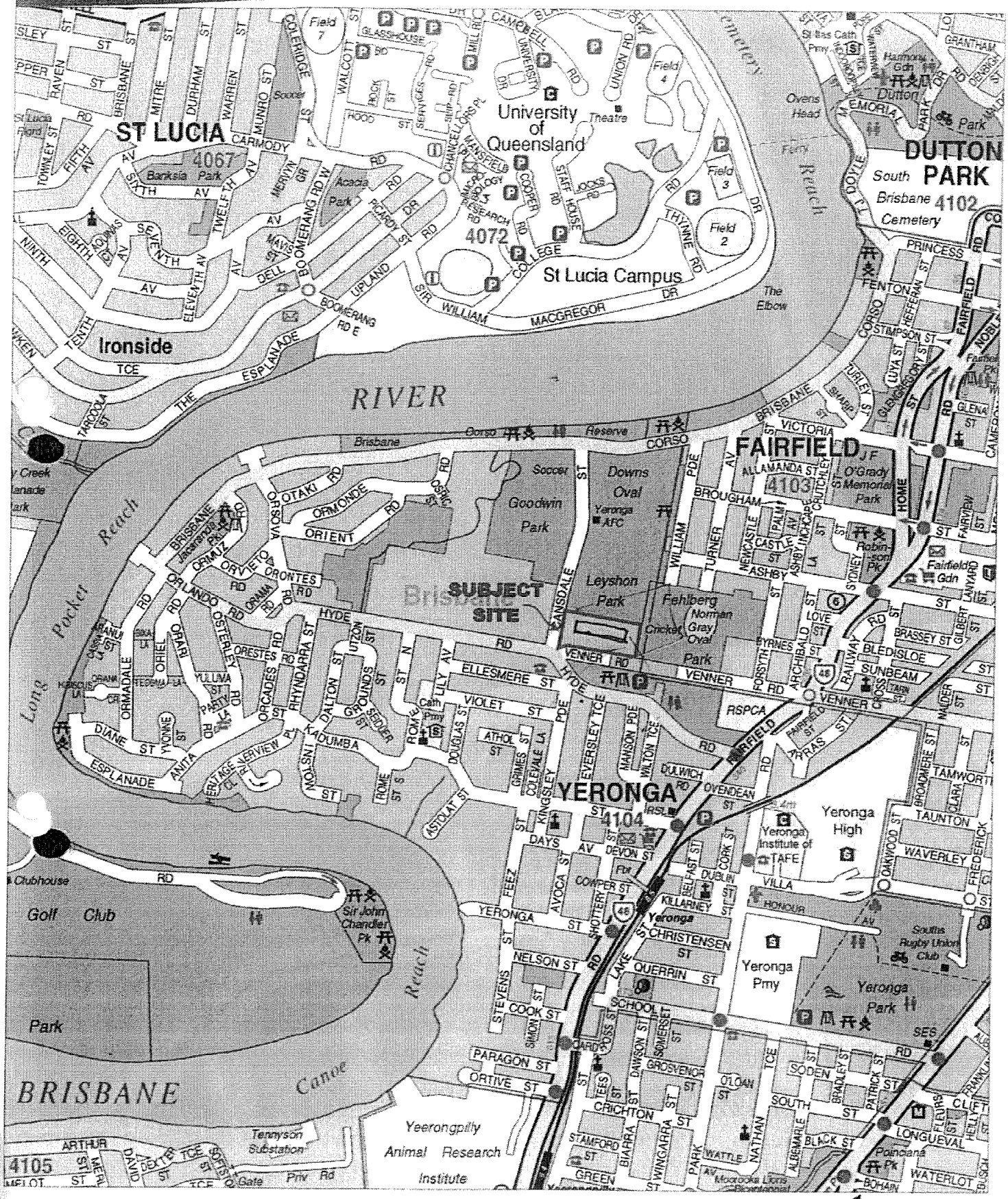
East: Fehlberg Park is located to the east of the subject site. This park is used by the South Brisbane District Cricket Club. Beyond this park lies the low-density residential area of Yeronga and Fairfield.

South: Immediately south of the subject site is Venner Road, which is partially unconstructed to the east of the site. Adjacent to this is a parkland reserve which includes a dog park and children's play areas. Beyond Hyde Road are existing Low-Medium and Low Density Residential and Commercial uses. It is understood that the existing service station site is to be redeveloped for townhouse/ units as approved by Council.

West: Cansdale Road and existing Light Industrial uses. This light industrial area contains several existing industrial uses (Akzo Nobel, Moxon Timbers and Airtech) and is surrounded by Sport and Recreation and Low-Density Residential Areas.

Locality Plan

Figure 1


ST LUCIA
4067
University of Queensland
St Lucia Campus
4072
DUTTON PARK
South Brisbane 4102
Cemetery
Ironside
RIVER
FAIRFIELD
4103
SUBJECT SITE
Brisbane
YERONGA
4104
Yeronga High
Yeronga Pmy
Yeronga Park
Golf Club
Park
BRISBANE
4105
Yeerongpilly Animal Research Institute
Tennyson Substation
Goodwin Park
Downs Oval
Leyshon Park
Fehlberg Norman Gray Oval
Reach
Long Pocket
Canne
Corso
Reserve
Cemetery
The Elbow
Fairfield Gdn
Robinson Pk
Poinciana Pk
Sir John Chandler Pk
Sir William MacGregor Dr
Boomerang Rd E
Esplanade
Ellesmere St
Venner Rd
Hyde Rd
Dulwich Rd
Overdean St
Fairfield Rd
Waverley
Taunton
Yeronga St
Christensen St
Querrin St
Nelson St
Cook St
Paragon St
Ortive St
Crichton St
Soden St
South St
Longueval
Waterlot
Bohain
Sunbeam
Bledisloe
Brassey St
Gilbert St
Princess
Fenton
Fairfield
Stimpson St
Victoria
Brisbane
Brougham
Ashby
Newcastle
Love
Railway
Forsyth
Archibald St
Venner Rd
Lily Av
Violet St
Athol St
Douglas St
Rome St
Kansdale St
Eversley Tce
Mansion Pde
Wilton Tce
Kingsley
Grimes St
Colevale La
Astolat St
Days Av
Devon St
Copper St
Feez St
Avoca St
Shotter St
Belfast St
Killarney St
Cork St
Dublin St
Villa
Honour Av
Oakwood St
Broadmere St
Tamworth
Clara
Frederick
Naider
Lake St
Schools
Somerset
Dawson St
Grosvenor
Olsan
Bradley St
Patrick St
Albemarle
Black St
Nathan
Wingarra
Biarra
Stamford
Green
Wattle
Park Av
Moorooka Uoya
Brisbane
Corso
Reserve
Soccer
Goodwin Park
Downs Oval
Yeronga AFC
Leyshon Park
Fehlberg Norman Gray Oval
Cricket
Park
Brisbane
SUBJECT SITE
Yeronga
4104
Yeronga High
Yeronga Pmy
Yeronga Park
Yeronga Institute of TAFE
RSPCA
Southside Rugby Union Club
SES
Pmy
Sch
Ch
Pmy
Pl
Pk
Gdn
Ctr
Ct
Cres
Dr
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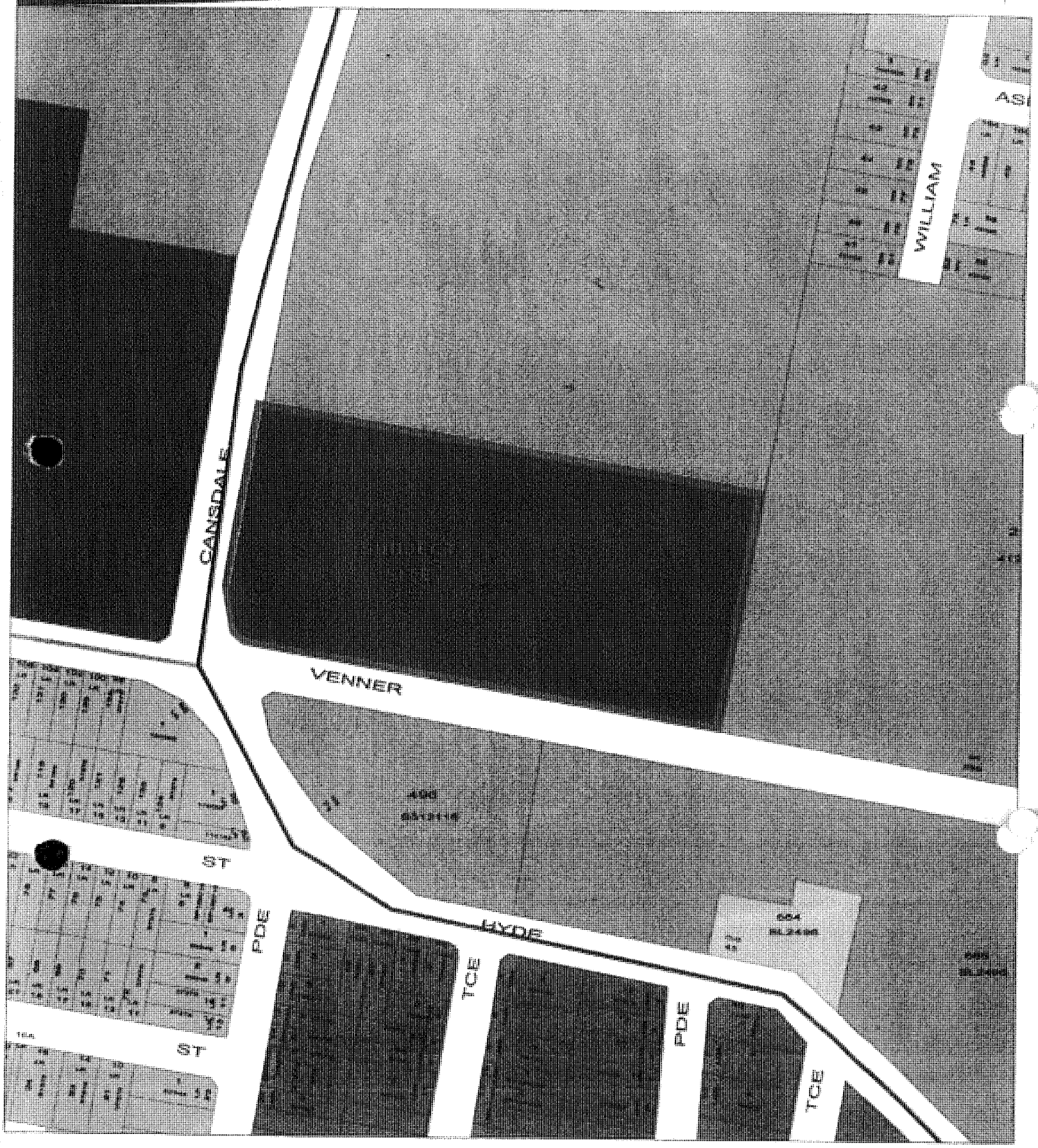
St
Av
Tce
Pde
La
Ln
Cl
Pl
Hwy
Cnr
Cnr
Cnr

Area Classification Plan

Figure 2



Light Industry

Sport and Recreation

Low Density Residential

Low - Medium Density Residential

Community Uses

pmm GROUP

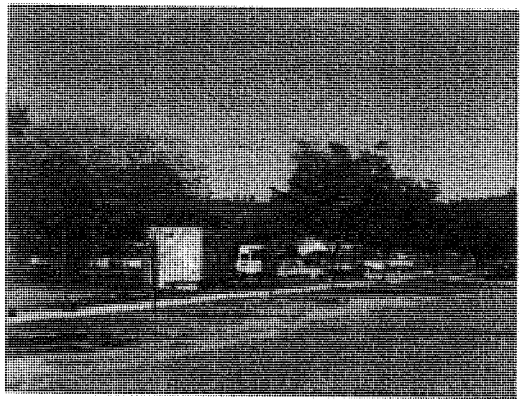
Ref. No: 7203 Date: March 2005 Scale: 1:2500 Source: Brisbane City Plan 2004

File Path: V:\Projects\7000 Jobs\7203Zoning.cdr

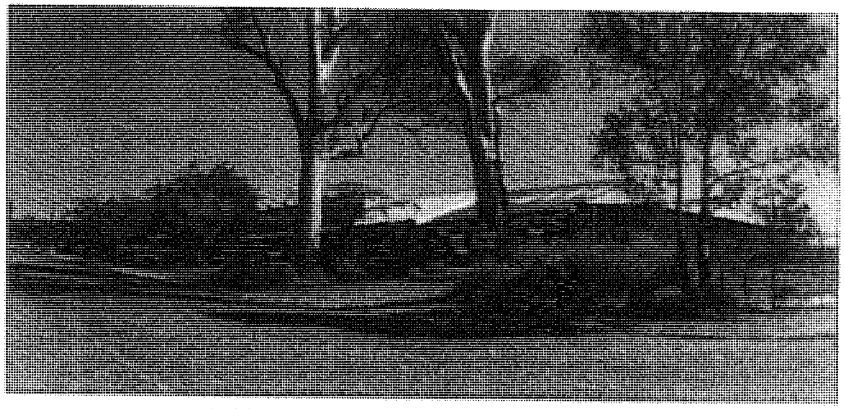
BCC.061.4777

Site Photographs

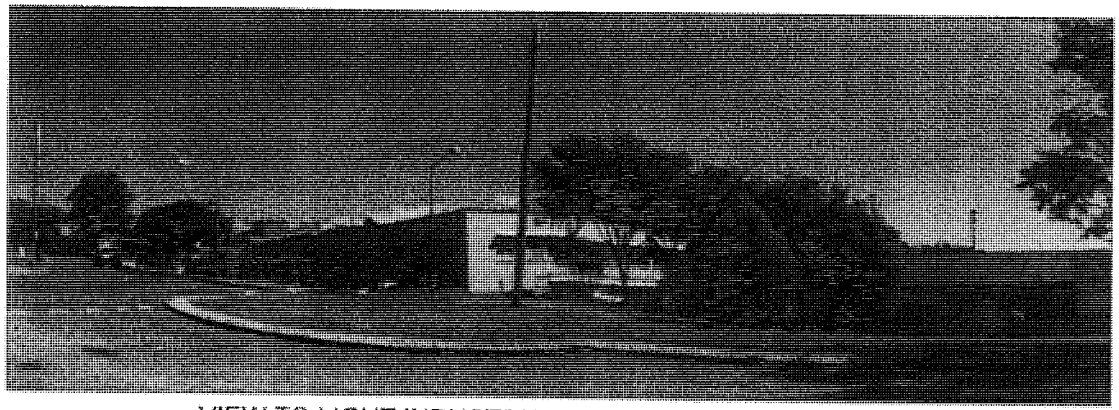
Figure 1



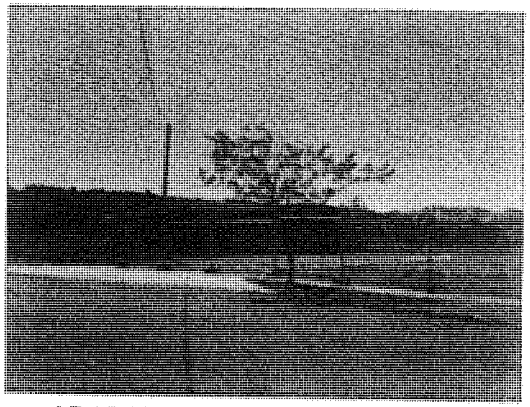
CANSDALE STREET SITE FRONTAGE.



VENNER ROAD SITE FRONTAGE.



VIEW TO LIGHT INDUSTRIAL AREA FROM VENNER ROAD.



ADJOINING SOCCER FACILITIES.

Ref No: 7203 Date: April 2005

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urban designers
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land surveyors

BCC.061.4778

PROPOSAL DETAILS

BACKGROUND / HISTORY

The subject site has been used in recent times as a commercial/ industrial parcel of land, primarily as an auction house. Whilst this use is considered appropriate for the subject site's current land use designation, taking into consideration the surrounding land uses, a residential land use is considered more appropriate. It is also understood that over time this area of Yeronga will undergo a transition from Light Industry activities to Residential.

Accordingly, our client Harrison's Real Estate has contracted to purchase the subject site and is seeking approval for an Integrated Retirement Village.

Three pre-lodgement meetings have been held with Brisbane City Council officers, they were:

- 29 September 2004 – Pre-lodgement Meeting with City Planning representatives
- 8 October 2004 – General Pre-lodgement Meeting with DA Team South
- 1 March 2005 – Detailed Issues Pre-lodgement Meeting with DA Team South.

Minutes relating to each of these meetings are contained within Appendix B.

The general direction obtained from the initial pre-lodgement was support for the proposed concept and the approach of seeking a preliminary approval overriding the planning scheme, followed by subsequent code assessable applications to establish each stage of the proposed development.

The 8th October 2004 pre-lodgement meeting outlined the key issues to be addressed in any application (refer our correspondence dated 18 October 2004, (Appendix B). It was concluded at this pre-lodgement meeting that a community consultation programme should be undertaken. This action was undertaken and is discussed later in this application documentation. It was also agreed that advice be sought from the Urban Management Division of Council.

The final pre-lodgement meeting on the 1 March 2005 reviewed the detailed matters required to be addressed in any application. These matters have been addressed throughout this documentation; PMM's minutes relating to this meeting are enclosed in Appendix B.

An extensive design process has been undertaken; the outcome is presented in this application for Council's assessment. This design responds to the site's opportunities and constraints and issues raised by the broader community and Council during consultation.

DESCRIPTION OF PROPOSAL

Refer: Appendix C – Proposal Plans

The proposed development seeks to establish an Integrated Retirement Village on the subject site. This village will include a range of levels of aged care, including a nursing home, assisted living and independent living units.

The Integrated Retirement Village will establish an attractive and comfortable living environment for people at various stages of their life, post retirement. The development will feature community oriented and support facilities such as -

- community meeting areas;
- dining facilities for residents;
- outdoor and indoor recreation areas (swimming pool, bowling area)
- passive recreation spaces set within a landscaped environment
- health facilities (doctor and other specialist consulting rooms)
- small café and convenience shopping facility.

These elements are ancillary to the primary proposal, being an Integrated Retirement Village.

A boardwalk area is also proposed along the eastern boundary of the site to facilitate an appropriate and visually appealing interface to the adjoining open space area. The works proposed along the eastern boundary will not only improve the visual appearance of the site, but will also address the required reworking of the existing drainage line including an improvement to the degraded ecological state of the open concrete drain.

Car parking is generally provided at basement level. The proposal includes the provision of 345 basement parking spaces that is intended to cater for the residents and staff of the village. Further parking is also proposed at grade on the site, with approximately 45-50 additional spaces included on street, along both the Venner Road and Cansdale Street frontages.

The construction is intended to be of a light-weight appearance with balconies and open areas to minimise the bulk of the form. The development will also be comprised of several smaller buildings, as opposed to one large building over the entire site, to enhance views through the site, assist with integrating the use with the surrounding residential uses and minimising building bulk. The construction intends to maximise the potential for interaction and recreation within the development, while providing a comfortable residential form. The corridor areas between the lift access and individual units will be protected to ensure all weather access. The buildings will also include covered colonnades and atriums to improve access and comfort for residents. The detailed design of buildings will be submitted to council via future Code Assessable applications that will be prepared in accordance with the application structure established by the preliminary approval being sought.

The proposal is structured as a Preliminary Approval Overriding the Planning Scheme - Material Change of Use (Multi-Unit Dwelling (Retirement Village) & Shop not exceeding 250m2) and a Development Permit for Reconfiguration of a Lot (One into Four).

The nature of the Preliminary Approval enables the staged development of the site, with future stages of the development assessed against the Design Guidelines and Yeronga Integrated Retirement Village Code contained within this Preliminary Approval application. By overriding the planning scheme future applications would become Code Assessable where they comply with the guidelines specified. The

guidelines have been formulated utilising the existing City Plan 2000 Level of Assessment Tables and Codes.

The site has been divided into Precincts, as illustrated on the Precinct Plan in Appendix C. The Design Guidelines identify the general intent for each Precinct, while the Yeronga Retirement Village Code directs the intended development form for each precinct. Where aspects of development are not included within the design guidelines presented, assessment is made against the existing provisions of the City Plan 2000. A description of each of the Precincts within the development site is provided below:

Precinct 1 – This precinct is to be developed for the Aged Care/ Nursing Home site. This site is intended to be a maximum of 3 storeys with a maximum Gross Floor Area (GFA) of 6,750m² over the precinct. The built form is to be attractive and outward oriented, to provide an attractive treatment to the primary street interface.

Precinct 2 – Precinct 2 is the largest precinct in the proposal. This precinct is to be developed for Independent Living Units over a variety of stages. The maximum GFA for this precinct is 23,500m². This Precinct comprises three sub-precincts, which determine the maximum height permitted and uses for each sub-precinct.

> *Precinct 2A* – This sub-precinct is to be a maximum of 3 storeys. The intended use of this site is to Independent Living Units, however, should market demand require greater facilities for Aged Care / Nursing Home services, the extension of this use has been facilitated through the level of assessment table.
>
> *Precinct 2B* – This sub-precinct is to be developed for Independent Living Units. The built form in this precinct is to be a maximum of 3 storeys. Buildings are to be orientated outwards and interact with the surrounding uses, including the adjacent sporting fields and internal recreation areas.
>
> *Precinct 2C* – This sub-precinct is to be developed for Independent Living Units. The maximum height for the sub-precinct is 5 storeys. This sub-precinct will maximise the outlook from the site, to the north and east.

Precinct 3 – This precinct is to be developed for Assisted Living units. This precinct also comprises two sub-precincts, which defer in relation to height. The sub-precincts include:

> *Precinct 3A* – This sub-precinct is to be a maximum of 3 storeys. The sub-precinct is located at a major entrance to the development and will feature buildings that clearly delineate this entrance and contribute to the architectural variety of the overall development.
>
> *Precinct 3B* – This sub-precinct is located at the centre of the development and is to include buildings of a maximum of 5 storeys. This sub-precinct will maximise the outlook from the site.

Precinct 4 – This precinct is to be developed as the recreational/ open space node of the village. While buildings are not anticipated for this precinct, any structures within this precinct will not exceed one storey.

The detailed provisions relating to each precinct and the Yeronga Retirement Village Code are contained in Appendix D.

TOWN PLANNING CONSIDERATIONS

Application Strategy

This Development Application involves two (2) components:

- Preliminary Approval Overriding the Planning Scheme - Material Change of Use (Multi-Unit Dwelling (Retirement Village) and Shop not greater than 250m²) in accordance with section 3.1.6 of the *Integrated Planning Act 1997.*
- Development Permit for Reconfiguring a Lot (1 into 4 lots)

Preliminary Approval Overriding the Planning Scheme for a Material Change of Use (Multi-Unit Dwelling (Retirement Village) and Shop not greater than 250m²)

Multi-Unit Dwelling is defined by the City Plan 2000 as:

***Multi – unit dwelling**: a use of premises as the principal place of longer term residence by several discrete households, domestic groups or individuals irrespective of the building form. Multi-unit dwellings may be contained on one lot or each dwelling unit may be contained on its own lot subject to Community Title Schemes. Examples of other forms of multi-unit dwelling include boarding house, retirement village, nursing home, orphanage or children's home, aged care accommodation, residential development for people with special needs, hostel, institution (primarily residential in nature) or community dwelling (where unrelated people maintain a common discipline, religion or similar). The term multi-unit dwelling does not include a house or single unit dwelling as defined elsewhere.*

Retirement Village is defined by the City Plan 2000 as:

***Retirement village**: (part of the definition of multi-unit dwelling) a use of premises for an integrated community including residential accommodation that meets the particular needs of persons who are retired and do not have children living permanently with them. A retirement village may include aged care accommodation or be residential development for people with special needs.*

Shop is defined by the City Plan as:

***Shop**: a use of premises for the display and retailing of goods, and personal services such as betting, hair and beauty care, laundromats and dry cleaning shop fronts e.g. supermarket, department store, showroom, retail warehouse, liquor store, place for the hire of domestic items, stall, market or salon.*

Approval for the above uses is sought as part of the Preliminary Approval Overriding the Planning Scheme.

This element of the application is Impact Assessable and consists of a Precinct Plan that defines the uses, GFA and building height, as well as a level of assessment table and code for future Code Assessable applications to be assessed against. This precinct plan and associated documents will override the existing area classification (Light Industry) applying to the site under the Brisbane City Plan 2000. Future Code Assessable development applications will adopt the design intent outlined in this application and will be assessed against the level of assessment tables and code in the Yeronga Integrated Retirement Village Design Guidelines. The code within the design guidelines package

incorporates the principles deemed necessary for the proposed development and calls on appropriate City Plan codes as necessary.

Development Permit for Reconfiguring a Lot (One into Four)
This element of the application is Code Assessable and sets up the appropriate lot structure for the staged development of the Integrated Retirement Village. This is a management subdivision and complies with the appropriate provisions of the City Plan.

Vehicle Access and Circulation

***Refer:** Appendix F – Traffic Assessment*

Primary vehicle access to the site will be via Venner Road. This will include a drop off zone, gated entry to the parking at grade within the site and an additional entrance, which provides access to the secure basement level parking. A secondary access point is proposed along Cansdale Street, which is primarily for access to the secure basement. Servicing of the development will occur within site at grade.

General vehicle circulation at grade on the site is to be minimised. This is in order to minimise potential conflicts between vehicles and pedestrians, and to enhance the pedestrian oriented nature of the development.

Pedestrian Circulation

Pedestrian circulation is to be maximised throughout the site. The built form is intended to comprise clusters of smaller buildings across the site, as opposed to one large building across the entire site. This will contribute to the pedestrian permeability of the site. A boardwalk is proposed along the eastern boundary of the site, which not only provides access out of the development to the surrounding parkland, but also contributes to the integration of the use with surrounding areas.

It is noted that the retirement village requires a level of security for its elderly residents. Accordingly, pathways through the site for people who are not residents will not be enhanced or encouraged, however the boardwalk along the eastern boundary of the site does enable interaction with the adjoining park areas, as well the improvements to pedesfrian access along Cansdale Street.

Ecology / Open Space / Landscaping

***Refer:** Appendix G – Ecological Assessment*

The subject site is essentially devoid of vegetation. Existing stands of trees occupy the road reserve and parkland areas around the subject site and this vegetation will be maintained to assist with the landscape setting proposed for the Integrated Retirement Village.

The eastern portion of the site contains a waterway designated under the provisions of the City Plan 2000. This waterway consists of a concrete drain that performs a stormwater discharge function. As part of the development proposal a hydraulic solution to address the inefficiencies of this existing stormwater infrastructure will be provided to Council. This hydraulic solution will address the details relating to biodiversity values of the drainage line.

A detailed landscape concept plan will be provided as part of Stage 1 development application documentation. The plans provided with this development application provide sufficient intent for the landscaping treatment for preliminary assessment purposes.

Visual Amenity / Reverse Amenity

The proposal seeks to integrate the development with the existing, surrounding residential and parkland areas. The proposal intends to minimise the appearance of building bulk of the development through the establishment of a maximum of 3 storeys along all site boundaries, with a maximum building height of 5 storeys to be located in a relatively small cross section at the centre of the subject site.

The preliminary cross sections for the proposal identify that from ground level, the height of the buildings will be minimised through the siting of the highest buildings at the centre of the site and with residential scale buildings located on all property boundaries.

As the proposed development is intended to be an Integrated Retirement Village, there are many buildings clustered around community facilities and spread across the development site. This clustering adds to the visual break up of the development's façade and facilitates visual relief from any perceived bulk of the development.

The design guidelines adopted for the future Code Assessable applications embrace the principles outlined in City Plan 2000 and will require a high level of architectural merit for all future buildings as they are established on the subject site.

Reverse amenity is a consideration for the development, in light of the location opposite existing industrial and commercial uses. The Acoustic and Air Quality Assessment prepared by Max Winders and Associates includes results of air quality and noise modelling. The report identifies that the industrial uses emit noise and air pollutants that are within acceptable levels for the proposed sensitive residential use. The report also identifies that there is substantial residential development existing in the area, which is in closer proximity to industrial uses, in particular Akzo Nobel, than the proposed development. The proposed development will not further limit the operation of the existing industrial uses, as the residential development already in the area and air quality requirements imposed on the industrial developments require that noise and pollutants and odour remain within acceptable levels.

The design of the buildings will be sensitive of the industrial uses and, where necessary, will incorporate screening and sufficient glazing and acoustically rated materials to mitigate potential impacts.

The service station and retail use along Hyde Road is understood to be discontinuing. It is understood that Council has recently approved the redevelopment of the site for the purposes of a townhouse development. Accordingly, the potentially negative impacts from the service station use will not impact on this proposal.

Community Facilities

The proposal includes community facilities primarily intended for the use of residents and visitors of the development. These facilities include those listed below –

- Community meeting areas;
- Dining facilities for residents;
- Outdoor and indoor recreation areas (swimming pool, bowling area)

- Passive recreation spaces set within a landscaped environment
- Health facilities (doctor and other specialist consulting rooms)
- Small café and convenience shopping facility.

These facilities will be limited in size and function as ancillary uses to the primary use, however they will address an important need for the development.

Titling Options

The ownership and operation of the Integrated Retirement Village is administered by State and Federal legislation. Titling of the development will be in accordance with these requirements and will be established on lodgement of Stage 1 code assessable development application.

Staging

The application structure enables the staged development of the proposal. The staging plan included in Appendix C identifies the proposed staging of the development.

URBAN DESIGN INTENT

Yeronga Retirement Village is an integrated retirement community planned for elderly accommodation, which provides a continuum of care to its residents. It is a flexible accommodation choice for the elderly with supported living options that provides the elderly with an "aging in place" model permitting permanent residency within the complex regardless of the incident of frailty.

The site itself is conducive to the development of an elderly accommodation complex on account of the following attributes:

- Proximity to the inner Brisbane City amenities and facilities;
- Proximity to local regional facilities of recreational parks and reserves, public transport, a selection of churches, medical and various institutional centres;
- Position within an established inner city suburb lacking appropriate accommodation for the elderly and frail;
- Location surrounded on 3 sides by recreational parks include Leyshon Park and Fehlberg Park;

The objectives of the design include the following:

- To establish a facility that services the needs of an increasing, aging population;
- To incorporate all possible natural environmental and ecological sustainable design principles into the development, to be supported by new age technological tools and aids;
- To establish a high quality retirement community that provides the facilities to contribute to the quality of life of its residents and integrates with the surrounding community.

Yeronga Village Complex is intended to be urban in nature by which the daily lives of the resident's will remain enriched in a lifestyle facility that offers identity and a "legible" environment. The complex is sensitive to its community place and beyond providing appropriate supported accommodation needs for the elderly of the Yeronga regional area, the complex is designed to be fully integrated with the community, offering services and support to the wider community.

SUSTAINABILITY

Council have put forward a draft of their guidelines for sustainable development for consideration with respect to the subject proposal. Within this draft, Council outline fifteen principles of sustainability that should be adopted for development within Brisbane, these are –

1. Establish agreed sustainable design values;
2. Apply an integrated and collaborative design and construction process;
3. Design for our subtropical place;
4. Protect and restore the natural ecosystems;
5. Utilise land appropriately;
6. Apply integrated water management;
7. Manage Energy Use;
8. Select appropriate building materials;
9. Manage Waste;
10. Consider Cost Efficiency;
11. Create healthy indoor environments;
12. Support green transport;
13. Develop adaptable buildings and spaces;
14. Build a safe and diverse community; and
15. Inform the end owner and user

Each of the above principles is supported by a set of guidelines to achieve the desired outcome. We consider the above elements to be key components to any development project and have integrated many of the above elements into development applications throughout Brisbane and South East Queensland. It is identified that the Yeronga Retirement Village considers these matters to be the guiding principles for detailed design for all future applications. Once the development framework is in place to facilitate the staged development of the Retirement Village, a detailed design process will be commenced, at which time the above principles will be addressed in detail.

ENGINEERING CONSIDERATIONS

Stormwater Drainage & Water Quality

Refer: *Appendix H – Hydraulic Assessment*

The ultimate development of the subject site is comprehensive and accordingly, a fully controlled stormwater solution will be engineered to ensure that no impact on surrounding land occurs as a result of stormwater disposal.

The adoption of sustainability principles will assist with the detention of stormwater onsite and reuse as necessary within landscaping areas. Further, the rework of the drainage line along the eastern boundary of the subject site will result in a positive outcome for the locality in improving stormwater flows.

Water quality will be ensured by installation of Gross Pollutant Traps as necessary on the subject site and through the appropriate polishing of stormwater through landscape areas. Water quality will be further addressed by the detailed design of the stormwater solution, in the Hydraulic Assessment

prepared by Cardno. Refer to Appendix H. This solution will incorporate ecological considerations to ensure the biodiversity values of the waterway are protected.

Noise & Air Quality

Refer: *Appendix I – Noise and Air Quality Assessment*

Air and Noise Quality modelling has been conducted to identify what impact, if any, the adjoining Light Industrial areas may have on the proposed development. The report prepared by Max Winders and Associates identifies that the existing and future anticipated emissions from existing industrial users falls within the acceptable levels for adjoining residential uses. It is identified that during the detailed design of buildings with a direct interface to the industrial areas, acoustic engineering treatments be incorporated to ensure no noise impact occurs.

Similarly, the surrounding sport and recreation areas have the potential to impact upon the proposed use by way of Noise and Light impacts. The report identifies that these impacts are localised only and easily managed through appropriate acoustic and other treatment to the proposed residences fronting these areas.

Traffic & Transport

Refer: *Appendix F – Traffic Assessment*

Cansdale Road and Hyde Road (east of Cansdale Street) is recognised by City Plan 2000 as suburban routes and Hyde Road (west of Cansdale Street) is recognised as a district access route. According to the Traffic Assessment prepared by Holland Traffic Consulting, the existing traffic flows along these roads are considered low, in relation to their suburban and district classifications.

The Traffic Assessment uses examples from other similar retirement village developments to model the potential traffic generation of the site and its impact on the road network. The anticipated traffic generation of the site will not be significantly more than the existing use. Accordingly, no upgrades to the road infrastructure are proposed.

The Traffic Assessment recommends the establishment of a central pedestrian refuge island immediately east of Ellesmere Street, along Hyde Road, to provide improved pedestrian access to the site from the bus stop. This is considered important to enable safe pedestrian access for aged persons.

Servicing

Refer: *Appendix K – Servicing Assessment*

The site is serviced by all necessary infrastructure, including electricity, water, sewerage and telephones. The Infrastructure Assessment prepared by BMD discusses the provision of the infrastructure.

A report prepared by Brisbane Water identifies the need to upgrade the sewerage infrastructure as a result of the future demands from the development. The detailed design will be provided at Operational Works Stage.

STATUTORY PLANNING PROVISIONS

BRISBANE CITY COUNCIL – CITY PLAN 2000

Level of Assessment

This proposal forms an Impact Assessable (Generally Inappropriate) Development Application due to the underlying Light Industrial Area Classification of the subject land.

Local Plan

The subject site is located in the Stephens District Local Plan area. Within the local plan there is provision for proposed bikeway/ walk way along both the western and eastern boundaries of the site. A component of this proposal includes streetscaping works along both Venner Road and Cansdale Street, which will contribute to the provision of pedestrian and cycle friendly access.

The Local Plan also identifies a bikeway/ walk way through the centre of the site. This is not viable, as the intended use of a Retirement Village requires a level of security and safety for its residents; it is therefore not appropriate for the establishment of a bikeway through the centre of the development. Similarly, with the establishment of the basement carpark on the site, the rise in level from the adjacent parkland and the associated landscaping of the site will not facilitate the provision of a bikeway through the site. There are existing accessways along the eastern boundary of the site through Fehlberg Park and along Cansdale Street, which provides sufficient pedestrian and cycle access.

Strategic Plan

The site is located within the Residential Neighbourhoods designation of the Strategic Plan which supports the intended residential use. The City Plan 2000 identifies City Wide Desired Environmental Outcomes (DEO) for Brisbane. Each DEO also includes a list of City Wide Strategies that guide the achievement of the DEO. Several of these DEOs and the strategies are addressed below:

DEO 3.2.1 *Brisbane is a safe, healthy and vibrant place to live, offering a wide range of local and regional services, facilities and activities and diverse housing, community, cultural and recreational choices.*

The proposal is consistent with the intent of the DEO through the provision of necessary housing choice for elderly residents. The proposal incorporates a range of aged care, including a nursing home, assisted living and independent living units within the village environment. The proposal includes a variety of facilities for residents, which are intended to contribute to the quality of life for those living in the village.

DEO 3.3.1 *Brisbane's land use pattern and built environment promotes its unique environment, such as its timber and tin architecture, topography and urban layout, and features a sustainable network of Residential Areas, Centres, employment areas and transport links.*

The strategic land designation of the site is Residential Neighbourhoods. The proposal seeks to establish a residential use, on a brownfield site that is currently used for Light Industrial purposes. The dominant development form in the local area is of a low-density to low-medium density residential nature with extensive parklands and sporting fields. The proposed development will be integrated into the existing community form, through the maximum building height of 3 storeys along all boundary

interfaces and the establishment of multiple buildings over the site. The proposal seeks to create a village development with extensive open space over the site. Adoption of contemporary sub-tropical design principles will ensure that the ultimate building form is low-impact lightweight buildings that are sensitive and respond to the tin / timber culture of many of Brisbane's suburbs.

Strategic Plan Maps

Map A within the Strategic Plan identifies the site as being located within the Residential Neighbourhoods designation. Within the Residential Neighbourhoods designation there are several components identified which are intended to contribute to the intended outcomes for the designation. The Residential Neighbourhoods designation includes several strategies that should be implemented to ensure that the liveability of residential areas are maintained and enhanced. These strategies are discussed below:

- *Meeting realistic expectations of future amenity*
  Development in the area is increasingly of a residential nature. The existing light industrial operations along Hyde Road and Cansdale Road are incompatible with the residential development in the area. The redevelopment of the site for residential purposes is consistent with the Strategic Plan intent and general development trend in the area.

  The proposal seeks to establish a vital residential development for the elderly. The proposal is to be designed to create a village environment, which is comfortable and welcoming for the residents, that integrates with the existing Yeronga community.

- *Housing Choice and Affordability*
  This strategy specifies that the residential neighbourhoods are to 'provide sufficient housing choice to enable residents to remain in their neighbourhoods through all stages of their life if they wish'. The general form of development in the local area is detached, low density to low-medium density residential houses. The existing development in the Yeronga area does not service the elderly population, in particular those requiring a higher level of care, such as assisted living or nursing home.

- *Maintaining Character*
  The proposal seeks to integrate with the existing community and character of the area. A specific characteristic of the Yeronga area, in particular is the parkland and sporting fields. Accordingly the proposal is to be designed to interact with the adjoining sporting fields, through the use of balconies and recreational gazebos along the property boundaries, to encourage viewing of sporting activities from the development.

- *Access to Services and Facilities*
  The subject site is located in proximity to existing shopping facilities, including the Fairfield Gardens Shopping Centre. The proposal will also include the provision of some facilities within the development to provide visiting doctors and other services, such as hairdressers, physiotherapists and the like, to provide regular services to residents of the development, on site. These facilities are considered to be important for the proposed use, as it is anticipated that some residents will have limited mobility to access such services off site.

Generally Inappropriate Impact Assessment

In accordance with section 2.5.2 of City Plan 2000, this application is assessed against the provisions relating to Impact Assessable Generally Inappropriate Development Applications. These criteria are addressed below:

- *The character, location, siting, bulk, scale, shape, size, height, density, design and external appearance of the proposal accords with the reasonable expectations and DEOs for the Area in which the land is classified.*

  The site is currently classified as Light Industrial however is designated in the Strategic Plan as Residential Neighbourhoods. Accordingly, there is a conflict between the current land use designation and activity and that of the Strategic Plan for Brisbane. The proposed use is consistent with the intent of the Residential Neighbourhoods and will be designed to complement the local area by providing a more attractive open built form and is more consistent with the residential development in the surrounding area.

  The proposed development will be complementary to the existing residential uses in the area. The Design Guidelines for the proposal seek to ensure an attractive built form that will be designed to minimize the bulk and appearance of the development. The proposal includes the establishment of precincts over the site. Each precinct includes specific intents, levels of assessment for various uses. The Yeronga Retirement Village Code includes requirements, such as maximum building heights, that will assist in minimizing the impact of building height on surrounding uses. The development is intended to feature the highest building form in the centre of the site, with lower heights of between 2 and 3 storeys along the boundaries to enhance the integration with surrounding uses.

  The site is surrounded on 3 boundaries by parkland. These adjacent uses are beneficial in reducing the impact of the development on surrounding residential areas. The parkland to the south of the site features extensive planting, including established trees which assist in minimizing the visibility of the proposed use from residential uses to the south.

  The density of the site is consistent with the demand for the proposed use. The proposal includes a maximum plot ratio of 1.3. The retirement village, which will feature a range of services ranging from relatively independent living up to full care, such as a nursing home will include facilities that will contribute to providing care facilities for the high demand on aged care in the local area. It has been widely accepted that there is a need for aged care in the Brisbane area, and the siting of this facility in an accessible, central residential location is suitable for such a use.

- *The proposal has a positive impact on the landscape, scenic quality and streetscape of the locality*

  The existing light industrial use does not contribute to the appearance or streetscape. The proposal includes Design Guidelines that will guide the staged development of the site. These guidelines include provisions relating to height and maximum Gross Floor Area (GFA), which will ensure that the built form is complementary to the surrounding development. A clear intention of the development form is provided by the accompanying supporting documents.

  The proposal includes streetscaping works for the surrounding Venner Road and Cansdale St. These works will include street trees and on street parking facilities, as indicated by the indicative

landscaping plan included in Appendix C. These proposed works will contribute to the streetscape of the surrounding road network.

- *The proposal does not detract from the appearance, environment or amenity of the locality. These effects may relate to issues such as hours of operation, display of goods or release of any contaminant*

  The proposed use will not detract from the appearance, environment or amenity of the local area. The site will be used for a mixture of residential purposes that will have minimal impacts on the local area.

- *The proposal does not generate greater traffic movement or hazard than is reasonably expected in the surrounding locality by reason of:*
  - *On-site and on-street parking*
  - *Number or type of vehicle movements*
  - *Manner of access to the site*

  The proposed development incorporates basement level parking and parking provision is in excess of the requirements for the use, as identified by the New South Wales Road Traffic Authority Guidelines for self funded Retirement Villages. Visitor parking is intended to be located at grade and on-street for ease of accessibility. The Venner Road and Cansdale Street frontages are to be improved through proposed streetscaping works, which will contribute to the appearance of the area.

  The existing use is generally expected to generate peak traffic flows of approximately 115 vehicle movements per hour, as identified in the Traffic Assessment. The proposed use, in a worst-case scenario is approximately 160 vehicles per hour. The traffic assessment notes that this is a high estimation on the basis that the site is located on a bus line and in proximity to existing shops. The Traffic Assessment notes that a majority of vehicle movements to be generated by the site are expected to by staff. Accordingly, the traffic assessment states that no upgrades are required to the existing street system.

  The access to the site for the proposed use will involve the main access from Venner Road. As a portion of Venner Road is currently unconstructed, access to the site will be along either Cansdale Road or Hyde Roads and in to Venner Road.

  A central pedestrian refuge is proposed east of Ellesmere Street to improve pedestrian safety for the elderly residents.

  Refer: *Appendix F – Traffic Assessment*

- *The capacity of the road system in the locality is suitable for the proposed activity*

  Holland Traffic Consulting has conducted traffic modelling over the site. The results of this modelling has identified that the existing road system has sufficient capacity for the proposed residential use.

  The Traffic Assessment recommends the establishment of a central pedestrian refuge island immediately east of Ellesmere Street, along Hyde Road, to provide improved pedestrian access to the site from the bus stop. This is considered important to enable safe pedestrian access for aged persons.

  Refer: *Appendix F – Traffic Assessment*

- *The site has a reasonable level of accessibility by all modes of transport, including pedestrian, cyclist, public transport and private vehicular access, that is appropriate to the proposed activity*

  The site is accessible by several modes of transport. The site is located within proximity of the Yeronga and Fairfield train stations. Brisbane City Council bus services are provided along Cansdale Road and Hyde Road. The site is also accessible by private vehicle, cycle and pedestrian access.

  Refer: *Appendix F – Traffic Assessment*

- *An adequate level of utilities and telecommunications infrastructure is available and that any utility upgrading carried out as a consequence of the proposal is within limits reasonably expected for the Area in which the land is classified*

  The site is adequately serviced by all infrastructure. A report prepared by Brisbane Water has indicated that there is a need for the augmentation of downstream infrastructure for wastewater.

  Refer: *Appendix K – Servicing Assessment*

- *The shared use of telecommunications infrastructure occurs to minimize disruptions and adverse impacts on amenity, communities and the environment*

  Appropriate telecommunications infrastructure is available to the subject site and all aspects of modern communications will be incorporated as part of the development proposal.

  Refer: *Appendix K – Servicing Assessment*

- *Noise generated by the proposal is within levels expected for the Area in which the land is classified*

  The proposed use is of a residential nature. The proposal seeks to replace the existing light industrial use, which is used as an auction house. No significant noise impacts will be generated by the proposed use.

  Refer: *Appendix I – Noise and Air Quality Assessment*

- *The proposal does not result in unreasonable risk or hazard on site or to adjoining lands*

  The proposed development is for a retirement village. The proposed use will not result in unreasonable risk or hazard to the surrounding areas.

  The site is located in proximity to some light industrial uses, for example the marine paint manufacturing plant, Akzo Nobel. It is understood that no hazards have occurred to date at the plant, and are therefore not considered to be likely for the continued operation of the use.

- *Where the proposal is of a nature or a scale not reasonably expected in the Area in which the land is classified, that sufficient land is dedicated for public open space to offset or mitigate impacts. In particular, buffers should be provided along waterways, wetlands and areas of biodiversity importance;*

  The site is located adjacent to Leyshon and Fehlberg Parks. A parkland reserve is also located on the opposite side of Venner Road. These parkland areas provide an existing buffer from the use to the existing residential development.

  The proposal includes the rework of the concrete drainage line that currently runs along the eastern boundary of the site. As part of these works, a boardwalk will be established along the eastern boundary to provide improved connection to the adjoining parkland, and rehabilitation works will be undertaken to improve the ecological state of the waterway. The proposal will therefore result in an improvement to the biodiversity values of the drainage line identified as a waterway.

- *The disposal or storage of wastes and other materials will not result in visual blight, environmental degradation or nuisance*

  The refuse collection is to be on site, located in proximity to the site access along Cansdale Street. The waste storage areas will be screened from view to avoid impacting on the residential amenity of residents of the development and surrounding uses.

- *Negative community impacts are not generated, including impacts on:*
  - *Community identity, cohesion and cultural practices*
  - *Community health and wellbeing*
  - *Access to community services and facilities required to support need*
  - *Personal safety*
  - *Housing choice, mix, cost and location*
  - *Access to employment and education*

The proposed use will provide much needed facilities for elderly residents of the Yeronga area to be able to remain in the area and be provided with the necessary care and assistance within the immediate catchment there is demand for over 1200 retirement village units. The proposal will provide a range of aged care facilities, ranging from nursing home, assisted living to independent living units, contributing to the housing choice available in the locality and assisting with satisfying the ever increasing demand for retirement living units.

The increase in housing choice, provision of appropriate security and establishment of additional community facilities are considered to be beneficial elements for the Yeronga community, with no anticipated negative impacts to occur.

Intent and Desired Environmental Outcomes (DEOs)

The site is currently classified as Light Industry in the City Plan. This classification is consistent with the current use as the Strophairs Auction House. This use will not be continuing as the land is under contract to be purchased by the client, Harrison's Real Estate Development for the establishment of the proposed Integrated Retirement Village. The local area has been experiencing increases in the development of residential use, which is supported by the strategic designation of the site, and the industrial activities in the area are increasingly being replaced by residential uses. Accordingly it is considered the best outcome for the site to discontinue the Light Industrial activities in favour of residential purposes.

Residential development in the local area is a mixture of Low Density and Low-Medium Density Residential. The proposal is complimentary to the existing residential uses, in particular in relation to the amenity of the use. The development will be of a scale consistent with the Low-Medium Density Residential Classification.

Codes

The Codes listed below are considered to apply to the proposed development. Generally, the specific Acceptable Solutions of the applicable Codes cannot be suitably addressed at this stage of process due to the broad and preliminary scope of the application. However, due to the scope of the proposal, the intent of each Code has been addressed within detailed reports, which are included as Appendices of this Report.

A summary of the intent of each Code and applicable documentation attached to this Report is provided below:

- *Landscaping Code* – An overall landscaping intent is identified on the Masterplan. More detailed landscaping designs will be completed and provided to Council as part of the operational works approval.
- *Light Nuisance* – This application comprises a Preliminary Approval for Material Change of Use Overriding the Planning Scheme to establish a Multi-Unit Dwelling (Retirement Village). No building work will be conducted on this site until subsequent code assessable uses for the establishment of the uses. Accordingly, this code will be addressed as part of the subsequent applications.
- *Non-Discriminatory Access and Use Code* – The proposed Retirement Village Use makes it essential for Non-Discriminatory Access and Use to be considered. Lifts will be included in all multi-storey buildings to provide access to upper levels and to the basement carparking. Detailed design of the buildings will be provided in subsequent code assessable applications for Development Permits.
- *Operational Works Code* – This code will be addressed at Operational Works stage.
- *Residential Design Codes* - At this stage of the application, no specific development is proposed. However, this Code will guide future development of the site. The Yeronga Integrated Retirement Village Code included in Appendix D will apply to the assessment of subsequent code assessable applications. This code calls on other codes within the City Plan 2000 for detailed assessment purposes as necessary. Where the Yeronga Integrated Retirement Village code does not specify provisions, assessment will be required against the whole of the planning scheme as an Impact Assessment (Generally Inappropriate) application.
- *Services, Works and Infrastructure Code* – BMD Group have addressed the provision of Services and Infrastructure for the site. The report is included in Appendix K.

- *Stormwater Management Code* – A preliminary hydraulic assessment of the site and surrounding areas has been conducted by Cardno. The report included in Appendix H discusses solutions for the potential flood issues associated with the site.
- *Subdivision Code* – The proposed subdivision is a management subdivision which achieves the minimum lot sizes under the subdivision provisions. The matters setout in the Subdivision Code have been addressed in the overall development and will be addressed fully in subsequent detailed appendices.
- *Transport, Access, Parking and Servicing Code* – have assessed the existing and predicted transport and access issues relating the site and surrounding infrastructure. Their report is included as Appendix E to this report.
- *Waterway Code* – the eastern boundary of the site is affected by a Waterway Corridor. Cardno MBK in their detailed Hydraulic and Ecological Assessment will address the requirements of the Waterway Code (and Biodiversity Code).

Planning Scheme Policies

A number of Planning Scheme Policies apply to the proposed development and are listed below. The intentions of these Policies have been addressed within other consultants' reports contained within the overall Development Application.

- *Consultation Planning Scheme Policy* – Community consultation has been undertaken in accordance with this Policy. To date, the Applicant has met with City Planning, Council officers, local Councillors, and has an ongoing relationship with local stakeholders such as the Yeronga Residents Association. Please refer to Appendix J – Consultation Report for details relating to Community Consultation undertaken.
- *Management of Urban Stormwater Planning Scheme Policy* – the matters relating to Stormwater Management are to be addressed by the Hydraulic Report prepared by Cardno. Refer to Appendix H.
- *Noise Impact Assessment Planning Scheme Policy* – the matters relating to acoustic impacts of the proposed development have been addressed by Max Winders and Associates and attached as Appendix I.
- *Transport, Access, Parking and Servicing Planning Scheme Policy* – Holland Traffic Consulting have assessed the existing and predicted transport and access issues relating the site and surrounding infrastructure. Their Report is included as Appendix F to this Report.

INTEGRATED PLANNING ACT

The purpose of the *Integrated Planning Act 1997* is the outcome of 'ecological sustainability'. To achieve this outcome, a number of measures are outlined, including the following that apply to the subject development proposal:

- Ensuring the sustainable use of renewable natural resources and the prudent reuse of non-renewable natural resources;
- Avoiding if practicable, or otherwise lessening, adverse environmental effects of development;
- Supplying infrastructure in a coordinated, efficient and orderly way, including encouraging urban development in areas where adequate infrastructure exists or can be provided efficiently;
- Applying standards of amenity, conservation, energy, health and safety in the built environment that are cost effective and for the public benefit; and
- Providing opportunities for community involvement in decision making.

The subject development proposal has taken these principles into consideration, and these are addressed further within this chapter as applicable under Brisbane City Council's planning scheme, *Brisbane City Plan 2000.*

State Planning Policies

Of the five State Planning Policies (SPP), only SPP 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide applies to the subject site and proposed development.

As the proposed solution for the apparent flood issues is for the relocation of the drainage line, and the proposed use is for the establishment of a retirement village in potentially flood prone land, the proposal is required to address the State Planning Policy.

The proposed solution seeks to resolve the flood issues on the site through the relocation of the existing drainage line and upgrade of the existing infrastructure. The proposed works will mitigate the flood risks on the site and the subsequent development on the proposed site will be in accordance with the requirements of the State Planning Policy and Council's requirements. This hydraulic solution discussed in Appendix H.

Referral Agencies / Referral Coordination

The subject application is a Preliminary Approval seeking to Override the Planning Scheme in accordance with Section 3.1.6 of the *Integrated Planning Act 1997*. Accordingly, as the proposal seeks to override the planning scheme, referral coordination is triggered by Section 3.3.5(1)(c) of the Integrated Planning Act 1997.

Following receipt of Council's Acknowledgement Notice, referral to the Chief Executive Officer will be undertaken as required and the referral coordination IDAS timeframes followed.

Heritage Register

No element of the site is listed on the heritage register and accordingly no heritage issues are applicable to the subject application.

Public Notification

As the application will require referral coordination, public notification will occur in accordance with the provisions of IPA for a period of 30 business days following the completion and submission of information request responses.

Environmental Approvals

No Environmental Approvals are being sought as part of this application.

Community Consultation

A community consultation program has been conducted for the project. The program was prepared and facilitated by Performance Frontiers. This program included stakeholder interviews of specific people in the local area, in particular the community action groups. The program also included a community brunch and information and discussion sessions, which was intended to provide information to the community, and also create a forum by which the local community could talk in an informal situation with members of the project team.

Overall the community consultation was positive, with some issues raised regarding the development of the site, primarily related to flood issues and the proposed height of buildings. There was a general agreement that the change from an industrial use to a residential use was appropriate for the site and locality in general. Please refer to Appendix J for a copy of the consultation report.

The opportunity for further community consultation relating to this project exists via the statutory requirements for Public Notification.

CONCLUSION

The proposed development seeks a Development Permit for Reconfiguration of Lot (1 into 4) and Preliminary Approval Overriding the Planning Scheme for Material Change of Use (Multi-Unit Dwelling (Retirement Village) and Shop not greater than 250m²) on property located at 15 Cansdale Street, Yeronga.

The proposal seeks to establish an integrated retirement village, which incorporates a range of aged care, including nursing home, assisted living and independent living units. The proposed development will provide important living options for elderly persons requiring aged care services.

This proposal establishes precincts over the site, the Yeronga Integrated Retirement Village Code and a set of Design Guidelines that will be used to assess the subsequent Code Assessable applications for the staged development of the Retirement Village.

The subject site is currently used for light industrial purposes. These and the other light industrial uses is the surrounding area have the potential to impact on the residential amenity of the surrounding area. Development in the area is increasingly of a residential nature and the strategic plan designation of the land is residential neighbourhoods. Accordingly, the proposal to establish a residential use is considered appropriate for the site.

The development will integrate with the existing community through the establishment of a residential scale appearance, interesting development form and lightweight appearance. The proposal includes a maximum of 3 storeys along the property boundaries, increasing to a maximum of 5 storeys at the centre of the site. The proposal will also include the establishment of several smaller buildings over the site, in order to enhance the views through the development to adjoining uses and to assist with minimising building bulk.

The strategic plan designation of the land, and the increasing amount of residential development in the area provides support for the establishment of the proposed use at the subject site. This proposal has addressed the Impact Assessable (Generally Inappropriate) Assessment provisions and the City Wide DEOs and strategies. The proposal provides a facility that provides appropriate and beneficial outcomes for the community and future residents of the development, consistent with the intended outcomes and necessary provisions.

Accordingly, this report recommends that the proposed development be approved subject to reasonable and relevant conditions.

[redacted]

Senior Town Planner
April 2005

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APPENDIX A

IDAS Forms, Certificate of Title, EMR Search & Consent Letters

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APPENDIX B

Pre-Lodgement Minutes & Correspondence

MEETING MINUTES

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Subject: Yeronga Retirement Village

Meeting Date: 1 March 2005

Meeting Location: Brisbane City Council

Attendees: [redacted] PMM Group ("SJF")
[redacted] PMM Group ("MC")
[redacted] Harrison's ("JH")
[redacted] – Harrison's ("MH")
[redacted] – BCC ("CR")
[redacted] – BCC ("MP")
Roger Greenway – BCC ("RG")
[redacted] – BCC ("TD")
Rory Kelly – BCC ("RK")

Issues: 2nd Prelodgement Meeting – Design Issues

Item #	Description / Action	Resp.
1.0	**Copy of Urban Management Division feedback** to be provided following meeting – RK advised would be provided with a copy of meeting minutes	
2.0	**Community Consultation** A summary of the community consultation process to date was provided to Council, in particular: ▪ 4 issues identified o Building height o Traffic o Amenity o Hydraulics	
3.0	RK asked that plans indicate AHD on layout	
4.0	Council was not keen on small **preliminary approvals** that are not consistent with City Plan - Require level of assurance that code assessable applications will be appropriate - Residents object rights are removed be code assessable applications - RK suggested using medium density provisions - Publicly appealable – requires sufficient information in the application	
5.0	**Hydraulics** - Waterway corridor – not just a pipeline - Building within waterway corridor not permitted - Need to address biodiversity issues - Issue is more than hydraulic – need to prove that there are no ecological issues - Biodiversity code, waterway code apply - Site visit to be arranged with Bill Manners	
6.0	**Traffic** - Channelisation works – Cansdale, Hyde and Venner Rd - streetscaping of the surrounding roads - visitor parking – potential if counted as on-street parking due to conflict with existing uses in the area – it is understood that the	

MEETING MINUTES

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Item #	Description / Action	Resp.
	streets are already parked out during sporting events - parking is dependent on the layout – overall numbers for the site - more than half of the parking provision should be provided above flood level - the main parking problem will be if there are less spaces than needed by the development	
4.0	Refuse Collection - John Love provides recommendations – not sign off	PK
5.0	Stormwater Reuse - collection of stormwater for reuse – landscaping areas, sporting fields, community areas – viable considering roof size	
	Sustainability - precincts o natural ventilation and light o connectivity within the site o atriums/ open space/ roof gardens o landscape architect – reflect character of the neighbourhood	
6.0	Application for type 4	
7.0	Referrals – use check sheet - Contaminated Land – satisfy EPA - Energex - concentration of use - Main Roads - EPA	
8.0	Urban Design - neighbourhood integration	
9.0	Relate retirement act to application	

MEETING MINUTES

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Reference:	7203
Property / Site:	Venner Road Retirement Village Development - Yeronga
Meeting Date:	30th September 2004
Meeting Location:	

Attendees:

Name	Company
[redacted]n (MH)	Harrison Real Estate
[redacted](JH)	Harrison Real Estate
[redacted](DG)	Design Inc. Gold Coast
[redacted](AP)	Design Inc. Gold Coast
[redacted](JMcK)	PMM Group
[redacted](SF)	PMM Group
[redacted]DD)	Acting Team Leader – DA Team South
Michael Papagorgio (MP)	City Planner

Agenda No.	Summary of Issues	Action
1.	• [redacted] provided an overview of the proposed Retirement Village Development and background on their existing Development being undertaken in Toowoomba. • [redacted] provided a background to Development considerations in the surrounding locality of the subject site. • [redacted] provided a detailed overview of the Proposed Development in accordance with the plans that had been prepared, walking Council Offices through the Design intent and overall bulk and scale of the Proposed Development.	

2.	***Comments made by Council Offices*** • From the material presented it is clear that there is a genuine need for the provision of Retirement Village/Assist Care Living within the Yeronga catchment area. It will therefore be necessary to approach this application with argument that there is this need and that this need will not be satisfied in any other way than the provision of this Development. • It will be necessary to discuss the possibility that smaller Developments in the catchment may also provide some level of service, however it will be necessary to identify that the size of these facilities may not be able to provide the same level of service. • It was noted that to provide the broad range of facilities as proposed in this Development there is the need for 200 plus beds as a minimum size and the integration of the low and high care facilities within the develop. • The illustration of the clear relationship to the surrounding Development and community needs to be made. • Application strategy would be for a Preliminary Approval over the entire site and Development Approval for Stage 1 of Development, with subsequent Development Approvals to be sort in accordance with this Preliminary Approval. • It was suggested that a two (2) Stage level of documentation be required, these being: o Stage 1 – Assessment of the Application against the strategic provisions of the Planning Scheme, namely the fact the current land use zoning is industrial land, demonstration of need, identification of whether this use can exist with the existing adjoining uses (exploring reverse amenity matters), consideration of an overall planning intent that Council may have for a Development of the light industrial area in question, consideration of whether the Development as proposed would remove any opportunities for future Development in the locality and indication of adjoining Developments timing. o Step 2 – is more sites specific assessment of the Development looking at the use mixes, design, bulk and scale, environmental considerations, engineering considerations, surrounding land use activities, the density to be accommodated, design approach (ie. Existing and emerging community), and incorporating a structured consultation process.	

MEETING MINUTES

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Reference:	7203
Property / Site:	Prelodgement Meeting Harrisons – Yeronga
Meeting Date:	8 October 2004
Location	Brisbane City Council

Attendees:

Name	Company
Rory Kelly	Brisbane City Council
[redacted]	Brisbane City Council
Roger Greenway	Brisbane City Council
Bruce Mcarthur	Brisbane City Council
[redacted]	Client
[redacted]	Client
[redacted]	BMD
[redacted]	Design Inc
[redacted]	Design Inc
[redacted]	PMM Group
[redacted]	PMM Group

Summary of Issues	Action
Multi unit on service station site	
Community action group ▪ Consultation may not be adequate within IPA timeframes – submitter appeals ▪ 5 storey buildings – submitter appeals / deemed refusal	
Urban Management Department – 10 days to establish their position. Sports & Recreation Economic Development Brisbane water * May want to look at nearby residential property combined	
Discourage of industrial use in local area. ▪ Trucks and traffic ▪ Infrastructure requirements – Sewer	
▪ Intersection Hyde and Fairfield Road, traffic through urban streets ▪ Security – Public access through site to parkland	

MEETING MINUTES

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Consultation first for identification of concerns then preparation of reports and application traffic congestion from Sports fields.	
Work with Council for community consultation process ▪ Through DA team	
Council indicated that there is no disagreement about need Issues may be height/access/infrastructure	
Referral to EPA and Main Roads	
Type 4 application – Major Development	
Community consultation endorsed by Civic Cabinet	
Density Medium Density 0.8 High Density 1.2	
Need to address the Impact uses not codes	
Relationship with remaining industrial Commercial impact – issue not residential	
Cover letter for Urban Management ▪ Assumptions i.e. extension of Venner Road ▪ All access of Venner road ▪ Flood	

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PO Box 1559
Fortitude Valley Q 4006
743 Ann Street
Fortitude Valley Q 4006
Australia

Our Ref: 7203
Date: 18 October 2004

Attn: Rory Kelly – Senior Planner

Development Assessment - South Team
Level 10
Brisbane Administration Centre
69 Ann Street
BRISBANE QLD 4000

Via: Mail

Dear Sir / Madam

RE: REFERRAL TO THE URBAN MANAGEMENT DIVISION
15 CANSDALE ROAD, YERONGA, DESCRIBED AS LOT 1 ON RP150512

We write with reference to discussions with Council during a Prelodgement Meeting on 8 October 2004. During this meeting it was identified that several divisions of the Council, including Brisbane Water, Sports and Recreation and Economic Development may have an interest in the development of this proposal. We now write to take up Council's offer of referring this proposal through the Urban Management Structure to obtain the appropriate direction prior to lodgement of the application. Accordingly we have listed below some potential issues that were raised during the Prelodgement Meeting and note that Council are already in receipt of concept plans.

The proposal involves the establishment of a Retirement Village, which will feature a variety of levels of aged care, ranging from low, essentially independent living, to high level care, including a nursing home. The village will also include a variety of commercial uses including post office, medical services, and recreational facilities. It is intended that this commercial area will contribute to the revitalisation of the existing commercial area that exists on the opposite side of Hyde Road. Please refer to the proposal plans for further detail.

During the Prelodgement meeting, several items were raised that we believe require comment from Council's various departments, these items are listed below:

- Extension of Venner Road – the site is located on the corner of Venner Road and Cansdale Road. The current proposal includes access from Venner Road. Venner Road is partially unconstructed from the site east towards Forsyth Street. This portion of unconstructed road is currently used as parkland area. We seek confirmation that this portion of road will remain unconstructed.
- Access from Venner Road – The design of the proposal currently includes access to the site being from Venner Road. During the Prelodgement Meeting, this was raised as a potential issue considering the possibility of upgrading the intersection of Hyde Road, Venner Road and Cansdale Road in order to provide access to the site.
- Traffic impacts – general consideration must be made into the potential traffic impacts of a development of this scale.

Directors: Jim McKnoulty B App Sc (Surv) LS MIS Aust Graham Dunlop B Surv MIS Aust JP (C Dec) GDURP MPIA Jeffrey Evans B App Sc (Surv) GDURP MPIA
Gregg Purcell B App Sc (Surv) LS MIS Aust C Dec Peter Egerton BRTP MPIA
PMM Group Pty Ltd ABN 67 010 679 446 ABN 67 561 045 588

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- Flood – the site is currently identified as being in a waterway corridor in the City Plan. A drain runs from the River along the eastern boundary of the site. Investigations are necessary into the upgrades of the drain and water levels around the site may also be an issue.
- Height – consideration of the height of the current proposal and its impact on the visual amenity of the area;
- Plot ratio – consideration of the plot ratio of the proposal.
- Strategic Direction – the site is currently classified as Light Industrial. There are other remaining light industrial uses in the vicinity, however clarification is sought in relation to the intent for development in the area.
- Location – The site is located adjacent to open space sport and recreation facilities. Consideration must be made relating to the relationship between the proposed use and the existing recreational facilities;

We advise, in accordance with discussions held during the Prelodgement Meeting, that a community consultation program has been developed for the project by Performance Frontiers. A brief overview of the proposed process is attached, and we ask Council to assess the methodology of the process proposed and provide the appropriate feedback on this approach.

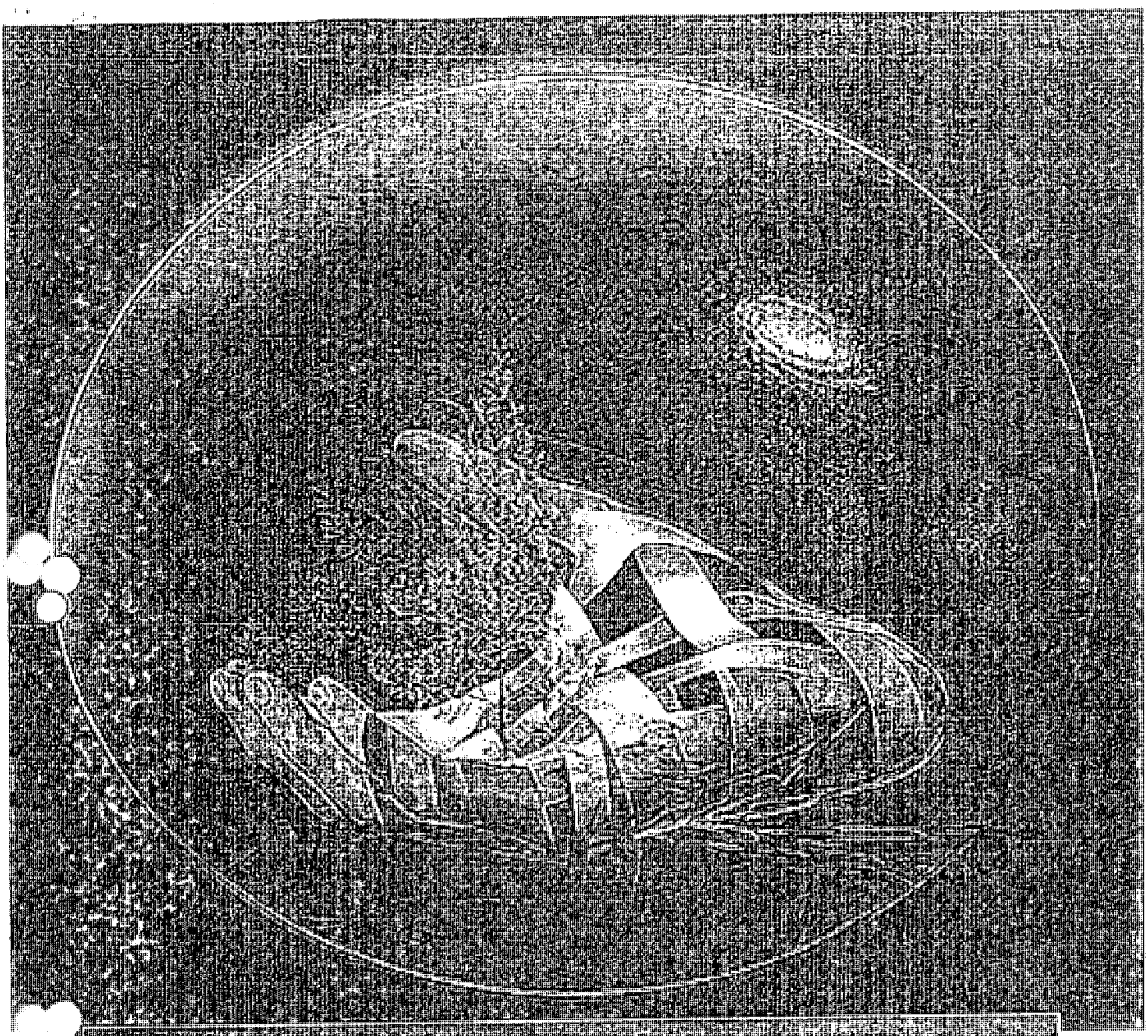
We would appreciate the consideration of this proposal, the above issues and any other items that may be associated with this development. We trust this information is sufficient for your purposes, however should you require any further details or clarification, please do not hesitate to contact the writer on 3237 8808 or 0403 013 725.

Yours faithfully
PMM GROUP PTY LTD

[redacted]
Senior Town Planner

Enc Community Consultation proposed methodology

cc [redacted] – Harrison Real Estate Development (letter only)



YERONGA CARE
COMMUNITY CONSULTATION PROGRAM

A proposal to design and manage a community consultation program for Harrisons Real Estate Development.

BCC.061.4808

1. Introduction

Harrison Real Estate Development is planning an aged care development on the corner of Venner Road and Cansdale Street at Yeronga.

Following discussions with Brisbane City Council, it has been recommended that a targeted community consultation be undertaken with people who are potentially impacted by the proposed development as part of the development planning and assessment process.

This proposal outlines the proposed consultation process including objectives, methodology, deliverables, fees and expenses and timing.

The consultation process has been developed in accordance with the Brisbane City Plan 2000 Consultation Scheme Policy principles as outlined in Appendix One.

2. Purpose

The overall objective of the community consultation program is to inform people affected by the proposed development and identify issues or concerns that need to be addressed in the development planning and assessment process.

At this stage, the consultation program will focus on:

- Informing the community about the nature and scale of the development
- Educating the community about the need and benefits of the development
- Obtaining specific and broad feedback from the community about key issues or concerns that they have with the development
- Involving the community in discussions or forums that potentially resolve issues and concerns
- Exchanging information about the progress and status of the development and how issues and concerns have been dealt with.

These objectives will be further refined during the project scoping stage of the program.

3. Methodology

The community consultation programme will comprise three stages:

1. Program scoping to clarify and refine the purpose, key objectives, expected outcomes, decision making processes and most appropriate level of consultation.

2. Community dialogue with people who are affected by the development to raise awareness and inform them about the need and benefits of the development, and to encourage them to participate in positive, constructive discussion about their issues, concerns and potential solutions.

3. Reporting of outcomes from community dialogue activities for inclusion in development planning and assessment processes.

BCC.061.4809

The activities and processes for each stage are as follows:

3.1 Stage One – Program scoping

The first stage of the community consultation programme is to identify the scope of consultation and communication, in particular the residential areas, community groups and other key stakeholders that should be included in the consultation program to ensure that the development planning and assessment process is a success and the most effective ways to communicate and reach these audiences.

A series of up to ten face to face interviews would conducted with the following individuals to determine the scope of the consultation:

- Local Councillor
- State and Federal MPs
- Chair of the Planning Committee
- Representatives of the newly elected Lord Mayor
- Representatives from the BCC Development Assessment Team
- Representatives from the Office of Urban Management
- Representatives from local community groups, in particular resident action groups and progress associations

Based on the outcomes of these interviews, a three hour meeting would be conducted with the client and project team to agree on the parameters of the consultation process. A consultation and communication plan would be finalised detailing the business, community, government and advisory groups and individuals who can assist with or who should be involved in the consultation process.

The design and co-ordination of communication activities that are needed to reach these target audiences would be undertaken on completion of this meeting.

It is envisaged that a mix of communication mediums would be utilised to maximise communication effectiveness and to ensure that people affected by the development have the opportunity to be aware of, informed and participate in the consultation process.

At this stage the preferred mediums would include local newspaper editorial and advertising, signage on site, community noticeboards, targeted letterbox drops and personal interviews with key local opinion leaders.

3.2 Stage Two – Community dialogue

Effective community consultation requires dialogue rather than debate.

Our approach to designing and facilitating community consultation programs is based on promoting dialogue with the people affected by the development that encourages them to be open to understanding and exploring a diversity of views and opinions and collaborating with project team consultants to find solutions to issues and concerns.

The first step in establishing the foundations for dialogue is to ensure that target audiences identified for the consultation process are reached through communication activities and are represented in and throughout the consultation process.

Consultation and communication activities will be designed to incorporate a registration of interest and a feedback mechanism so that people affected by the development have the opportunity to be informed and remain informed regardless of their level of participation in the process.

To this end, it is proposed that a physical site office be established in vacant shops opposite the development site to act as a point of contact and information source about the development and the consultation process. In addition, we propose establishing a website with a bulletin board for announcements and information updates to the community with a community forum area on the site where participants can exchange information, views and ideas about the development.

The second step in developing community dialogue is to create events that will attract people's attention, interest and participation.

We propose a series of three integrated events that maximise awareness, access and opportunity for participation:

- *A Community Sunday Brunch* to explain the proposed development and the consultation process to the community and encourage ongoing participation and support for the process. The event would be held on-site or at a nearby high traffic location from 10.30am-12.30pm and feature keynote presentations from the project team and a discussion forum to identify preliminary perceptions and attitudes towards the development. A feedback survey would be distributed to people at the event.
- *A Community Workshop* to better understand the need and benefit of the development and to identify key issues and concerns that need to be considered as part of the development planning and assessment process. The workshop would be held on two different weekday evenings from 7.00pm–9.00pm at a local community facility (eg. Yeronga RSL, community hall or school hall). The event would be interactive and experiential to build dialogue and ownership of the consultation process. Outcomes of both evenings would be posted on the community information board at the physical office and on the website.
- *Community Forums* where individuals or groups can meet with the Project Team at the site office at pre-agreed times to discuss particular aspects or concerns about the development; or engage in an online forum on the website with the Project Team where other people can views comments and information exchanged.

3.3 Stage Three – Reporting of community dialogue

On completion of the Community Sunday Brunch and Community Workshop, a preliminary report would be prepared outlining the outcomes of the consultation at that point and comments that need to be considered or adopted in the development planning and assessment process. The outcomes would be reported using Brisbane City Plan 2000 guidelines.

A final report incorporating feedback from the Community Forums would be prepared and submitted on completion of the consultation.

4. Expected outcomes

Based on the preliminary briefing from PMM Group, the expected outcomes for this consultation program are:

- People affected by the development will have the opportunity to be made aware of and to be informed about the proposed development.
- People affected by the development will have the opportunity and be encouraged to participate in community consultation activities.
- A cross-section of people representing the broad range of community groups and interests will be involved in the consultation process at some point.
- Key issues and concerns of people affected by the development by will clearly identified and recorded.
- Potential solutions/acceptable outcomes will be identified to address key issues and concerns.
- A preliminary report will be prepared and included in the Development Application
- A final report will be prepared and submitted following completion of the consultation program.

5. Timing

The proposed timing of the project is as follows:

- Stage One: Project Scoping Weeks 1-2
- Stage Two: Community Forum Weeks 3-7
- Stage Three: Reporting Weeks 6-8

BCC.061.4812

APPENDIX ONE

Program alignment - Brisbane City Plan 2000 Consultation principles

Consultation principle	Proposed actions
People affected by a development proposal or project have the right to be informed and to have the opportunity to participate and this may include tenants affected by the development for example.	Multiple mediums for informing people potentially affected – local newspaper, site signage, highly visible shop front display, letterbox drop, personal interviews with key local opinion leaders
The consultation program should be interesting, equitable (in terms of physical access and access to information), inclusive (of all stakeholders, particularly marginalised groups) and adequately resourced.	Interactive, experiential community workshops and public meetings. Multiple information mediums used. Marginalised groups identified in project scoping and contacted directly. Investment in shop front to encourage ongoing information exchange.
Consultation should commence early and form part of the development formulation and assessment process rather than being a one-off event	Community consultation to occur prior to lodgement of development application. Consultation program forms part of development formulation and assessment process.
The history of previous consultation programs should be taken into account	BCC to advise on success and failure of previous consultations in this area as part of project scoping stage.
The purpose, expected outcomes and decision making process should be clearly communicated to all parties participating.	Purpose, expected outcomes and decision making process to be finalised during project scoping stage. Process to be clearly articulated to and reinforced with participants during each program activity.
A diversity of consultation techniques should be implemented to maximise opportunity for participation	Proposed techniques include personal interviews, community workshops, community meetings, media releases, street meeting, signage on land and community notice boards.
Consultation objectives should be matched with appropriate techniques as outlined in the plan	Finalisation of most effective techniques on completion of objective setting in program scoping stage
The consultation program should be constantly evaluated against its objectives and modified accordingly to meet changing needs	Program review on completion of each stage/key activity
Participants should be informed how the issues raised through consultation have been addressed in the development proposal/outcome	Community forums Shop front bulletin/information board Shop front community meetings with project team

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APPENDIX C

Proposal Plans

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APPENDIX D

Design Guidelines

YERONGA RETIREMENT VILLAGE – INTENT, LEVEL OF ASSESSMENT TABLE AND CODE

GENERAL

These Design Guidelines support a Preliminary Approval application associated with the Yeronga Retirement Village. The Design Guidelines specify the level of assessment for subsequent development applications on land located at 15 Cansdale Street, Yeronga, described as Lot 1 on RP150512.

The design guidelines contain information and detail to guide the further development of the site through establishing a vision and a set of precincts for development. The key role for the Design Guidelines is to establish the key intents for each precinct to guide the staged development. The Yeronga Retirement Village Code then defines the alternative solutions for specific Performance Criteria within the Brisbane City Council City Plan 2000 relating to this development.

These Design Guidelines must be read in conjunction with the Brisbane City Plan 2000. Where there are no provisions with the Design Guidelines and the Yeronga Retirement Village Code, the Brisbane City Plan 2000 provisions will prevail.

VISION

Create an integrated Retirement Village that provides a high level of quality of life and residential amenity for its residents that interact and contribute to the amenity of the existing, surrounding locality.

- Establish a village environment that integrates with the existing community
- Provide a range of aged care facilities that addresses the demand for such residential development;
- Develop a built form that compliments the surrounding environment;
- Provide a retirement facility that provides a high quality of life for its residents

INTENT

Built form

The built form of this development will be complimentary to the existing residential development in the area and will take advantage of the location adjacent to the local sports fields and proximity to the Brisbane River. Buildings should be lightweight in appearance. Development on the site should provide high pedestrian access within the site, for residents.

The built form on the site is intended to be of a low-medium to medium density providing a range of aged care facilities including nursing home, assisted living and independent living.

Social form

This development is intended to provide a much needed retirement and aged care facility in the Yeronga area. The form of the development will encourage a high level of amenity and quality of life for residents of the village. The development will provide a range of aged care facilities including nursing home, assisted living and independent living. The development should encourage interaction with the community.

DESIRED ENVIRONMENTAL OUTCOMES

1. Buildings should integrate with the surrounding development and enhance the natural features of the site and surrounding areas;
2. Development should be of a low- medium to medium density, ranging between 3 to 5 storeys over the site;
3. Development in this precinct should provide open space and recreational areas that are considerate in their design of the future residents on the site.

PRECINCTS

PRECINCT 1 – AGED CARE FACILITY

INTENT

Precinct 1 is located at a visually dominant location within the site and accordingly must provide an attractive facade to the surrounding areas through the use of a combination of balconies, articulations and other architectural features.

The built form is required to address both the external road network as well as the internal areas of the site. Built form should be visually interesting and complementary to existing residential development in the area. Development in this precinct should be a maximum of 3 storeys and of a lightweight appearance.

Development within this precinct must be considerate of the intended aged care use, and accordingly must incorporate design features and facilities to provide a high quality of life for residents.

PRECINCT 2 –INDEPENDENT LIVING

INTENT

This precinct is the largest within the development site. The maximum Gross Floor Area (GFA) to be achieved over the site is 23,500m^2. The general form of this precinct will be low – medium density, independent living units. These units will generally be orientated toward the sporting fields located to the north and toward the centre of the development. Design of buildings in this precinct must consider the existing industrial uses located on the opposite side of Cansdale Street.

Built form should assist in minimising building bulk. Where possible the built form will be stepped up, away from the boundary of the site and include a lightweight appearance.

This precinct is divided into 3 sub-precincts as discussed below:

Sub Precinct 2a – Aged Care / Independent Living Units

The intended development of this site is for Independent Living Units, however should the demand for additional aged care facilities require, this precinct may also be developed for aged care facilities.

Sub Precinct 2b – Independent Living B

Development within this precinct is to be of a maximum of 3 storeys. This precinct will be developed for independent living units that are, where possible, oriented towards the adjacent sporting fields and parkland.

Sub Precinct 2 c – Independent Living C

This precinct includes some of the highest buildings within the site, to a maximum of 5 storeys. Built form should be architecturally interesting and include balconies and articulation to assist with minimising the appearance of building bulk.

PRECINCT 3 – ASSISTED LIVING

INTENT

This precinct is located at a main entrance to the development. At this visually prominent location, the built form must demonstrate a welcoming and comfortable environment for residents and visitors.

Buildings may include covered areas, including atriums to provide sheltered recreational areas for the residents of the assisted living units.

Development within this precinct must be considerate of the intended aged care use, and accordingly must incorporate design features and facilities to provide a high quality of life for residents.

This precinct is divided into two sub-precincts, as follows:

Sub-Precinct 3A – Assisted Living A
This precinct is to be a maximum of 3 storeys. This sub-precinct is located at a major entrance to the development and will feature buildings that clearly delineate this entrance and contribute to the architectural variety of the entire development.

Sub-Precinct 3B – Assisted Living B
This precinct is located at the centre of the development, and accordingly includes a maximum building height of 5 storeys. Buildings in this precinct must maximise the outlook from the site.

PRECINCT 4 – RECREATION PRECINCT

INTENT
This precinct is the focus of the recreational facilities within the development. The facilities in this precinct may include swimming pool, lawn bowls playing field, croquet lawn, and the like.

This precinct should also incorporate shade structures around these facilities. No buildings are anticipated within this precinct, however shade structures will not exceed one storey.

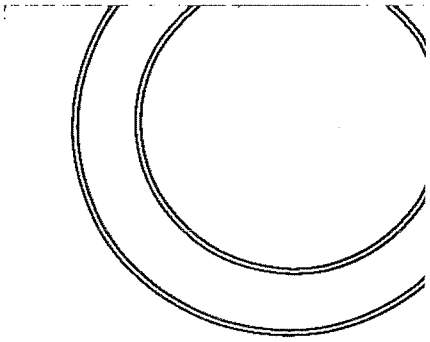
LEVEL OF ASSESSMENT

Please note that:

- This table should be read in conjunction with Section 2 General Assessment Processes in City Plan 2000
- This level of assessment table applies to the development proposed within the Yeronga Retirement Village Development
- The trigger for assessment in the level of assessment table is Material Change of Use and/or building work (associated with a use or structure specified in the level of assessment table) unless otherwise specified.
- Where the Yeronga Retirement Village Code does not identify specific requirements, the Medium Density and other relevant provisions in City Plan 2000 prevail.

LF

Self Assessment	Applicable Codes
1. **Estate Sales Office** in Precincts 1, 2 and 3.	Yeronga Retirement Village Code ~~LF~~ I
2. **Home Business** in Precincts 1, 2 and 3 where complying with the self assessable provisions in the Home Business Code.	Home Business Code I
3. **Outdoor Lighting** where complying with the Acceptable Solutions in the Light Nuisance Code – All Precincts	Light Nuisance Code ✓
4. **Park** where complying with the Acceptable Solutions in the Park Code – All Precincts	Park Code ✓
Code Assessment	**Applicable Codes**
1. **Operational Work** for **Filling** or **Excavation** – All Precincts	Filling and Excavation Code I
2. **Reconfiguring a Lot** where – - entailing the subdivision of existing or approved buildings, except houses	Sudivision Code
3. **Multi-Unit Dwelling (Retirement Village)** where complying with the Yeronga Retirement Village Code in Precincts 1, 2 and 3.	Yeronga Retirement Village Code
4. **Shop** or **Office** where less than 250m2 gross floor area and ancillary to the Retirement Village Use in Precincts 1, 2 and 3.	Yeronga Retirement Village Code
5. **Satellite Dish** (where not exempt development) in all Precincts.	Satellite Dish Code



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Impact Assessment	
Generally Appropriate	
1. **Home Business** in Precincts 1, 2 and 3 where not complying with the Self Assessable provisions in the Home Business Code	Home Business Code
2. **Park** where note complying with the Acceptable Solutions in the Park Code	Park Code
3. **Utility Installation**	
4. **Volumetric Subdivision** where not associated with an existing or approved building	Subdivision Code
Generally Inappropriate	
1. **Any other material change of use**	

PRELIMINARY

YERONGA RETIREMENT VILLAGE CODE

1. Application

This code will apply in assessing Material Change of Use and Building Work applications in the Yeronga Retirement Village. This code applies to all Precincts within the Village.

2. Using this code

In using this code, reference should be made to Section 1.1 – How to use the Codes, at the front of the Brisbane City Council City Plan 2000.

When this code is listed in the level of assessment table for the applicable Precinct as the applicable code for Code or Impact Assessment, the code is to be read as being the purpose, Performance Criteria and Acceptable Solution.

The following is a list of further primary and secondary codes that should be considered in assessing applications over this site:

List of Primary Codes

- Filling and Excavation Code
- Home Business
- Light Nuisance
- Subdivision Code

List of Secondary Codes

- Biodiversity
- Energy Efficiency
- Landscaping
- Non-Discriminatory Access and Use
- Residential Design – Special Needs
- Services Works and Infrastructure
- Stormwater Management
- Transport, Access, Parking and Servicing Code
- Waterway
- Wetlands

3. Purpose

The purpose of this Code is to effectively manage the staged development of the Yeronga Retirement Village to ensure the impact on neighbours is minimised, while:

- Encouraging attractive buildings of a size, intensity and appearance complementary to and considerate of the surrounding development and land uses.
- Facilitating development that is up to 5 storeys in height, spread across the site and visually interesting
- Encouraging development that provides a pleasant living environment for its occupants

4. Performance Criteria and Acceptable Solutions

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
BUILDING SIZE AND ORIENTATION				
P1 Buildings built prior to 1900 must be retained (whether in a Demolition Control Precinct or not)	**A1** Buildings built prior to 1900 are reused, refurbished and retained			
P2 Building size is consistent with the intent of the Yeronga Retirement Village and the opportunities presented by this brownfield development site.	**A2.1** Maximum gross floor area for each precinct is specified below - Precinct 1 – 6,750m² Precinct 2 – 23,500m² Precinct 3 – 5,500m²			
	A2.2 The site area is a minimum of 800m² and has a minimum frontage of 20m			
	A2.3 Building height at any point is no more than: ▪ Precincts 1, 2a, 2b and 3a – 3 storeys (or 9m from ground level to the underside of the ceiling of any habitable room); and ▪ Precincts 2c and 3b – 5 storeys (or 15m from ground level to the underside of the ceiling of any habitable room);			
	A2.4 Building length is no more than 30m in any direction			
P3 The appearance of building bulk must be reduced by design elements	**A3.1** The building bulk is reduced by a combination of ▪ balconies and recesses ▪ variations in material and building form			

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PRELIMINARY

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	A3.2 Setback from a road alignment is a minimum of: ▪ 6m for building walls ▪ 4m for balconies, eaves, awnings, garden structures, etc.			
	A3.3 Elevations show variation in materials, colours and/or textures between levels			
	A3.4 Roofs include pitches, gables, skillions or other features			
	A3.5 Services structures and mechanical plant are screened or designed as part of the building			
P4 The development must be orientated to the street and facilitate casual surveillance of the street	**A4.1** Building front elevation is parallel or nearly parallel to the road frontage			
	A4.2 Building is not set back more than 8m from a road alignment			
	A4.3 Building has windows or balconies that face the street or are on the front of the building			
	A4.4 Basement parking structures between a street frontage and the main front elevation are no more than 1m above ground level at any point			

PRELIMINARY

1. Solution: ✓ = Acceptable Solution
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PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
P5 Building elevations must visually balance the height of the building	**A5** A number of the following design elements are introduced: ▪ variations in plan shape, such as curves, steps, recesses, projections or splays ▪ variations in the treatment and patterning of windows, sun protection devices of other elements of a facade ▪ elements of a finer scale that the main structural framing ▪ balconies, verandahs, terraces or sun shading devices ▪ light coloured materials			
P6 Roofscapes must be attractive and not marred by a cluttered display of plant and equipment	**A6.1** Service structures and mechanical plant are designed as part of the building or screened effectively			
	A6.2 Building caps and rooftops contribute to the architectural distinction of the building			
BUILDING DESIGN AND SETTING				
P7 Landscaping must be consistent with the established landscape character of the area and accommodate the retention of existing vegetation, including street trees	**A7** Established trees are retained where removal is not required to site new buildings			
P8 The development must include landscaping that contributes to a pleasant and safe environment and integrates well with the neighbourhood	**A8.1** Landscape design allows the overlooking of the street and pedestrian entry areas			

PRELIMINARY

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	A8.2 Landscape design emphasises a clear pedestrian entry point			
P9 Fencing and walls must: ▪ assist safety and surveillance of the street and entry areas ▪ enable use of private open space abutting the street ▪ assist in highlighting entrances	**A9.1** High solid front fences are avoided so that dwelling can observe the street			
	A9.2 Height of fences/walls on any road alignment does not exceed: ▪ 1.5m if 50% transparent ▪ 1.2m if solid			
	A9.3 Solid front fences/walls above 1.2m high are provided only on arterial or suburban routes and: ▪ fences longer that 10m have gates, indentations or detailing to provide visual interest ▪ fences are limited to 60% of the frontage where private open space fronts the street			
P10 The location, height, extent, and materials of retaining walls must be designed to minimise visual impact	**A10.1** Combined height of retaining wall and fence does not exceed 2m			
	A10.2 Retaining walls are set back from any boundary and are stepped or terraced, so that landscaping can soften visual impact			

PRELIMINARY

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
P11 Development must provide sufficient communal and private open space for residents' needs	**A11.1** A minimum 25% of the site is provided as open space each with a minimum dimension of 2m			
	A11.2 A landscape area of minimum dimension of 2m is provided along the full frontage of any road frontage (excluding cross-over and pedestrian access only)			
	A11.3 For a ground floor dwelling, ground floor private open space is provided with: ▪ minimum area of 35m² ▪ minimum dimension of 3m			
	A11.4 For a dwelling unit above ground level, private open space for each dwelling unit is provided in the form of a balcony with minimum dimension of 3m			
P12 Communal open space for clothes drying and common recreation facilities must be provided where a significant proportion of dwellings do not have access to ground floor private open space	**A12** Where more than 25% of dwellings do not have access to ground floor private open space, communal open space for clothes drying and common recreation facilities is provided with at least one continuous area a minimum of 50m² with a minimum dimension of 4m			
P13 Screening and partial enclosure of balconies is limited to provide privacy for neighbours and comfort for residents without resulting in unattractive buildings or an appearance of excessive bulk or restricting opportunities for passive surveillance of the street	**A13.1** Screening of balconies is limited to the side and rear boundaries and the sides of balconies between those units where needed to prevent noise and overlooking of other units or dwellings and recreation areas			

PRELIMINARY

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
PRIVACY AND ACCESS TO SUNLIGHT				
P14 Habitable spaces must not directly overlook dwellings on adjacent land Energy efficiency and solar access to the proposed dwellings must be maintained *Note:* *North or north-east facing windows, balconies or decks may be permitted to provide lesser levels of privacy than would otherwise be allowed by this Code where this will significantly improve passive solar design*	**A14** Where habitable room windows look directly at habitable room windows in an adjacent dwelling within 2m at ground floor level or 9m at levels above ground floor, privacy is protected by: ▪ still heights a minimum 1.5m above floor level OR ▪ fixed opaque glazing in any part of the window below 1.5m above floor level OR ▪ fixed external screens OR ▪ fencing to a minimum 1.5m above ground floor level (only applies to overlooking from windows at ground floor level) OR ▪ achieving the privacy solution shown in *Figure b* (in Code) OR ▪ where screening of decks and balconies is required, it is solid translucent screens, or perforated panels, or trellises that are permanent and durable and have a maximum of 25% openings			

PRELIMINARY

1: Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
P15 Development must not significantly reduce daylight to open space and habitable rooms in adjacent development	**A15.1** The side boundary setback, except for a wall built to the boundary, is a minimum of: ▪ 1.5m for a wall up to 4.5m high ▪ 2m for a wall up to 7.5m high ▪ 2m plus 0.5m for every 3m (or part of 3m) over 7.5m height for a wall over 7.5m high ▪ less than 1.5m where the wall is no more than 3.5m high and no more than 15m long			
	A15.2 A wall built to a side boundary has: ▪ a maximum height of 3m, unless it abuts a higher existing or simultaneously constructed wall ▪ a maximum length of 15m where it does not abut an existing boundary wall. *Note:* *Where a wall built to the boundary has a heights less than 2m measured on the adjacent property, it can extend the full length of the boundary, less any front or rear boundary setback*			
	A15.3 Minimum rear boundary setback is 6m *Note:* *Minimum setbacks do not apply to eaves and sun shading devices*			
P16 Development must achieve a pleasant, attractive and manageable living environment	**A16.1** The optimal number of units are orientated to within 20° either side of north			

PRELIMINARY

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
Dwellings must receive daylight and allow passage of cooling breezes through habitable rooms *Note:* *North or north-east facing windows, balconies or decks may be permitted to provide lesser levels of privacy than would otherwise be allowed by this Code where this will significantly improve passive solar design*	**A16.2** Orientation of main living area windows to within 20° either side of north is maximised			
	A16.3 The majority of private open space has good access to sunlight			
	A16.4 Window placement and internal layout allows cross-ventilation			
P17 Fenestration and sun control devices must be used effectively to: ▪ shade buildings ▪ reduce glare ▪ assist in maintaining comfortable indoor temperatures	**A17** Effective sun shading devices are provided to windows			
SPECULAR REFLECTIVITY				
P18 ▪ Buildings must not incorporate any type of glass or other surface likely to reflect specular rays that could create undue nuisance, discomfort or hazard to any part of the surrounding locality	**P18** Any reflective glass material has: ▪ a level of light reflectivity of not greater that 20% ▪ a level of heat transmission of not less than 20%			
CAR ACCOMMODATION AND VEHICLE ACCESS				
P19 Pedestrian spaces, courts, landscaping or recreation areas must be more prominent than vehicle movement areas and utility spaces Garages and parking structures must not visually dominate the street frontage	**A19** The proposal has at least one prominent pedestrian entry that connects a foyer directly with the footpath			

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PRELIMINARY

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
P20 Vehicle access and parking must be safe and convenient for residents, visitors and service providers Residents and visitor parking must be provided according to: ▪ the number, size and type of dwellings proposed ▪ the availability and acceptability of kerbside parking adjacent to the site ▪ local traffic or parking management ▪ the likely preference of the occupier or target market *Note:* *Resident parking provision may be reduced from the rate specified in the Acceptable Solution where public transport is available within a reasonable walking distance*	**P20** Off-street parking spaces are provided: ▪ where qualifying for a subsidy for aged persons or persons with disabilities accommodation under any law, 1 car space per 3 dwellings ▪ otherwise, as in Table 1, the total rounded up to the nearest whole number			
	Table 1 Vehicle space for different dwelling sizes			
	Dwelling unit size (gross floor area)/ number of bedrooms — Average vehicle spaces per dwelling			
	Location — **A[1]** — **B[2]** Small (<75m²) or 1 bedroom — 0.75 — 1 Medium (75-110m²) — 1 — 1.25 Large (>110m²) or 3 bedroom — 1.25 — 1.5			

PRELIMINARY

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	Plus per dwelling for visitors 0.25 0.25 Note: Tandem parking may be used where 2 spaces are provided for 1 dwelling (1) A means any part of the site is within 200m, of a pedestrian entry to a railway station, busway station, or ferry terminal, or within 100m of a major road except where the site has its only access to a road where on-street parking restrictions apply (2) B means any other circumstances			
P21 Vehicle parking design and location must minimise impacts on neighbouring dwellings Noise disturbance must be mitigated by parking area location and fencing	**A21.1** Vehicle parking is: ▪ screened to minimise reflection of car headlights onto dwelling windows and attenuate noise ▪ lit at night ▪ separated from habitable windows to minimise noise and fumes disturbance			
	A21.2 Vehicle parking structures are designed and located: ▪ behind the building setback, or ▪ behind or below the building so they are not visually dominant from a public street ▪ to be compatible with overall building design in terms of height, roof form, detail, material and colours ▪ as close as possible to the dwellings to be served			

PRELIMINARY

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	A21.3 The location of visitor parking is discernible from the street			
	A21.4 Vehicle movement areas are located a minimum of 3m from adjoining dwellings and acoustic screening is provided next to any vehicle movement or parking areas along the side or rear boundary OR A 2m wide vegetated buffer is provided next to any vehicle movement or parking areas along the side or rear boundary Refer to *Figure f* (in Code)			
P22 Vehicle access to neighbouring sites must not impede the traffic flow on arterial routes	**A22** Vehicle access is provided to abutting sites that only have frontage to arterial routes, to facilitate access via an alternative street			
MANAGING LIGHT AND NOISE IMPACT				
P23 Light nuisance must be minimised	**A23** Outdoor lighting complies with the requirements of *AS4282 – Control of the Obtrusive Effects of Outdoor Lighting*			
P24 Noise from the development must not adversely affect existing or likely future dwellings on adjacent land	**A24.1** Vehicle movement areas are located a minimum of 3m from any adjoining dwellings, or are provided with acoustic screening to the boundary			
	A24.2 Any air conditioning plant is located toward the centre of the site			

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PRELIMINARY

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	A24.3 Communal open space is located a minimum of 3m from adjoining dwellings provided with acoustic screening			
	A24.4 The development complies with the **Noise Impact Assessment Planning Scheme Policy**			
P25 Exposure of new dwellings to noise must be minimised	**A25** Noise impacts on dwellings located within 150m of a Centre, Industrial Area, rail corridor, road corridor (suburban routes, motorways and arterial routes) or within a noise exposure contour of 20 ANEF or greater are mitigated to comply with the requirements of the **Noise Impact Assessment Planning Scheme Policy**			
UTILITIES AND SERVICES				
P26 Waste disposal and collection areas must be unobtrusive, and adverse impacts on neighbouring properties must be mitigated	**A26.1** Garbage bin storage and collection areas are located on site and are screened from view			
	A26.2 For buildings of ten or more units, on-site bin storage: ▪ is not located within 5m of a property boundary ▪ is located where it can be accessed by refuse collection services ▪ is located within the main building			
AFFORDABLE HOUSING OUTCOMES				
P27 Low cost housing is encouraged through development bonuses but only if it does not compromise local amenity	**A27** If accommodation provides lodging for permanent residents or is administered by a housing cooperative, a Government or Council agency or charitable organisation to provide low cost, special			

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	needs housing or aged care accommodation for at least 10 years and height limits and setbacks are complied with: ▪ the plot ratio of low cost and special needs housing may exceed the plot ratio applicable to multi-unit dwellings in the area ▪ on-site parking may be less than otherwise stated in this Code provided it meets expected requirements			
DESIGN FOR SAFETY				
P28 Proposals must be designed incorporating crime prevention through environmental design (CPTED) principles *Note* *For guidance on assessing the incorporating of crime prevention through environmental design principles refer to the* **Crime Prevention Through Environmental Design (CPTED) Planning Scheme Policy**	**A28** Building design and layout incorporates the following features: • opportunities for casual surveillance and sightlines (e.g. windows overlooking parking and communal areas) • exterior building design which promotes safety (e.g. clearly visible foyers) • adequate definition of uses and ownership (e.g. landscaping to define private and communal space) • adequate lighting (e.g. lighting of potential entrapment locations) • appropriate way finding mechanisms (e.g. signage) • minimization of predictable routes and entrapment locations (e.g. concealed spaces near building entry)			
GENERAL PROVISIONS				

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
P29 The establishment of an Estate Sales Office(s) / display dwelling(s) is ancillary to the Retirement Village use and is for no longer than 2 years.	No acceptable solution prescribed			
P30 Shop / Office use established must be less than 250m2 and ancillary to the proposed Retirement Village Use.	No acceptable solution prescribed			

PRELIMINARY

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

pmm GROUP
urban designers
town planners
land surveyors

APPENDIX E

Codes

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
P1 Filling or excavation must not impact adversely on visual amenity or the stability of land *Note:* *Retaining wall construction will also need to comply with Section 4 of Schedule 5 of the Standard Building Regulations 1993 and embankment gradients will need to 'comply with Section 5 of Schedule 5 of the Standard Building Regulations 1993*	**A1.1** A retaining wall is set back at least half the height of the wall from any boundary of the site	✓	All fill retaining walls located along the boundary of the site will be set back at least half the height of the wall from the boundary. Retaining walls over 1.5m will be stepped 0.75m for every 1.5m in height, terraced and landscaped and be of a high quality finish. The appearance of the completed development will conform to the overall topography and amenity of the area in accordance Council's requirements for stability and visual amenity criteria.	
	A1.2 Retaining walls over 1.5m are stepped 0.75m for every 1.5m in height, terraced and landscaped	✓	Please see comments for Acceptable Solution A1.1 above.	
	A1.3 Retaining wall finishes that present to adjoining land are of a high quality appearance and compatible with surrounding development	✓	Please see comments for Acceptable Solution A1.1 above.	
P2 Filling or excavation must not result in any contamination of land or waters	**A2.1** For filling, only clean fill is used	✓	It is not proposed to import fill onto the site. The proposed filling and excavation will not affect any receiving water body, as effective sediment and erosion control measures will be implemented during construction, and the area will be stabilised immediately upon completion of earthworks. The site is not on the contaminated land register and as the site elevations range from 5m AHD – 8m AHD the site is not expected to be affected by Acid Sulfate Soils.	
	A2.2 For excavation, no contaminated material is excavated, or acid sulfate soil or contaminant disturbed	✓	Please see comments for Acceptable Solution A2.1 above.	
	A2.3 For excavation or filling acid sulfate soils are not affected by changes to the site's hydrology	✓	Please see comments for Acceptable Solution A2.1 above.	
	A2.4 The site is not on the contaminated land register	✓	Please see comments for Acceptable Solution A2.1 above.	

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
P3 Filling or excavation must not cause any increase in flooding or drainage problems	**A3.1** No filling or excavation is located • in any waterway corridor as shown on the Planning Scheme Maps and defined in the definitions • within the waterway corridor or, if there is no waterway corridor, within the 100 year ARI extent • in any wetland as shown on the Planning Scheme Maps and defined in the definitions	✓	The site is not affected by a Flood Regulation Line and is not located in a waterway corridor, wetland, or overland flowpath. The site varies in elevation from 5m AHD – 8m AHD and as such is not affected by Acid Sulfate Soils. The location of post development stormwater discharge will not significantly change from that of pre development discharge. Stormwater runoff from the subject site has been included in the design catchments of the existing downstream developments. As such no worsening of flooding downstream of the site will occur. The proposed filling and excavation works will not cause ponding on the site or on nearby land. Stormwater discharge from the developed site will not adversely affect the safety or use of land upstream and downstream or the adjoining site as runoff from the subject site has been included in the design catchments of the existing downstream developments.	X
	A3.2 Filling or excavation does not cause ponding on the site or on nearby land	✓	Please see comments for Acceptable Solution A3.1 above.	
	A3.3 Any increase in flooding will not adversely affect the safety or use of any adjoining site and land upstream and downstream	✓	Please see comments for Acceptable Solution A2.1 above.	
	A3.4 Any changes to run-off characteristics resulting from filling for storm events, up to at least the 2 year ARI design storm, are minimised in an ecologically sensitive manner	✓	Please see comments for Acceptable Solution A2.1 above.	
	A3.5 Filling or excavation does not adversely affect the flow of water in any overland flow path *Note:* *Compliance with Acceptable Solutions A3.1 to A3.5 can be demonstrated through the submission of a report detailing:* • *calculations for flood modelling of the riparian zone, including ground cover, understorey*	✓	Please see comments for Acceptable Solution A2.1 above.	

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	and canopy vegetation • *management strategies to prevent adverse flooding and minimise changes to run-off characteristics consistent with Council's current Subdivision and Development Guidelines 1997 and Environmental Best Management Practice for Waterways and Wetlands 1996*			
P4 Filling or excavation must not adversely affect environmental values in receiving waterways or wetlands *Note:* *For guidance on stormwater management, refer to the **Management of Urban Stormwater Quality Planning Scheme Policy***	**A4** Filling or excavation complies with the **Stormwater Management Code** and Council's **Erosion and Sediment Control Standard**	✓	The proposed filling and excavation works will comply with the Stormwater Management Code and Council's current Erosion and Sediment Control Standard. The works will not adversely impact upon any receiving water body, as effective sediment and erosion control measures will be implemented during construction including sediment fences and basins. The entire site will be effectively stabilised immediately upon completion of earthworks.	
P5 Emissions of air pollutants from filling or excavation, particularly dust, must not have a significant environmental harm or nuisance impacts *Note: For guidance on the assessment of air quality, refer to the **Air Quality Planning Scheme Policy***	**A5.1** No dust emissions extend beyond the boundary of the site	✓	All works associated with the filling and excavation of the site will be in accordance with EPA requirements and Council's standards and specifications to ensure that no dust emissions or odours extend beyond the boundary of the site. Best management practices for the control of dust and air emissions will be implemented during construction.	
	A5.2 No other air emissions, including odours, are detectable at the boundary of the site	✓	Please see comments for Acceptable Solution A5.1 above.	
	A5.3 A management plan for control of dust and air emissions is prepared and implemented	✓	Please see comments for Acceptable Solution A5.1 above.	
P6 Emissions of noise must not cause significant environmental harm or nuisance impacts *Note:* *For guidance on the assessment of noise impacts refer to the **Noise Impact Assessment Planning Scheme Policy***	**A6.1** The total duration of filling or excavation operations does not exceed 4 weeks	✓	The total duration of the earthworks for the development will not exceed 4 weeks per Stage. Earthworks operations will occur only between 7am to 6pm Monday to Saturday.	

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	A6.2 Filling or excavation operations occur only between 7am to 6pm Monday to Saturday	✓	Please see comments for Acceptable Solution A6.1 above.	
P7 Traffic generated by filling or excavation must not impact on the amenity of the surrounding area	**P7.1** Haul routes used for transportation of fill to or from the site only use Major Roads	✓	All works and vehicular and plant operations will be contained within the site. It is not expected that a significant quantity of material will be transported from the site as the earthworks for the development will be balanced. The total duration of the earthworks for the development will not exceed 4 weeks and all truck and heavy machinery movements to and from the site will be minimised. All access to the site will be gained from the existing street network.	
	P7.2 Truck movements generated by filling or excavation do not exceed 20 truck movements per day	✓	Please see comments for Acceptable Solution A7.1 above.	
	P7.3 Truck movements generated by filling or excavation do not occur for longer than 4 weeks	✓	Please see comments for Acceptable Solution A6.1 above.	

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
P1 Land used for urban purposes must be serviced adequately with regard to water, waste disposal, drainage, telecommunication and energy	A1 The land is provided with: ▪ reticulated water, sewerage, drainage, electricity and telecommunications services ▪ gas service where reasonable	✓	Refer to Brisbane Waters site investigation report attached to the application.	
P2 Frontage to the site must provide the following to an appropriate urban standard: ▪ an effective, high quality paved roadway ▪ an effective, high quality roadway kerb and channel ▪ safe, high quality crossings over channels and walkways ▪ safe, accessible high quality bikeways ▪ a safe, accessible, high quality public walkway compatible and integrated with the surrounding environment ▪ provision of an alteration to required public utilities ▪ effective drainage ▪ appropriate conduits to facilitate the provision of required street lighting systems and traffic signals	A2 The following are provided or already exist at the frontage of the site, to the standard that would have applied if the development formed part of a new subdivision: ▪ concrete kerb and channel ▪ forming and grading to walkways ▪ crossings over channels and walkways ▪ a constructed bikeway ▪ a constructed walkway, minimum 1.2m wide and full width from the property line to the kerb in Multi-purpose Centres ▪ reconstruction of any damaged public walkway in concrete ▪ construction of the carriageway ▪ payment of costs for required alterations to public utility mains, services or installations ▪ construction of and required alterations to public utility mains, services or installations ▪ drainage works ▪ installation of electrical conduits	✓	Preliminary survey from PMM attached shows the existing infrastructure around the proposed development.	
P3 Building design and layout must provide for additional infrastructure to facilitate future telecommunications services and providers (e.g. fibre optic cable)	A3.1 Conduits, cabling or ducting is provided in all residentials, community, commercial and industrial buildings of a sufficient diameter to enable two or more carriers to service the building. An underground access connection pit and "lead in" duct is provided in the footpath, plus a conduit from the property boundary to: ▪ a designated entry point in each building ▪ each lot in community title developments ▪ each floor and tenancy in multi-occupancy			

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
	buildings All works is to be in accordance with relevant Building Codes and Australian Standards *Note* *An accurate, digital 'as built' three dimensional location plan will need to be supplied for all infrastructure provided in the footpath* **Additional requirements for Multi-unit Dwellings of more than 4 storeys and 20 units or Centre Activities with a gross floor area of 2500m2 or greater:**			
	A3.2 New buildings are provided with: ▪ a co-located equipment room ▪ a central (vertical) riser duct within the core of the building ▪ a telecommunications closet on each floor ▪ distribution by underfloor or suspended ceiling ducts ▪ designated wireless area on roof with structural capability All work is to be in accordance with relevant Building Codes and Australian Standards Refer to *Figure a* *Note* *A signed statement must be submitted to Council by a competent person (as defined in the Standard Building Regulation 1993) confirming that the premises as built complies with these requirements, when final building certificates is issued*			

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS[1]	COMMENTS	COUNCIL USE ONLY
P4 Major public projects promote the provision of affordable, high bandwidth telecommunication services throughout Brisbane	A4 Conduits are provided in all major Council and government works projects to enable the future provision of fibre optic cabling: ▪ when the additional expense is unlikely to be prohibitive ▪ when further major work is unlikely or disruption would be a major concern eg limited capacity roads ▪ when there is a clear gap in the telecommunication network ▪ when there is a clear gap in the bandwidth available to the area Note An accurate, digital 'as built' three dimensional location plans will need to be supplied for all infrastructure provided in the road reserve			

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

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APPENDIX F

Traffic Assessment

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APPENDIX G

Ecological Assessment

Our Ref 3500/34 :kjd

Contac [redacted]

4 April 2005

PMM Group
PO Box 1559
FORTITUDE VALLEY QLD 4006

By Facsimile: 3237 8833

Attention: [redacted]

Dear Sir

YERONGA VILLAGE COMPLEX - CANSDALE STREET, YERONGA NATURAL ASSETS ISSUES

In respect of the above matter we provide herewith a preliminary assessment of Natural Assets issues concerning the retirement village proposed at Cansdale Street, Yeronga.

Based on a combination of desktop and preliminary field investigations it has been determined that the proposed site for a retirement village at Cansdale Street, Yeronga possess no ecological values of significance as recognised by applicable State or Commonwealth regulations including the Vegetation Management Act, Nature Conservation Act and Environment Protection and Biodiversity Conservation Act. The site is also devoid of any flora or fauna of significance as recognised in the Natural Assets Planning Scheme Policy of the City Plan. The only area or aspect of the site that is of some recognised significance, from a natural assets perspective, are the mapped presences of:

- a waterway corridor which traverses the eastern portion of the site ad adjoining parkland reserve; and
- a small wetland situated on the adjoining property to the north of the site.

In respect of these two areas, physical inspections of the site reveal the following facts and circumstances prevail at the site.

1. The mapped waterway corridor does not encompass any natural waterway, with the subject "waterway" being comprised of stormwater drainage pipes and a concrete lined drainage channel. This waterway currently possesses little or no functional ecological values as an area of habitat for native flora or fauna.

2. The mapped wetland area to the north of the site appears to have been the subject of drainage works involving the establishment of a stormwater drainage pipe and filling of low-lying land. The vegetation this area is comprised primarily of exotic terrestrial grasses and herbaceous weeds and provides little or no functional resemblance to a natural wetland ecosystem.

Cardno
Engineering the Future

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ACEA
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The proposed retirement village development would involve some works within the mapped waterway corridor, including works for stormwater drainage purposes. In this respect the proposal needs to be of a form that complies with the requirements of the Waterway Code and the Biodiversity Code of the City Plan. In respect of achieving compliance with the Biodiversity and Wetland Codes the relevant considerations are whether or not the works proposed in the mapped Waterway Corridor would:

- have a significant adverse impact on any areas or aspects of functional biodiversity values; and
- result in enhancement of the biodiversity values and functions of the subject waterway.

Given that the mapped waterway corridor does not currently possess any functional biodiversity values it is clear that required works within the waterway corridor:

- would not adversely impact upon any areas or aspects of biodiversity significance; and
- could be designed to effect a significant improvement in the biodiversity values of the waterway corridor.

The general nature of works within the mapped waterway corridor are described in a Review of Hydraulic Issues prepared by Cardno (Qld) Pty Ltd and presented under cover of a separate report. It is also understood that Council is considering carrying out flood mitigation/drainage works within the waterway corridor adjacent to the subject site. As such there are opportunities for the drainage works associated with the retirement village development to achieve some of flood mitigation objectives of Council.

Notwithstanding the above, it will be necessary to prepare a full Natural Assets Assessment Report in support of the proposed development. This report would provide the following:

1. a description of the existing values and functions of the mapped waterway corridor and mapped wetland area to the north of the site;

2. a description of the proposed plan of development with a particular focus on the nature of works proposed within the mapped waterway corridor, including details of the existing values and functions of the waterway corridor would be preserved and/or enhanced; and

3. an assessment of the degree of compliance that the proposed plan of development achieves with the performance requirements of the Waterway Code, Wetland Code and Biodiversity Code of the City Plan.

In respect of the above it is noted that the Natural Assess Assessment Report cannot be completed until relevant details concerning the precise nature of works within the waterway corridor are available. However for the reasons specified above it is our assessment that the existing nature of the waterway corridor provides ample opportunities to design and implement a program of works that would actual result in enhancement of the biodiversity values and functions of this waterway corridor and hereby achieve compliance with the relevant development assessment codes with a biodiversity focus.

Cardno

We trust that this preliminary assessment of relevant natural assets issues addresses your current requirements. If you have any queries in relation to the above please do not hesitate to contact us.

Yours faithfully

[redacted]

Senior Ecologist
for **Cardno**

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APPENDIX H

Hydraulic Assessment

7203

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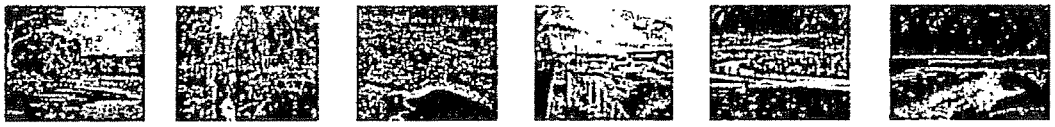
Engineering the Future

Yeronga Retirement Village



Review of Hydraulic Issues

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Job No. 3500/34

BCC.061.4852

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Document Control

Version	Date	Author		Reviewer	
		Name	Initials	Name	Initials
1	17 March 2005	[redacted]		[redacted]	

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BCC.061.4853

Yeronga Retirement Village
Review of Hydraulic Issues

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Figure 3 Waterway Plan
Figure 4 Inundation Plan- Local Flooding
Figure 5 Council Flood Mitigation Works
Figure 6 Proposed Drainage Strategy

1. INTRODUCTION

It is proposed to construct a retirement village at the corner of Cansdale Road and Venner Road at Yeronga. The structure plan for the development is shown in Figure 1.

This report considers the potential implications associated with flooding of the site and available opportunities for the development to proceed without impacting on flood levels.

Existing ground levels across the site are generally between 5 m AHD and 6 mAHD. The site is affected by both local flooding and backwater flooding from the Brisbane River. An open channel with a concrete invert is located along the eastern boundary of the site. Runoff from the catchment area to the south of the site discharges to the channel via a 1,650 mm diameter pipe that passes through the south eastern corner of the site and twin 1.8 metre wide and 1.2 meter high oval pipes draining from the south west. The existing drainage is shown on Figure 2. The channel drains to the Brisbane Corso and then discharges to the Brisbane River.

Despite the fact the channel was formed by excavation, a waterway corridor has been defined relative to the channel that affects the site. The location of the waterway corridor is shown on Figure 3. The estimated extent of inundation of the site for the 50 year event is shown on Figure 4.

The area has been the subject of previous flood investigations, with the *Yeronga Local Stormwater Management Plan* completed by Council in June 2003.

This report considers the potential implications associated with flooding of the site and available opportunities for the development to proceed without impacting on flood levels.

2. APPLICABLE FLOOD LEVELS

Based on a flood report obtained from Council and the Yeronga Local Stormwater Management Plan (City Design June 2003), the applicable flood levels to the site are listed in Table 1.

Table 1 Defined Flood Levels

Event	Brisbane River Flooding (mAHD)	Local Flooding (mAHD)	
		Existing	Post Mitigation
100 Year	6.7	-	-
50 Year	5.5	3.70 – 4.35	3.70 – 3.74
20 Year	3.7	-	-
10 Year	-	3.25 – 4.27	3.10 – 3.24
2 Year	-	3.00 – 4.23	2.80 – 2.97

The figures quoted in Table 1 for local flooding include the levels predicted for the site following the completion of proposed flood mitigation works. The proposed mitigation works that affect the site are shown in Figure 5.

Based on Table B2.2.1 of the *Subdivision and Development Guidelines* (2000), the design levels applicable to the development are listed in Table 2. As the Local Stormwater Management Plan considered the 50 year event, it was assumed that the channel is classed as a designed open channel. These levels will need to

Table 2 Design Levels for Development

Case	Brisbane River		Local Flooding		Governing Level (mAHD)
	Design Level	Level (mAHD)	Design Level	Level (mAHD)	
Allotment fill	100y ARI + 0.3m	7.0	50y ARI + 0.3m	4.65	7.0
Habitable Floor	100y ARI + 0.5m	7.2	50y ARI + 0.5m	4.85	7.2
Non-Habitable Areas	100y ARI + 0.3m	7.0	50y ARI + 0.3m	4.65	7.0
Carparking*	20y ARI	3.7	50y ARI	4.35 existing 3.74 mitigated	4.35 existing 3.74 mitigated

Note: Basement car parks can be set below the nominated level provided that suitably waterproofed perimeter walls, air vents, and entry/exit ramps at the car park entrance are above the 100 year ARI flood levels for all sources including the Brisbane River (i.e. 6.7 m AHD).

3. DEVELOPMENT OF SITE

The Yeronga Local Stormwater Management Plan considered a range of flood mitigation measures to reduce the incidence of flooding of non-habitable areas of existing properties to the south of the site.

The proposed solution for the area includes the widening of the existing channel to provide a grassed base 12 metres wide and the extension of the channel to Hyde Road, as shown on Figure 5.

Although the report refers to the channel as being located in parkland, the channel would pass through and significantly constrain the development potential of the proposed Yeronga Retirement Village.

The proposed extent of development of the site requires the movement of the existing channel to the adjoining parkland to the east. Due to the presence of the cricket ovals, it will be necessary to pipe flow beneath the north eastern corner of the site in order to connect to the existing channel to the north of the site.

The proposed location of the drainage works is shown on Figure 6. A channel would be constructed within the unformed section of Venner Road to collect runoff from the Hyde Road area.

As the proposed works will lie on Council land, consent will be required from Council for their completion. It is therefore expected that in order to gain approval from Council at least part of the flood mitigation benefit provided by the proposed Council works will need to be obtained from the ultimately adopted design.

The opportunity also exists to improve upon the ecological value of the drain by the incorporation of natural channel design features.

Detailed modelling will be required to define the extent of channel required and the revegetation works possible within the channel.

4. CONCLUSION

A retirement village is proposed for a site at the corner of Cansdale Street and Venner Road at Yeronga (refer Figure 1).

A drainage channel passes along the eastern boundary of the site (refer Figure 2).

In order to complete the development it will be necessary to relocate the channel to the Council parkland in the east (refer Figure 6). It is considered that this can be achieved without increasing flood levels upstream of the site.

FIGURES

Figure 1 Development Plan

Figure 2 Drainage Plan

Figure 3 Waterway Corridors

Figure 4 Inundation Plan- Local Flooding

Figure 5 Council Flood Mitigation Works

Figure 6 Proposed Drainage Strategy

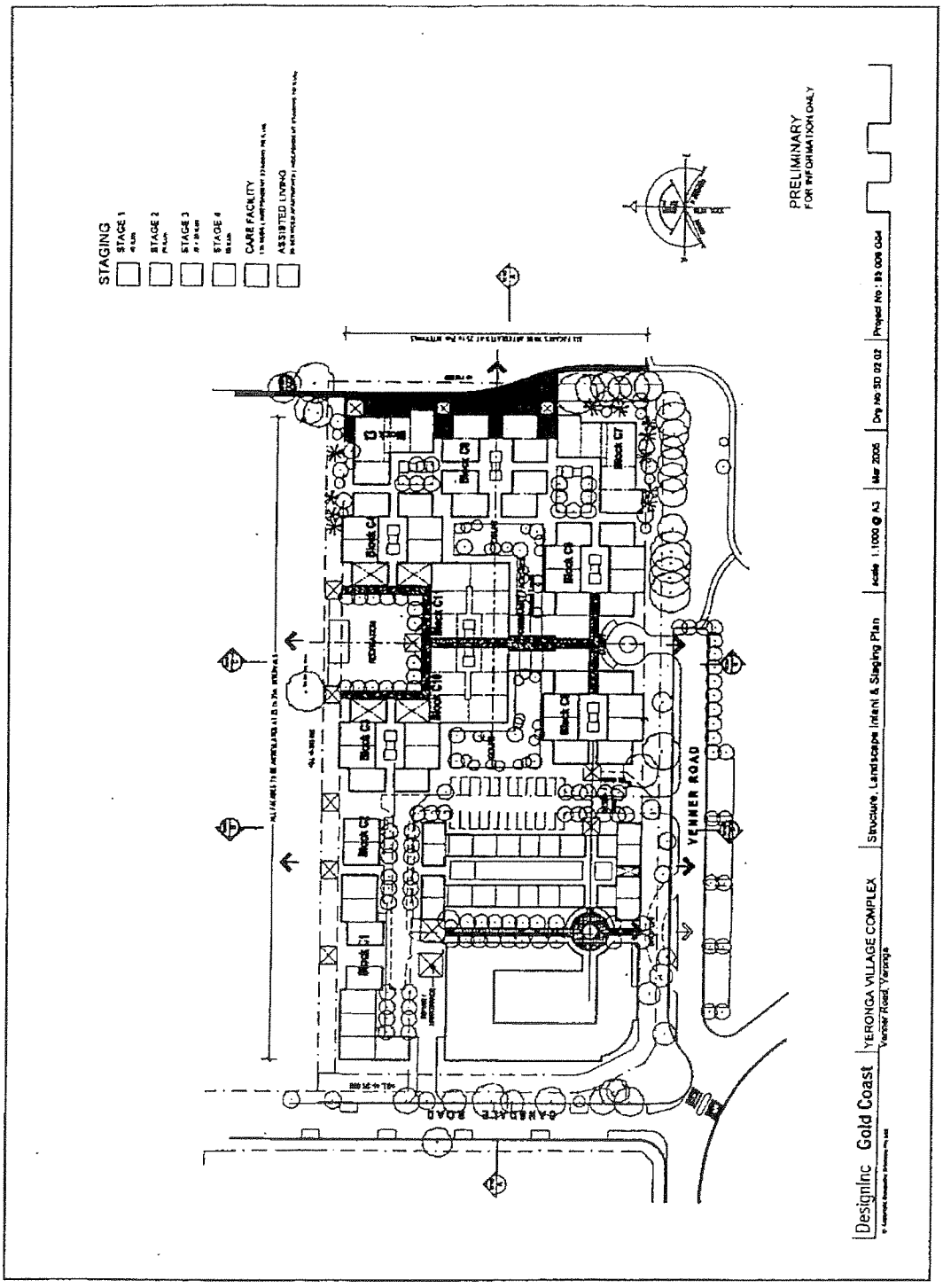
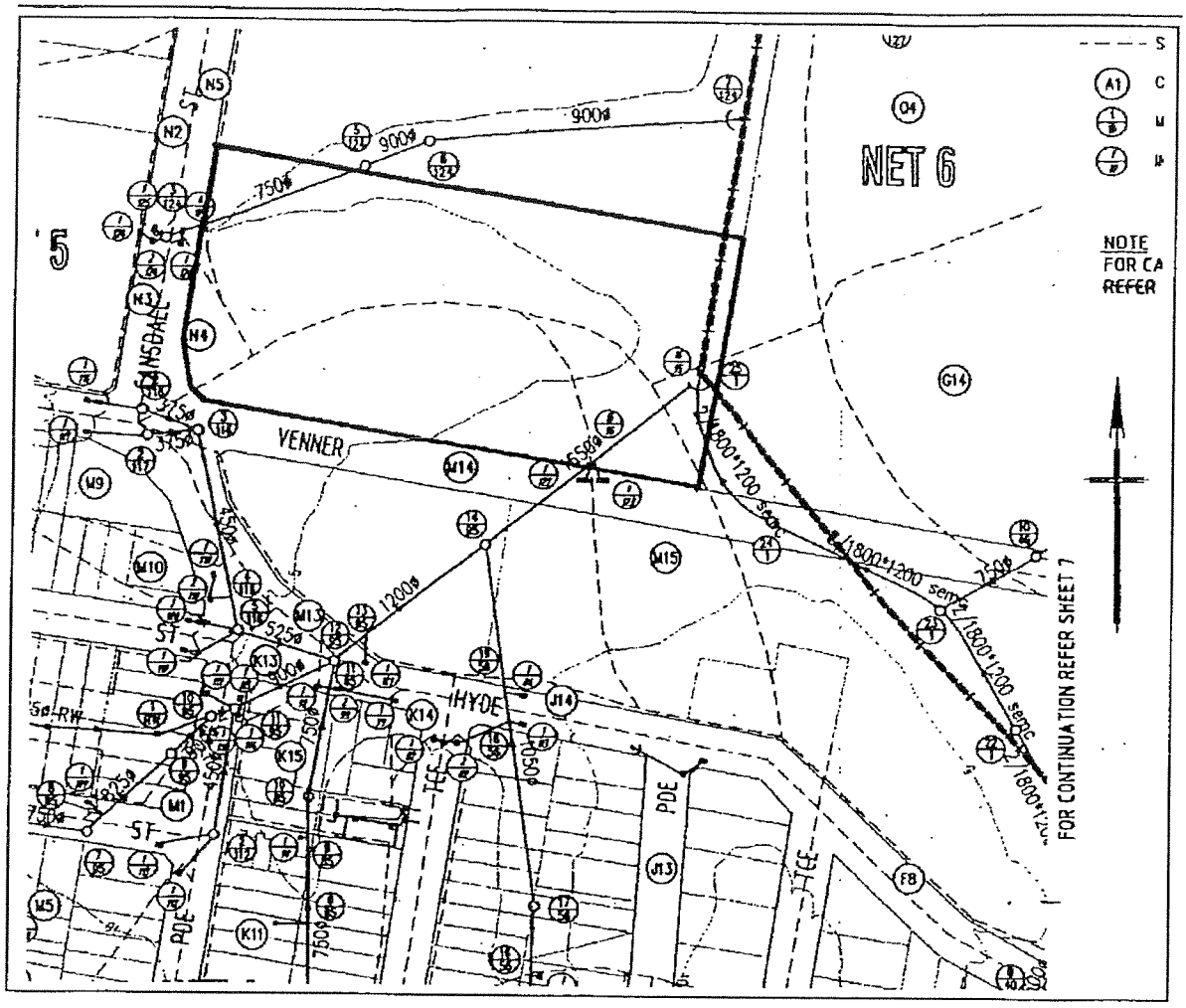


FIGURE 1
Development Plan



From Council plan W11060/6

FIGURE 2
Drainage Plan

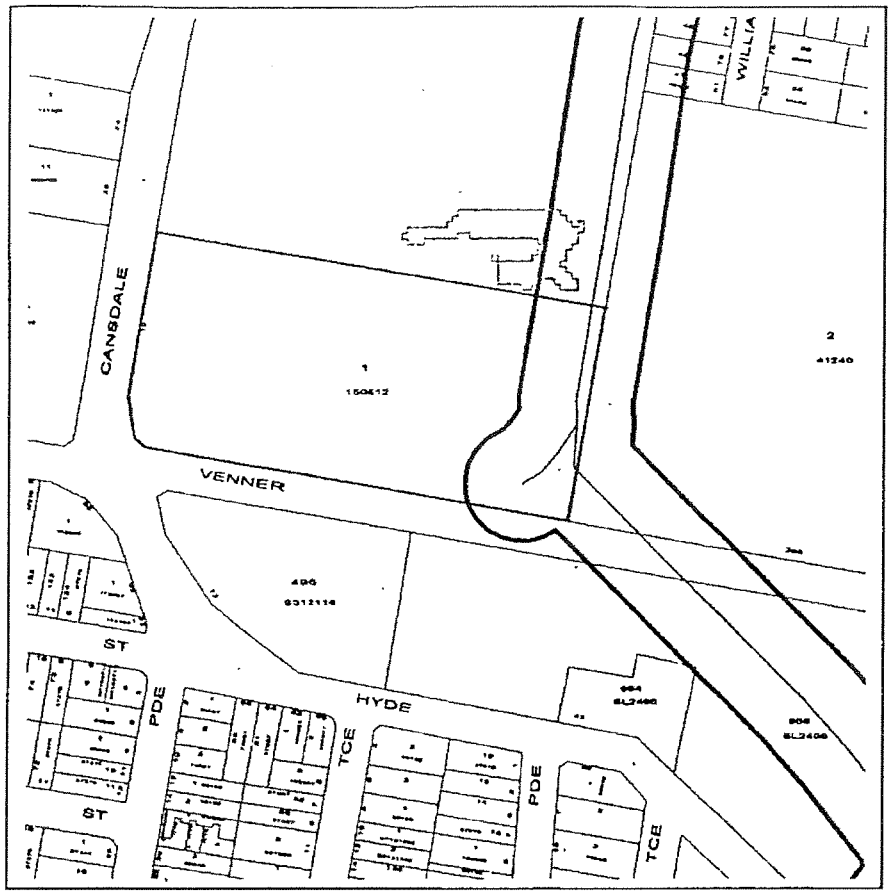
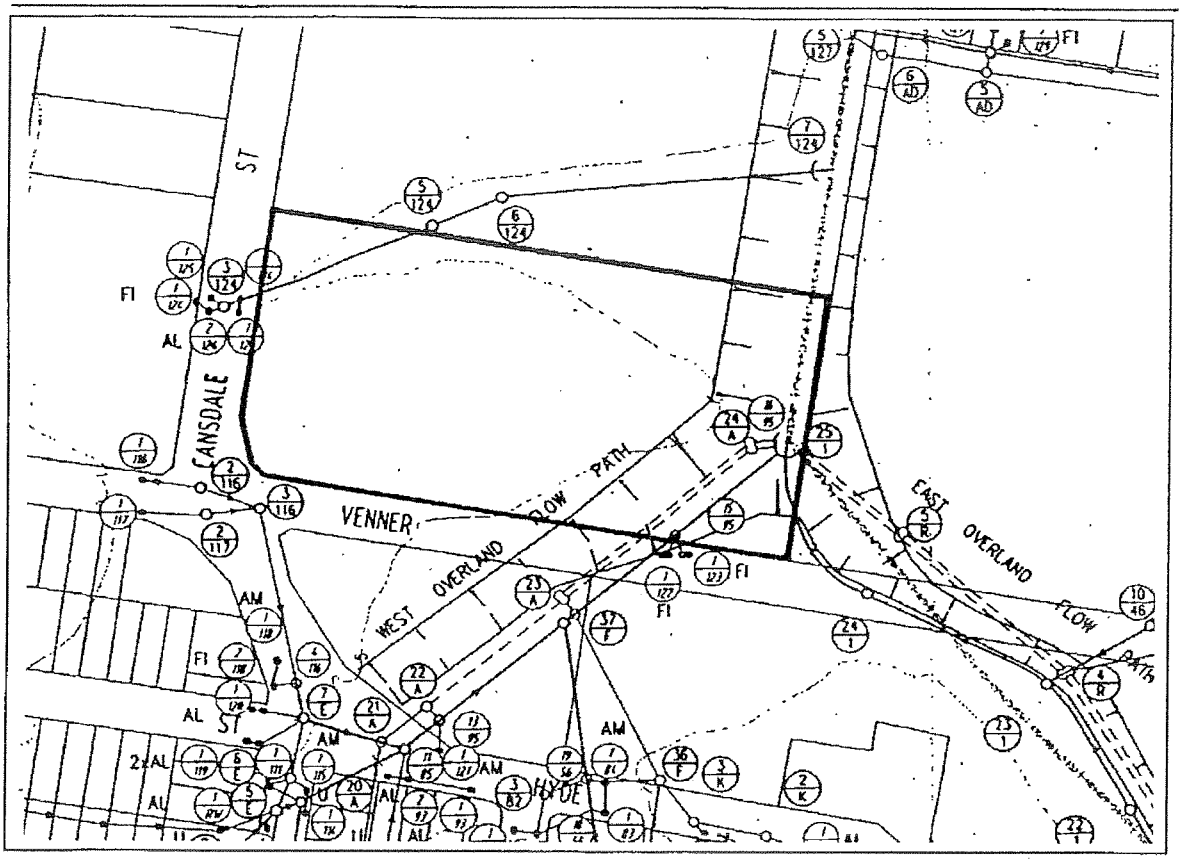


FIGURE 3
Waterway Corridors



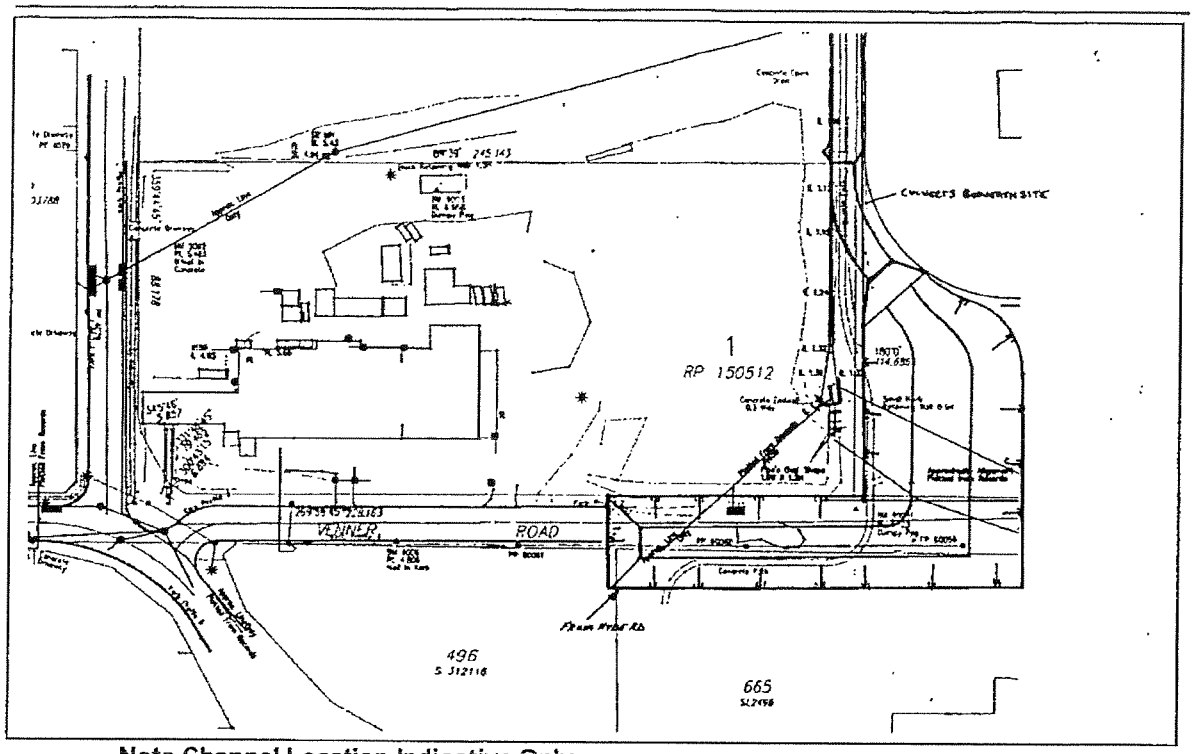
From Council Plan W11060/42

FIGURE 4
Inundation Plan- Local Flooding



From Council plan W11060/30

FIGURE 5
Council Flood Mitigation Works



Note Channel Location Indicative Only

FIGURE 6
Proposed Drainage Strategy

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APPENDIX I

Noise & Air Quality Assessment

Max Winders & Associates
Consulting Engineers & Environmental Scientists

ENVIRONMENTAL AMENITY ASSESSMENT

PROPOSED YERONGA VILLAGE RETIREMENT COMPLEX

VENNER ROAD

YERONGA

Prepared for:

Harrisons Real Estate Developments

Prepared by:

Max Winders & Associates Pty Ltd

1 April 2005

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Job Name: Yeronga

Job No: 04-227

Original Date of Issue: 01.04.05

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Principal Author [redacted]

Client: Harrisons Real Estate Developments

Client Address: PO Box 15543, City East, Brisbane Q 4002

Client Contact: [redacted]

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APPENDIX J

Community Consultation Report



YERONGA RETIREMENT COMMUNITY CONSULTATION REPORT

Results of consultation program with stakeholders in the Yeronga and Fairfield community.

BCC.061.4870

Executive Summary

A targeted community consultation has been undertaken with people who may be potentially impacted by a proposed residential aged care development on the corner of Venner Road and Cansdale Street at Yeronga.

The overall objective of the community consultation program has been to inform people affected by the proposed development and identify issues or concerns that need to be addressed in the development planning and assessment process.

The community consultation program has been structured to identify and interview key stakeholder groups likely to be directly impacted by the development and then follow these interviews with a series of three community workshop and information sessions that encourage local residents to participate and discuss their views towards the proposed development.

Overall, there has been strong support for the development from the majority of stakeholders interviewed because of the need for retirement and aged care facilities in the area and the current lack of available facilities.

The major concerns that have been expressed by stakeholders are:

- Flooding of parklands adjacent to the site and its impact on the development
- The development contributing to flooding and sewerage problems in the area
- Increased traffic on Hyde and Cansdale Roads from the service vehicles, staff and visitors to the development
- Impact of current noise and lighting levels from the sporting fields on residents in the development
- Lack of pedestrian access and street safety for residents of the development, particularly on Cansdale Street during the soccer season
- Rezoning of the site setting a precedent for medium to high density development in the industrial estate
- The future extension of Venner Road through the parklands.

The community workshop and information sessions reinforced these concerns and produced similar outcomes in terms of key issues raised, even though the group dynamic in each was markedly different.

An individual feedback form completed by the majority of participants at these sessions has provided valuable insight into the community views towards the proposed development in terms of:

- overall reaction to the proposed development
- what they like most about the proposed development
- what their main concerns are
- whether they think the development will benefit the community
- whether they support this type of development in the area
- services and facilities they would like to see in the development

In terms of their overall reaction to the proposed development, the majority of participants have been positive and in favour of the proposed development, and see the development as meeting a need and benefiting the area. Only a few (10% of total participants) perceive negative associations with the proposed development.

BCC.061.4871

The three aspects about the proposed development that they like most have been:

- the need for this type of development to allow local residents to stay in the area for their retirement
- the different levels of care and integration with the local community
- the location and proximity of the development to infrastructure and services.

The mains concerns that participants have with the proposed development are:

- flooding and drainage issues associated with the proposed site and the adjoining parklands
- the height and density of buildings proposed for the development
- increased traffic in the area as a result of service vehicles, staff and visitors to the development.

Other concerns identified by participants are:

- the impact of noise and traffic congestion from sporting fields and industrial estate on residents in the proposed development
- the capacity of the sewerage plant to cope with proposed development
- the capacity of the local transport system to cater to residents in the proposed development
- the impact on local business adjacent to the development
- the toxicity of land on the proposed site given its previous uses as a dump
- setting a precedent for medium to high density residential in industrial area

The overwhelming majority (92%) of participants who completed the individual feedback form believe that the proposed development will benefit the community.

More importantly, four in five participants (83%) who completed the individual feedback form would support the proposed development.

The main facilities and services that participants would like to see in the proposed development are:

- Medical services such as doctors, physio, hydrotherapy and dentists and chemists
- Basic retail and commercial shops such as general store, newsagency, hairdresser and café/restaurants
- Private and public transport services for residents
- Community facilities such as a pool, gym, community hall/centre for arts and crafts, library and computer room.

Residents who attended the community workshop and information session would like to receive more detailed information about the final design and scale of the development when it becomes available.

In the interim, participants would like to be kept informed about the progress of the development approval process, especially the timeframe for possible construction of the facility.

Flooding and traffic are two areas that participants would like to be informed more about especially after studies have been completed.

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Appendices

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2. List of key stakeholder groups
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Disclaimer

The report has been prepared using feedback from personal interviews with key stakeholders, telephone feedback from local residents who could not attend the consultation, and findings from the data analysis of Individual Feedback Forms collected from participants in each of the three information sessions.

The findings in this report accurately represent the views of local residents and stakeholders who participated in the consultation program. However, the findings are limited to this group of people and may not fully reflect the diversity of views held in the community.

Given the high attendance rate at the consultation, we believe that the majority of relevant and appropriate community concerns have been identified in this report.

However, no responsibility is taken for issues or concerns identified as a result of further research or community consultation. Furthermore, no responsibility is taken for any outcomes or actions that occur as a result of this report.

1. Background to the consultation program

A targeted community consultation has been undertaken with people who may be potentially impacted by a proposed residential aged care development on the corner of Venner Road and Cansdale Street at Yeronga.

The proposed development is intended to be an integrated retirement community that incorporates independent living, assisted living, a nursing home and associated support services.

It would be located on a five (5) hectare site that is currently used for light industrial purposes and is designated as being in the Light Industrial Area classification of the Brisbane City Council City Plan. Rezoning of the site to Residential would be required for the development.

A consultation program was developed and refined through discussions with representatives from Brisbane City Council, the local Councillor and State Members. It commenced 1 November 2004 and concluded on 8 December 2004.

This report outlines the objectives and methodology used to consult stakeholders in the community and details the findings from personal interviews and community meetings and workshops.

The consultation process has been undertaken in accordance with the Brisbane City Plan 2000 Consultation Scheme Policy principles as outlined in Appendix One.

2. Consultation objectives

The overall objective of the community consultation program has been to inform people affected by the proposed development and identify issues or concerns that need to be addressed in the development planning and assessment process.

The specific objectives addressed in the consultation program were:

1. To inform the community about the nature and scale of the development
2. To educate the community about the need and benefits of the development
3. To obtain specific and broad feedback from the community about key issues or concerns that they have with the development
4. To involve the community in discussions or forums that potentially resolve issues and concerns
5. To exchange information about the progress and status of the development and how issues and concerns have been dealt with.

The final objective will require ongoing communication with stakeholders who were involved in this consultation program at key points in the development planning and assessment process.

3. Methodology

The community consultation programme involved three key stages:

1. Program scoping to identify the scope of consultation and communication, in particular the residential areas, community groups and other key stakeholders that needed to be included in the consultation program and the most effective ways to communicate and reach these audiences.

2. Community dialogue with people affected by the development to raise awareness and inform them about the need and benefits of the development and to encourage them to participate in positive, constructive discussion about their issues, concerns and potential solutions.

3. Reporting of outcomes from community dialogue activities for inclusion in development planning and assessment processes.

The activities and processes used in each stage are detailed below:

3.1 Stage One – Program scoping

A preliminary scoping activity identified key residential areas in Yeronga and Fairfield and potential local community groups and stakeholders that may be impacted by the proposed development. It also identified potential communication mediums that could be used to reach and inform these people such as local newspaper editorial and advertising, shopping centre community noticeboards, targeted letterbox drops and personal interviews with key local opinion leaders.

A meeting was organised and conducted with the local Councillor Helen Abrahams to review the residential areas likely to be impacted and to identify key individuals and groups that should be consulted as part of the consultation program and who may assist in refining the scope of the consultation (see Appendix Two). At the meeting, it was recommended that Community Meetings/Workshops be held at Yeronga Football Club because it is well known to local residents and that a bus tour be provided to residents interested in viewing similar retirement community developments.

Key stakeholders were contacted by telephone to explain the consultation program and to organise appointments for personal interviews with representatives. A total of thirteen (13) face to face interviews were conducted with the following people:

- [redacted] – Fairfield Neighbourhood Watch
- [redacted] – Yeronga Football Club
- [redacted] – South Brisbane Cricket Club
- [redacted] and Freda Patunis – Olympic Soccer Club
- [redacted] on behalf of Anna Bligh – Member for South Brisbane
- [redacted] – Member for Yeerongpilly
- [redacted] – Yeronga Residents Association
- [redacted] – Yeronga RSL
- [redacted] – St Sebastians Catholic School
- [redacted] Yeronga Hyde Road Kindy and Preschool
- [redacted] – Yeronga Hyde Road Kindy and Preschool
- [redacted] – El Salvador Soccer Club
- [redacted] Spanish Senior Citizens Association.

In each interview, an overview of the proposed development was given using six (6) A3 colour visuals (contained in Appendix Three) showing:

- An aerial view of the location of the proposed site
- A site context map showing locations of key stakeholders
- A site analysis map showing potential facilities, services and movement flows
- A design response concept for different residential accommodation choices
- Artist impressions of the village
- An indicative section showing the potential scale and form of the facilities.

Stakeholders were encouraged to give their views on the proposed development including any concerns that they or the community might have and whether they thought that the development would benefit and be supported by the community.

Based on the outcomes of these interviews, a meeting was conducted with the developer and project team to finalise the community consultation process and the communication plan. It was agreed that three (3) community information sessions would be held to maximise awareness, access and opportunity for participation by local residents. However, due a lack of available retail space, it was not possible to create a physical office for one-on-one meetings with the public. It was also decided that there was insufficient time in the lead-up to the community consultation to create a website for online discussions and that such a tool could be used at a later stage in the development process to update the community.

A marketing campaign was prepared to inform and encourage local residents to participate in community information sessions. It comprised the following activities:

- An editorial in the Southern News on Thursday 25 November 2004
- An advertisement in the Southern News on Thursday 25 November 2004
- A letterbox drop to 1511 Yeronga households and 245 Fairfield households
- Notice on the Fairfield Gardens Shopping Centre Community Noticeboard
- Flyers in the Fairfield Gardens Shopping Centre Information Stand
- Flyers at Yeronga Hyde Road Kindy and Preschool
- Flyers at Yeronga Park Kindy and Preschool
- Notice in the Fairfield Neighbourhood Watch November Newsletter

Marketing materials incorporated a registration of interest and a feedback mechanism to allow people direct contact to find out more about the development and to capture their feedback, especially if they were unable to attend the information sessions.

Appendix Four contains copies of these materials.

3.2 Stage Two – Community dialogue

Three Community Information Sessions were facilitated with local residents on:

- Sunday 5th December from 10.00-11.30am
- Monday 6th December from 6.00-7.30pm
- Wednesday 8th December from 6.00-7.30pm

The purpose of each session was to explain the proposed development and the consultation process to the community and to identify preliminary perceptions and attitudes towards the development.

The events featured three keynote presentations:

- The Concept of Integrated Retirement Communities- residential aged care expert Keith Burke explained how retirement villages have changed over time and gave an overview of the concept behind the proposed Integrated Retirement Community at Yeronga
- The Proposed Site and Development Process – Senior Town Planner Simon Forsyth from the PMM Group identified the site and surrounding land use activities, the need for the development, the town planning controls and the development application process.
- The Design Intent – Architect Angelo Pernazza from DesignInc discussed the way that the facility would be integrated with the community, the facilities and services that are being considered for the community, and the scale and form of the development.

Following the presentations, participants were given the opportunity to ask questions and share their views with others. Groups were asked to identify what they like about the development, their main concerns, and the services and facilities that they would like to see considered in the design of the community.

Each person was encouraged to complete an Individual Feedback Form that was collected at the end of the event. Two thirds (66%) of participants completed the survey.

The format was altered for the Wednesday evening session to allow more discussion on site related issues.

Appendix Five contains the agenda used in the Community Workshops. Appendix Six contains the Individual Feedback Form distributed to participants. Results from the feedback form are incorporated into the findings in the next section of the report.

A total of 34 people contacted the office of Performance Frontiers prior to the Community Information Sessions to find out more information about the proposed development and/or register for one of the three events.

A total of 97 people attended the three information sessions:

- Sunday Brunch - 69 people
- Monday evening - 11 people
- Wednesday evening – 17 people

3.3 Stage Three – Reporting of community dialogue

The report has been prepared using feedback from personal interviews with key stakeholders, telephone feedback local residents who could not attend the consultation, and findings from the data analysis of Individual Feedback Forms collected from participants in each of the three information sessions.

The report accurately represents the views of local residents and stakeholders who participated in the consultation program. However, the findings are limited to this group of people and may not fully reflect the diversity of views held in the community. Given the high attendance rate at the consultation (5% of local households), we are confident that majority of relevant and appropriate community concerns are addressed in this report.

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4. Results of the consultation

4.1 Stakeholder interviews

Personal interviews were used to consult with key stakeholders identified by the local Councillor.

Overall, there was strong support for the development from the majority of stakeholders interviewed because of the need for retirement and aged care facilities in the area and the current lack of available facilities. In the case of sporting associations adjoining the proposed development site, there was strong interest in looking at ways to develop community facilities for residents in the development.

The major concerns expressed by stakeholders were:

- Flooding of parklands adjacent to the site and its impact on the development
- The development contributing to flooding and sewerage problems in the area
- Increased traffic on Hyde and Cansdale Roads from the service vehicles, staff and visitors to the development
- Impact of current noise and lighting levels from the sporting fields on residents in the development
- Lack of pedestrian access and street safety for residents of the development, particularly on Cansdale Street during the soccer season

Two stakeholders stated that they would only support the development under certain conditions:

- That the rezoning of the site would not set a precedent for medium to high density development in the industrial estate
- That Venner Road is not extended through the parklands
- That flooding issues in the parklands are addressed.

The following pages detail the key issues raised by each stakeholder.

BCC.061.4878

Stakeholder	Issues raised
South Brisbane Cricket Club [redacted] President	Building height may throw shadow on cricket pitches Cricket Club currently uses access point on proposed site for tractors to go to Yeronga Football Club pitches Flooding on side of proposed site during storms Rehabilitation of creek is needed Potential use of Cricket Club by aged care residents for community purposes
Olympic Soccer Club [redacted], President Secretary	Lack of parking space on Cansdale St during soccer season may hinder pedestrian access for elderly Improved pedestrian access for elderly needed in front of Olympic Soccer Club Potential use of retirement village facilities by soccer club for gym training
El Salvador Soccer Club [redacted] President [redacted] Secretary	Noise and lighting from playing fields may impact residents of proposed development Lack of parking space on Cansdale St during soccer season may hinder pedestrian access for elderly
St Sebastians Primary School [redacted] Principal	Local parishioners want to stay in the area but are becoming incapacitated Opportunity for school to promote "Adopt a Grandparent" program as well as school visits to facility
Yeronga Residents Association [redacted] Representative	Increased traffic on Hyde, Kingsley Rd and Brisbane Corso Possible extension of Venner Road in the future Stormwater failure on Kingsley, Eversley and Hyde roads Flooding of proposed site – highest point on site is 5.6 m Capacity of sewerage system to cope with new developments in area

BCC.061.4879

Yeronga RSL [redacted] Hon Secretary	Lack of aged care facilities in Yeronga area Affordability of potential development for members
Yeronga Hyde Road Kindy [redacted] Manager, [redacted] President [redacted] Treasurer	Density and aesthetic of proposed development Increased traffic, especially from service vehicles and staff Flooding of site and contribution to existing flooding of parklands Toxicity of site Extension of Venner Road Would not support it if re-zoning of site set a precedent for other medium to high density developments in the industrial estate
Yeronga Football Club [redacted] Manager	Supports development and keen to look at ways to provide club services to residents of the development
Spanish Senior Citizens [redacted] Secretary	Lack of aged care facilities in area and growing need among members – strongly support development
Fairfield Neighbourhood Watch [redacted] Local Area Co-ordinator	Lack of aged care facilities in area and growing need among members – strongly supports Security for residents in development Local residents in Hyde Road may complain if trees they planted in park are disturbed
Member for Yeerongpilly [redacted]	Lighting and footpaths at end of Cansdale near Football Club Impact of traffic from industrial estate on residents in proposed development Impact on existing residents of traffic associated with density of development
Member of South Brisbane [redacted], Office Administrator	Possible encroachment on existing parkland

BCC.061.4880

4. Results of the consultation (cont'd)

4.2 Community workshops and information sessions

Three community workshops and information sessions were conducted at Yeronga Football Club on from Sunday 5 December to Wednesday 8 December 2004.

A total of 97 people attended these sessions and 64 of these people completed an individual feedback form at the end of each session.

Participant analysis	Sun	Mon	Wed	Total
Total registrations	69	11	17	97
Total surveys returned	42	10	12	64

The comments and views from each individual who completed the feedback form have been analysed and used as the basis for reporting the following outcomes:

- overall reaction to the proposed development
- what they like most about the proposed development
- what their main concerns are
- whether they think the development will benefit the community
- whether they support this type of development in the area
- services and facilities they would like to see in the development

Each of the three community information sessions produced similar outcomes in terms of key issues raised, even though the group dynamic in each was markedly different.

At the Sunday community Brunch, there was strong support and excitement about the proposed development from a large group of people. Only minor concerns were expressed about flooding, traffic and density of the development.

In the Monday evening session, there were two distinct groups of people; those who were opposed to any change in the area even though they recognised the need for the facility and would probably support the development; those who supported the development because they see a strong need for this accommodation for themselves and others in the community.

The Wednesday evening session comprised an equal cross-section of all age groups who were largely supportive of the development.

Age groups represented at the three community information sessions are as follows:

Participant analysis	Sun (n=41)	Mon (n=9)	Wed (n=11)
65+	22	6	4
51-65	6	3	2
36-50	12	1	3
18-35	1	0	3
1-17	1	0	0

The following pages outline the findings from these sessions.

BCC.061.4881

4.2.1 Findings: Overall reaction to the proposed development

When asked for their overall reaction to the proposed development, the majority of participants were positive and in favour of the proposed development, and saw the development as meeting a need and benefiting the area.

Only a few (10% of total participants) perceived negative associations with the proposed development.

The following table outlines the individual responses from each participant completing the feedback form. Please note that multiple responses were recorded from some individuals. The sample (n=) indicates the number of individuals completing this question.

Overall reaction to proposed development	Sun (n=46) No. mentions	Mon (n=10) No. mentions	Wed (n=12) No. mentions
Excellent idea/good idea/very positive	23	1	7
Am very interested/excited	8	1	
In favour/very favourable	5	2	1
Subtotal	*36*	*4*	*8*
Area needs this type of facility	5	1	3
Will benefit the area/enhance amenity	3		
Subtotal	*8*	*1*	*3*
Great location	2		
Better than townhouses	1		
Favourable but have some concerns	4	1	1
Sceptical/cautious	1		1
More cars	1		
Complex too large for area	1	1	1
Negative		1	
Subtotal	*3*	*2*	*2*
Don't know		1	

BCC.061.4882

4.2.2 Findings: What people like most about the proposed development

When asked what they like most about the proposed development, the main themes listed by participants were:

- the need for this type of development so that local residents can stay in the area for their retirement
- the nature of the development in terms of offering different levels of care and being integrated with the local community
- the location of the development and its proximity to infrastructure and services.

The following table details the number of mentions made by participants in each information session.

What you like most about the proposed development	Sun (n=46) No. mentions	Mon (n=10) No. mentions	Wed (n=12) No. mentions
Need for it in the area	8	1	3
Future for local residents/can stay in Yeronga	6	2	2
Sub total	*14*	*3*	*5*
Integrated internally and with community	6		3
3 levels of care	8	2	1
New concept for aged facilities	1	1	1
Subtotal	*15*	*3*	*2*
Location	7		1
Close to city and local amenities	7		
Subtotal	*14*		*1*
More appropriate use than industrial	4		1
Green space	1		
Town square concept	1		
The security	1		
Subtotal	*3*		
Residents have been consulted	2		
The two storey accommodation	1		
Nothing	1	2	1

BCC.061.4883

4.2.3 Findings: Concerns that people have about the proposed development

The mains concerns that participants have with the proposed development are:

- flooding and drainage issues associated with the proposed site and the adjoining parklands
- the height and density of buildings proposed for the development
- increased traffic in the area as a result of service vehicles, staff and visitors to the development.

Other concerns identified by participants are:

- the impact of noise and traffic congestion from sporting fields and industrial estate on residents in the proposed development
- the capacity of the sewerage plant to cope with proposed development
- the capacity of the local transport system to cater to residents in the proposed development
- the impact on local business adjacent to the development
- the toxicity of land on the proposed site given its previous uses as a dump
- setting a precedent for medium to high density residential in industrial area

Concerns about the proposed development	Sun (n=46) No. mentions	Mon (n=10) No. mentions	Wed (n=12) No. mentions
Flooding/drainage issues	20	2	8
Height and density of buildings	10	5	3
Increased traffic	10	3	5
Car parking	3	1	3
Noise and traffic congestion from sporting fields on retired residents	5		
None at all	4		
Capacity of sewerage plant	3	1	1
Sets precedent for medium to high density residential in industrial area	1	1	1
Toxicity of land	2		1
Capacity of local transport service	2		1
Affordable to local residents	1	1	
Dog noises from RSPCA	2		
Street safety for pedestrians	2		
Ownership of asset	2		
Impact on adjacent businesses		2	
That it is integrated with the local community	1		
Enough green space/landscaping	1		
Smell from sewerage works	1		
Type of land fill used	1		
Noise from traffic and factories on Hyde Rd	1		
Extension of Venner Rd through park	1		
Medical care	1		
Smell from drain		1	
Residents will have access to pastoral/spiritual needs		1	
Not appropriate next to parkland		1	

BCC.061.4884

4.2.4 Findings: Facilities and services in the proposed development

The main facilities and services that participants would like to see in the proposed development are:

- Medical services such as doctors, physio, hydrotherapy and dentists and chemists
- Basic retail and commercial shops such as general store, newsagency, hairdresser and café/restaurants
- Private and public transport services for residents
- Community facilities such as a pool, gym, community hall/centre for arts and crafts, library and computer room.

Facilities and services you would like to see in the development	Sun (n=46) No. mentions	Mon (n=10) No. mentions	Wed (n=12) No. mentions
Medical/therapy	13	2	1
Pharmacy	7	1	
Pool	4	1	1
Hairdresser	6	1	
Basic retail and commercial	3	1	1
2-3 levels of care	3		2
Village bus service	4		
Coffee shop/café/restaurants	2	2	
Resident activities/entertainment/arts and crafts	4		
Alternative natural therapy	1		
Car parking	1		1
General store	3		
Newsagency	3		
Library	3		
Community hall/centre	3		
Lounge	2		
Computer room	2		
Nursing home	1		
Boutique shops	1		
Public transport	2		
Security	1		
Exercise/gym	1		2
Units for single mums and families/public housing	1	1	1
Lower set buildings	2		1
Integrated shopping centre	1		
Bus interchange with rail	1		
Recreational green space	1		
Tennis court	1		
Bowling green	2		1
Sports facilities	2		
Chapel		1	
Theatre workshops			1

BCC.061.4885

4.2.5 Findings: The benefit of the proposed development to the local community

The overwhelming majority (92%) of participants who completed the individual feedback form believe that the proposed development will benefit the community.

Only the Monday information session (9 people) were divided in their views.

Do you think that this development will benefit the local community	Sun (n=40)	Mon (n=9)	Wed (n=10)
Yes	40	5	9
No	0	4	1

4.2.6 Findings: Support by local residents for the proposed development

Four in five participants (83%) who completed the individual feedback form would support the proposed development. Again, only the Monday session expressed a mixed view.

Do you support this type of development	Sun (n=40)	Mon (n=9)	Wed (n=11)
Yes	36	4	9
No	4	4	2

BCC.061.4886

4.2.7 Findings: Additional information sought about the proposed development

Residents who attended the community workshop and information session would like to receive more detailed information about the final design and scale of the development when it becomes available.

In the interim, participants would like to be kept informed about the progress of the development approval process, especially the timeframe for possible construction of the facility.

Flooding and traffic are two areas that participants would like to be informed more about especially after studies have been completed.

Additional information that you would like to have about the development	Sun (n=40)	Mon (n=9)	Wed (n=10)
Development plans/maps/charts	5		
Type of unit residences	1		
Timeplan before building commences	3		
How to build without flooding	4		
How traffic will be dealt with	1		
Number of units	1		1
Affordability of units	1		
Wheel chair access	1		
Transfer between levels of care	1		
Impact of development on industrial area	1		
Traffic problems near green bridge		1	
How many politicians get kickback		1	
How much developer will make			
Copy of final report to Council			1
Prices			1
Copy of survey			
Results of traffic studies, projections and impacts			1

BCC.061.4887

APPENDIX ONE

Compliance with Brisbane City Plan 2000 Consultation principles

Consultation principle

People affected by a development proposal or project have the right to be informed and to have the opportunity to participate and this may include tenants affected by the development for example.

Actions taken

Multiple mediums for informing people potentially affected were used:

- personal interviews with key stakeholders groups
- newspaper editorial and advertisement in Southern News
- letterbox drop to local households
- notice in the Neighbourhood Watch newsletter
- flyers on the Fairfield Gardens community noticeboard & information stand.

Consultation principle

The consultation program should be interesting, equitable (in terms of physical access and access to information), inclusive (of all stakeholders, particularly marginalised groups) and adequately resourced.

Actions taken

Personal interviews were undertaken with 13 key stakeholder groups including marginalised groups identified by the local Councillor. Representatives of each were contacted directly and an appointment was made at a time of their convenience at a location of their choice.

Following the interviews, three interactive, experiential community workshops and public information sessions were held at Yeronga Football Club. This location was recommended by the local Councillor and chosen because it is well-known and easily accessible to both Yeronga and Fairfield residents. It is a single storey venue on a level site that has appropriate parking facilities and disabled access.

In each interview and at the community workshops and public information sessions, participants were given an overview of the proposed development and the opportunity to view six A3 colour visuals showing key aspects of the development.

At the community workshops and public information sessions, participants were given the opportunity to ask question and speak directly to the project architect, town planner and aged care advisor.

APPENDIX ONE (cont'd)

Consultation principle

Consultation should commence early and form part of the development formulation and assessment process rather than being a one-off event

Actions taken

The community consultation has commenced prior to lodgement of development application to ensure that the community is properly informed and that it has the opportunity to become involved and have input into the design process.

At the community workshops and public information sessions, the project architect and town planner have listened to the views of the community and where possible provided feedback and advice on different aspects of the proposed development.

Participant contact details have been collected so that the developer can update the community on the progress of the application and answer any of the issues raised at the consultation once further information comes to hand.

Further workshops and information sessions are planned for 2005 as the status of the development application becomes clearer.

Consultation principle

The history of previous consultation programs should be taken into account

Actions taken

Preliminary discussions with Brisbane City Council identified previous consultations undertaken in the Yeronga Fairfield area relevant to this development.

A subsequent meeting with the local Councillor explored community attitudes and concerns to developments in the area and identified key stakeholder groups that should be consulted as part of this program. Personal interviews were undertaken with all stakeholders identified.

APPENDIX ONE (cont'd)

Consultation principle

The purpose, expected outcomes and decision making process should be clearly communicated to all parties participating.

Actions taken

The scope of the consultation program was finalised in a project team meeting held prior to the commencement of the consultation. The purpose, expected outcomes and decision-making process were outlined to participants in all personal interviews. A project team meeting held on completion of the personal interviews reviewed the scope of the consultation program but no changes were made. The purpose, expected outcomes and decision-making process were again clearly outlined at the start of the community workshops and public information sessions and reinforced in the middle and end of each session.

Consultation principle

A diversity of consultation techniques should be implemented to maximise opportunity for participation

Actions taken

A diversity of consultation techniques were used to maximise opportunity for participation from personal interviews and community workshops/information sessions to an editorial and advertisement in the local newspaper, and a letterbox drop to local residents.

The residential areas of Yeronga and Fairfield likely to be impacted by the development were identified by the local Councillor, as were key stakeholders that need to be consulted. Personal interviews were undertaken with these key stakeholders.

Community workshop and information sessions were scheduled before school holidays using three different timeslots to ensure maximum participation.

The workshops were also designed and structured to encourage participant involvement using three short and interesting presentations by the project architect, town planner and aged care advisor followed by group discussions and individual reflection and evaluation of the proposed development, concluding with questions from the audience.

APPENDIX ONE (cont'd)

Consultation principle

Consultation objectives should be matched with appropriate techniques as outlined in the plan

Actions taken

Following the finalisation of consultation objectives by the project team in the program scoping stage, the most effective techniques to achieve consultation objectives were decided upon.

These techniques were reviewed to ensure their compliance with BBC City Plan 2000 Consultation Guidelines and match the techniques recommended by BCC in Appendix 2 (pp 67-68) for:

- informing the community about the nature and scale of the development
- educating the community about the need and benefits of the development
- obtaining specific and broad feedback from the community about key issues or concerns that they have with the development
- involving the community in discussions or forums that potentially resolve issues and concerns.

BCC.061.4891

APPENDIX ONE (cont'd)

Consultation principle

The consultation program should be constantly evaluated against its objectives and modified accordingly to meet changing needs

Actions taken

The consultation has been reviewed against its objectives at three key stages in the process by:

- the developer and BCC during the formulation and design of the consultation program
- the project team prior to commencement of the program
- the project team following identification of preliminary issues and concerns after completion of the personal interviews
- representatives from the project team on completion of the first consultation program to determine ongoing community consultation requirements.

Consultation principle

Participants should be informed how the issues raised through consultation have been addressed in the development proposal/outcome

Actions to be taken

Following completion of the community consultation, participants have been advised that they will be updated by the project team in early 2005 once more information and detail are available about the proposed design and timeframe for the development application and approval process.

APPENDIX TWO

List of key stakeholder groups

The following key stakeholders including minority groups were identified by the local Councillor on commencement of the program:

- Fairfield Neighbourhood Watch
- Yeronga Football Club
- South Brisbane Cricket Club
- Olympic Soccer Club
- Anna Bligh – Member for South Brisbane
- Simon Finn – Member for Yeerongpilly
- Yeronga Residents Association
- Yeronga RSL
- St Sebastians Catholic School
- Yeronga Hyde Road Kindy and Preschool
- Yeronga Hyde Road Kindy and Preschool
- El Salvador Soccer Club
- Spanish Senior Citizens Association.

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APPENDIX THREE

Visuals used in stakeholder interviews/community meetings

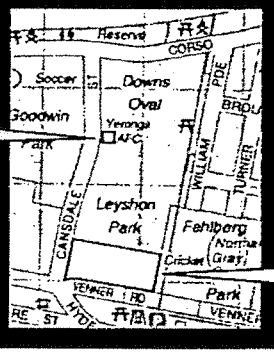
BCC.061.4894

APPENDIX FOUR - Community consultation marketing materials

PROPOSED INTEGRATED RETIREMENT COMMUNITY AT YERONGA

free community brunch

INFORMATION SESSION AND SITE TOUR



Free Community Brunch at Yeronga Football Club

Proposed Retirement Community

SUNDAY 5TH DECEMBER
10.00am - 11.30am

YERONGA FOOTBALL CLUB
CNR CANSDALE ST AND BRISBANE CORSO, YERONGA

Accommodation for seniors is urgently needed in the Yeronga and Fairfield area. A retirement community is proposed for the Strophairs Auction site at the corner of Hyde Road and Cansdale St, adjoining Leyshon and Fehlberg Park.

Find out more about it
Bring your family, friends and people in your street along to learn more about the proposed community.

Meet and talk with other residents
Get to know other people in the area and share your views about what you would like to see at the retirement community.

Have a fun day out in your local community
Enjoy a range of entertaining and informative activities. Take an organized bus tour to see examples of similar communities in Brisbane.

weekday evening workshops and forums
free light supper provided

If you are unable to make it to the Sunday Brunch or you would like more information on the community, additional information sessions will be held on:

Monday 6 December	**Yeronga Football Club**	**6.00pm**
Wednesday 8 December	**Yeronga Football Club**	**6.00pm**

registration and enquiries
To register your attendance or find out more about these events, contact

APPENDIX FIVE - Community Workshop agenda

Community Brunch Sunday 5 December – Yeronga Football Club Cansdale St

Workshop program

8.30am	Bump-in: Set-up of display materials and workshop equipment
9.20am	Final briefing on workshop format: [redacted]
9.30am	Registration opens (information sheet/survey to guests on arrival)
10.00am	Welcome and introduction – [redacted]
10.10am	The concept of Integrated Retirement Communities - [redacted]
10.20am	Presentation of proposed development – [redacted] 0mins)
10.40am	Survey followed by group discussions - [redacted]
11.00am	Presentations to whole group - [redacted]
11.15am	Panel questions to [redacted]
11.25am	Summary of key themes and next steps - [redacted]
11.30am	Close
11.45am	Bus tour departs

Please note Monday and Wednesday evening workshops will follow same format with bump-in at 5.00pm, registration opening at 5.30pm and the session from 6.00-7.30pm.

BCC.061.4896

APPENDIX SIX - Individual feedback form

YERONGA RETIREMENT COMMUNITY CONSULTATION FEEDBACK FORM

Please answer the questions below and return this form to us before you go today.

1. As a local resident, what is your overall reaction to the proposed development?

2. What do you like most about it?

3. What concerns, if any, do you have?

4. What type of facilities and services would you like to see in the development?

5. Do you think this development will benefit the local community? Yes ☐ No ☐ Please tick ✓

6. As a local resident, do you support this type of development? Yes ☐ No ☐ Please tick ✓

7. What additional information, if any, would you like to have about the development?

8. Please tick the categories below that best describe you:

   Resident of Yeronga ☐ Resident of Fairfield ☐ Other_____

   1-17yrs ☐ 18-35yrs ☐ 36-50yrs ☐ 51-65 yrs ☐ 65yrs+ ☐

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APPENDIX K

Servicing Assessment

06 APR 2005

BMD CONSULTING

Our Ref. CB 0401

1-April 2005

PMM
PO Box 1559
FORTITUDE VALLEY QLD 4006

Attention: [redacted]

RE: SERVICES REPORT – PROPOSED RETIREMENT COMPLEX CANSDALE ROAD – YERONGA

With regards to the above proposal in regards to service requirements to the development we note that existing Electrical & Telecommunication network passes the site.

In regards to water and sewerage infrastructure refer to the BCC report prepared by Brisbane Water in reference to this site.

In general, the water network is adequate for the proposed development with the sewerage system requiring augmentation as noted in the BCC Report. The actual location of the sewer infrastructure will be subject to detail design and approval by BCC. We have had preliminary talks with [redacted] from Brisbane Water and he has advised us that the location of the infrastructure in the services report is for a guide only.

Should further clarification be required please contact the undersigned at the Brisbane Office.

Regards,

[redacted]

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ABN: 23 010 743 692

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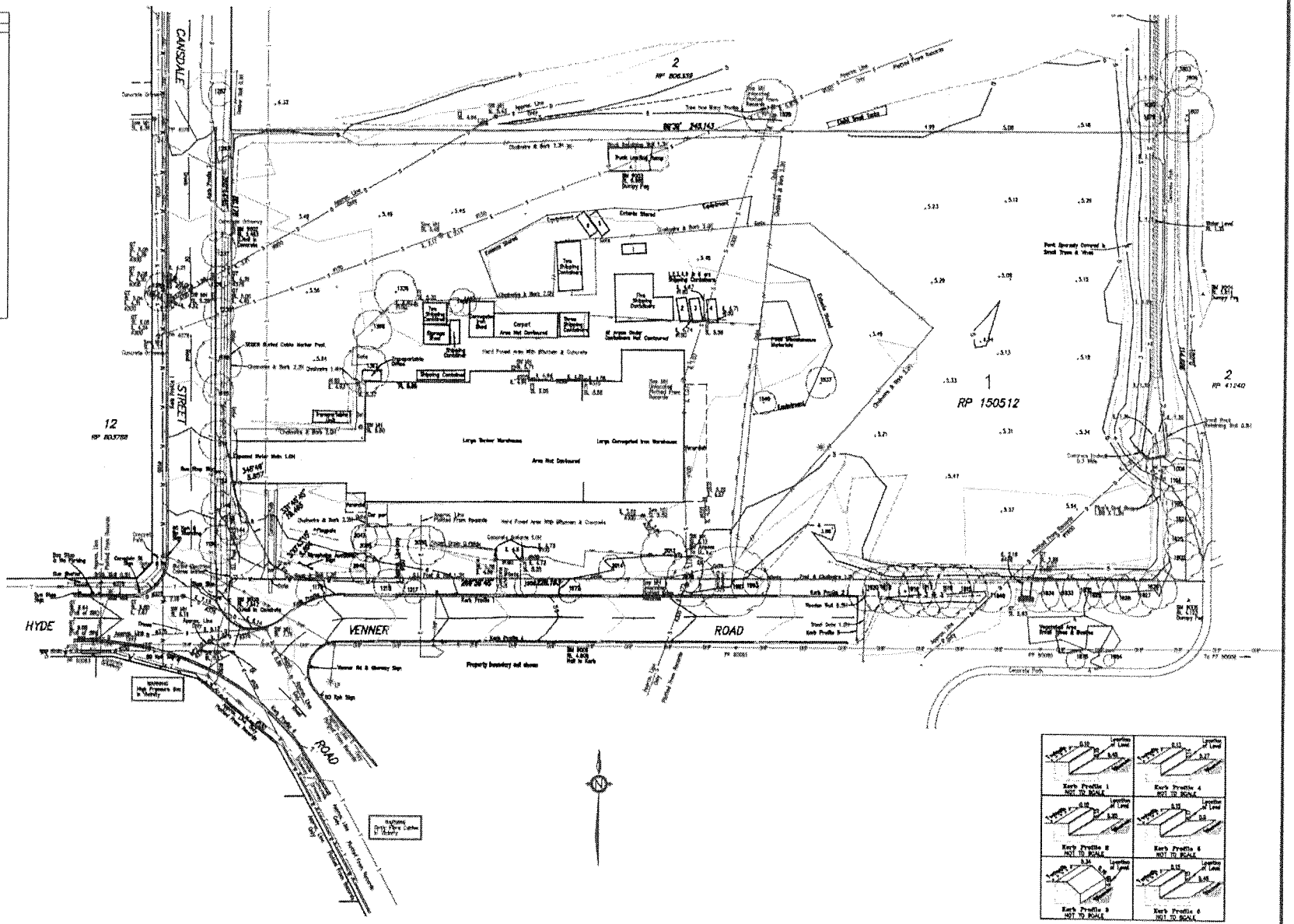
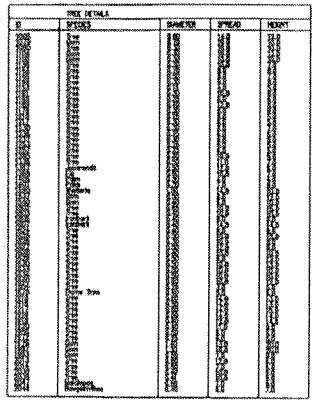
APPENDIX L

Detailed Survey





WARNING NOTES

PROPERTY BOUNDARIES

The property boundaries and dimensions shown on this plan are plotted from original title records. They have been plotted using surveying methodology that is generally accurate to within 1% millimetres of the true boundary position. However, boundary locations can only be determined by completing a cadastral survey as defined by the Surveyors Act 1977.

The property boundaries and dimensions shown on this plan must not be relied upon when designing services, buildings or other structures that are to be constructed in close proximity to these. Designs of services, buildings or structures that require critical boundary offsets will require cadastral boundary locations determined by completing a cadastral survey as defined by the Surveyors Act 1977.

Boundary corners were not marked at the time of survey.

SURVEY

Only the visible surface features of services (manholes, pits, valves, fittings etc.) have been located accurately during this survey. The position of all underground services (pipelines and underground features shown on this plan are approximate only and were plotted from records in conjunction with the surveyed locations of visible surface features. The true position of any underground services can only be determined by pot-holing or service detection.

The position of services (pipelines) shown on this plan must not be relied upon when designing services or buildings that are to be constructed in close proximity to them. If existing service positions are critical to design or construction purposes, the services location must be accurately determined by pot holing or surveyed in situ by the relevant service authority prior to commencement of design or construction.

In accordance with the Workplace Health and Safety Act, trenching have not been entered to establish ground levels. The ground levels shown are plotted from approximate field measurements and existing records.

The shown underlying services are symbolic representations, and whilst they are reasonably positioned, they are not to scale.

Service alignments and attributes have been derived from the following sources only:

- Brisbane City Council
- Energex
- Telstra
- Others

Whilst all care has been taken by the field surveyor to correctly identify the services and type of trees located during this survey, there are very restrictions to assist with identification so that if accurate identification of tree types is to be relied upon for any purpose, then all trees listed will require an arbitration by a suitably qualified expert.

0 10 20 30 40 50
Scale of Metres

LINEWORK	SYMBOLS

PROJECT	PROPOSED DEVELOPMENT
LEVEL DATUM	AHD
ORIGIN	PSM 132396 RL 6.862 4TH ORDER
SCALE	1:500
Date	13-08-2004
Rev	D
Parish	YEERONGPILLY
Local Authority	BRISBANE C.C.
Job Ref	7203
CLIENT	M & J HARRISON
	DETAIL SURVEY OVER LOT 1 ON RP 150512, CORNER VENNER RD & CANSDALE ST, YERONGA
Reference	7203-01

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urban designers townplanners land surveyors
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PO BOX 1555,
FORTITUDE VALLEY QLD 4006
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FACSIMILE (07) 3257 8833
email pmm@pmm.com.au
web www.pmm.com.au

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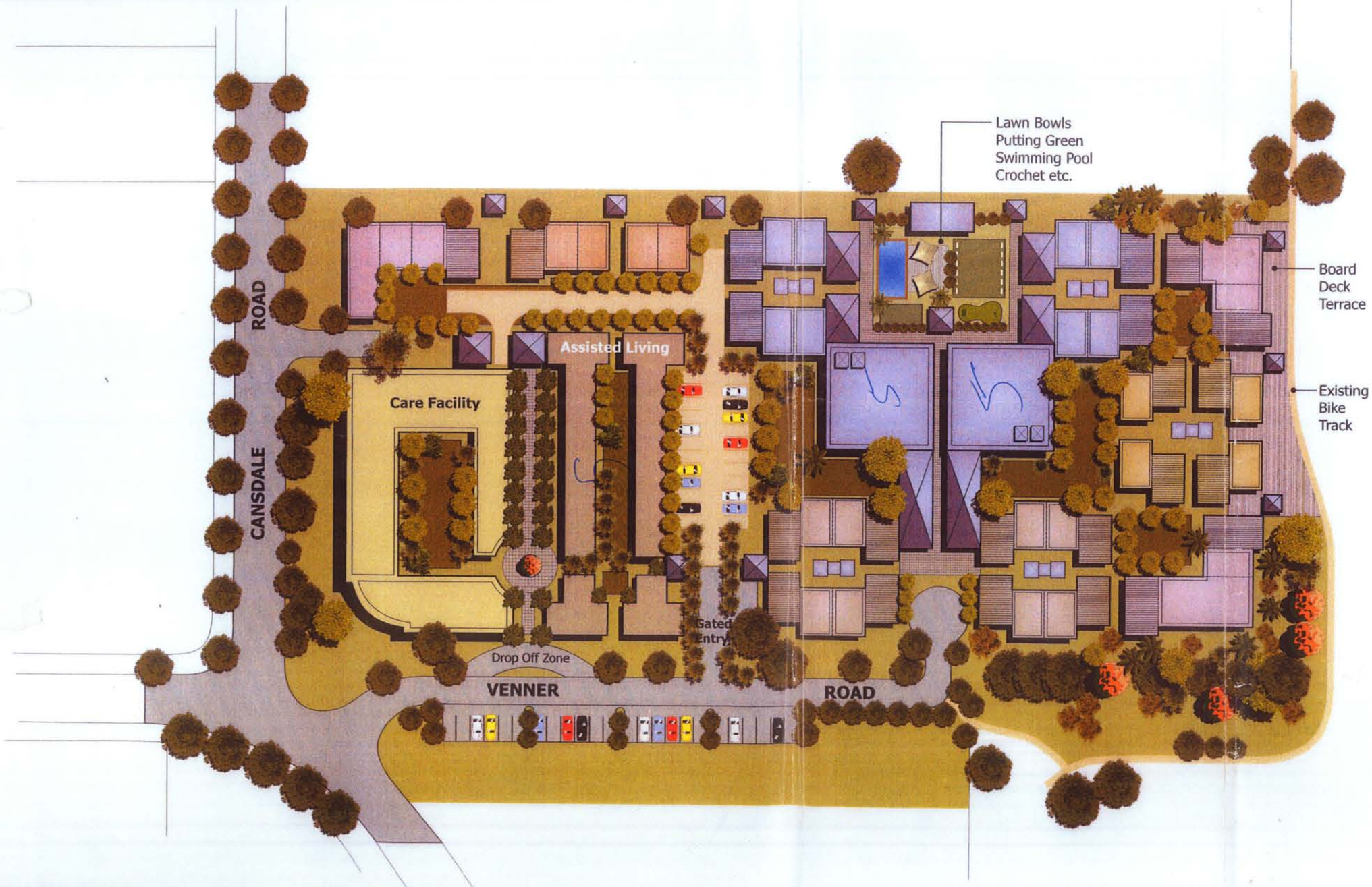
TM.dwg

BCC.061.4901

Conceptual Masterplan

Yeronga Village Complex

29



The contents of this plan are conceptual only, for discussion purposes.
All areas and dimensions are approximate, subject to relevant studies, Survey, Engineering, and Council approvals.

7203-04 date: march 2005 scale: 1:500@A1 (1 : 1000 @ A3)

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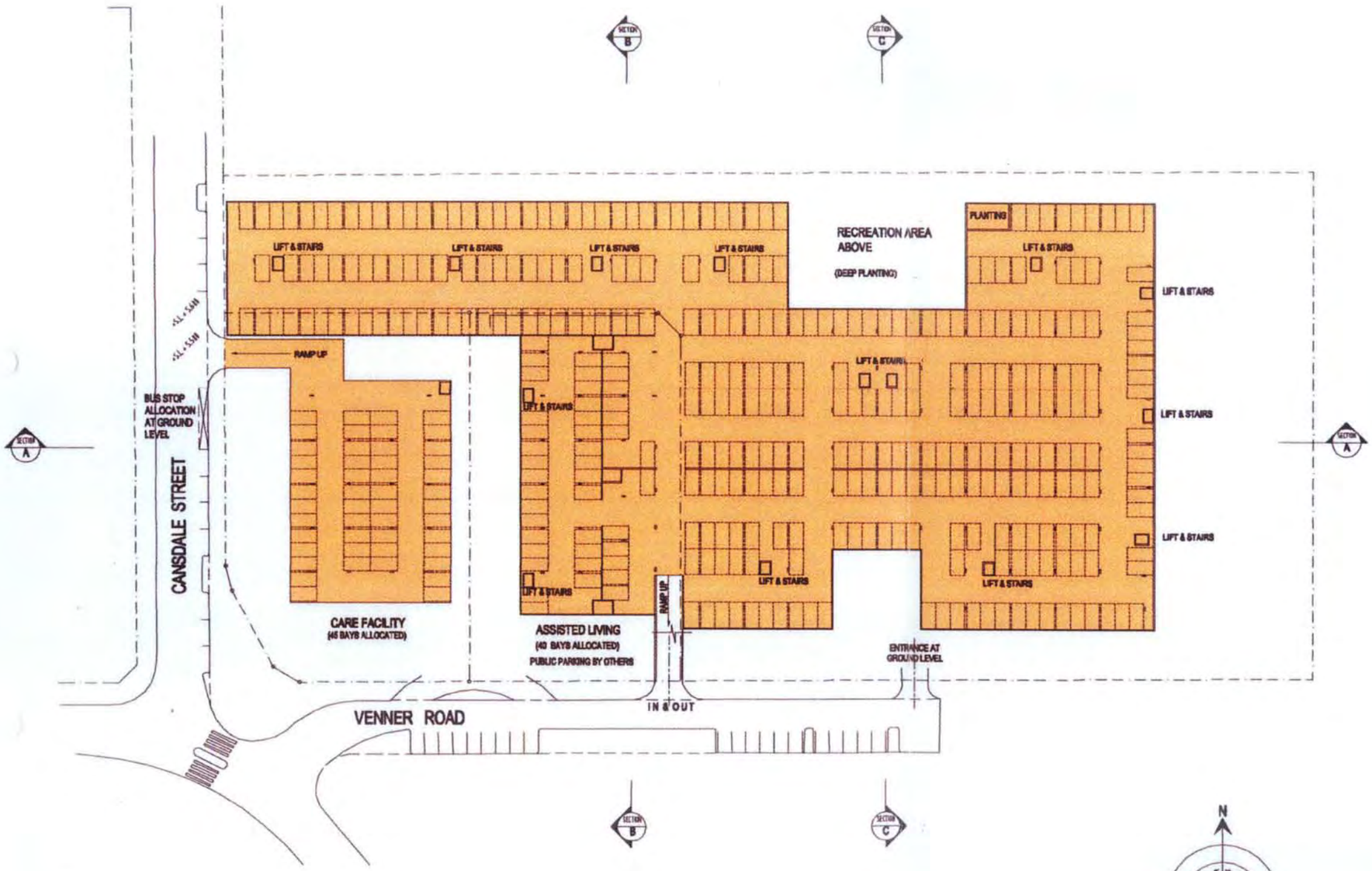


OVERALL CARPARKING PROVISION:

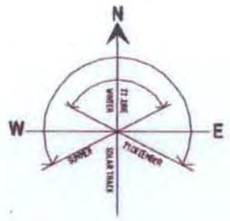
1. BASEMENT LEVEL

Assisted Living	- 40
I.L.U's	- 260
sub-total	- 300
+ Care facility	- 45
Total	345 no.

2. GROUND LEVEL

On Site Parking	- 25
On Street Parking	
Venner Road	- 20
Cansdale Street	- 10
	+ Bus Stop
Total	55 no.

3. PROPOSED TOTAL **400 no.**



PRELIM. DA SUBMISSION ONLY

DesignInc **Gold Coast**

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YERONGA VILLAGE COMPLEX
Venner Road, Yeronga

BASEMENT CARPARK PLAN | scale: 1:1000 @A3 | Mar 2005 | Project No : 85.008.G04 | Dwg No: SD.02.01 C

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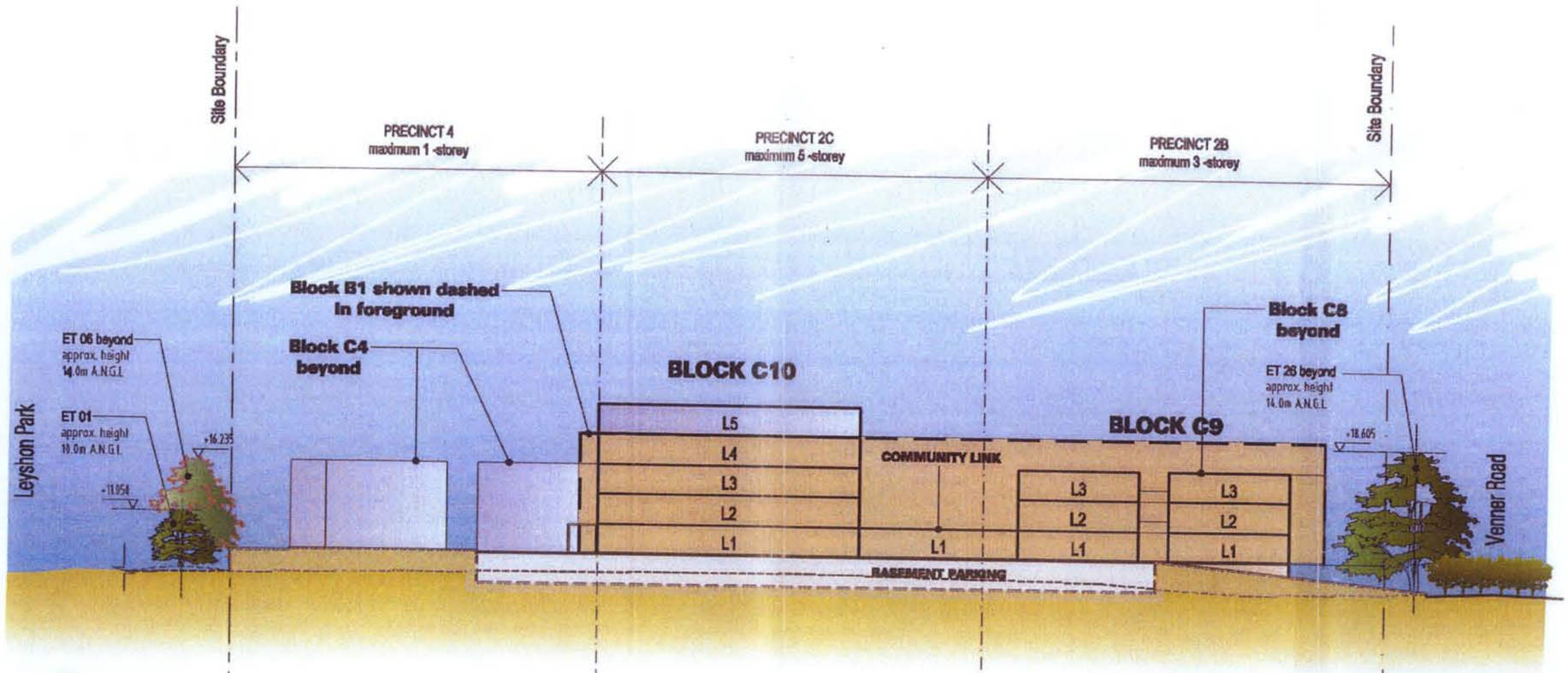
Section C-C

Yeronga Village Complex



section c-c

all levels refer to AUSTRALIAN HEIGHT DATUM A.H.D

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7203-07 date: march 2005 scale: 1:500@A3

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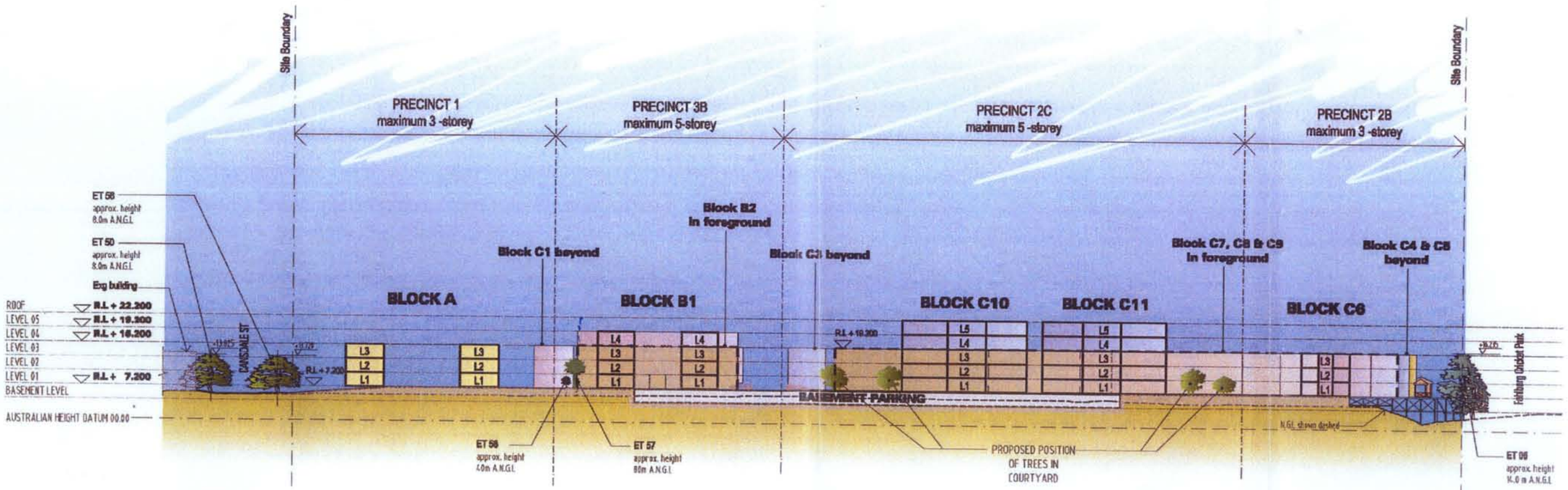
Section A-A

Yeronga Village Complex



section a-a

all levels refer to AUSTRALIAN HEIGHT DATUM A.H.D

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7203-05 date: march 2005 scale: 1:500@A3

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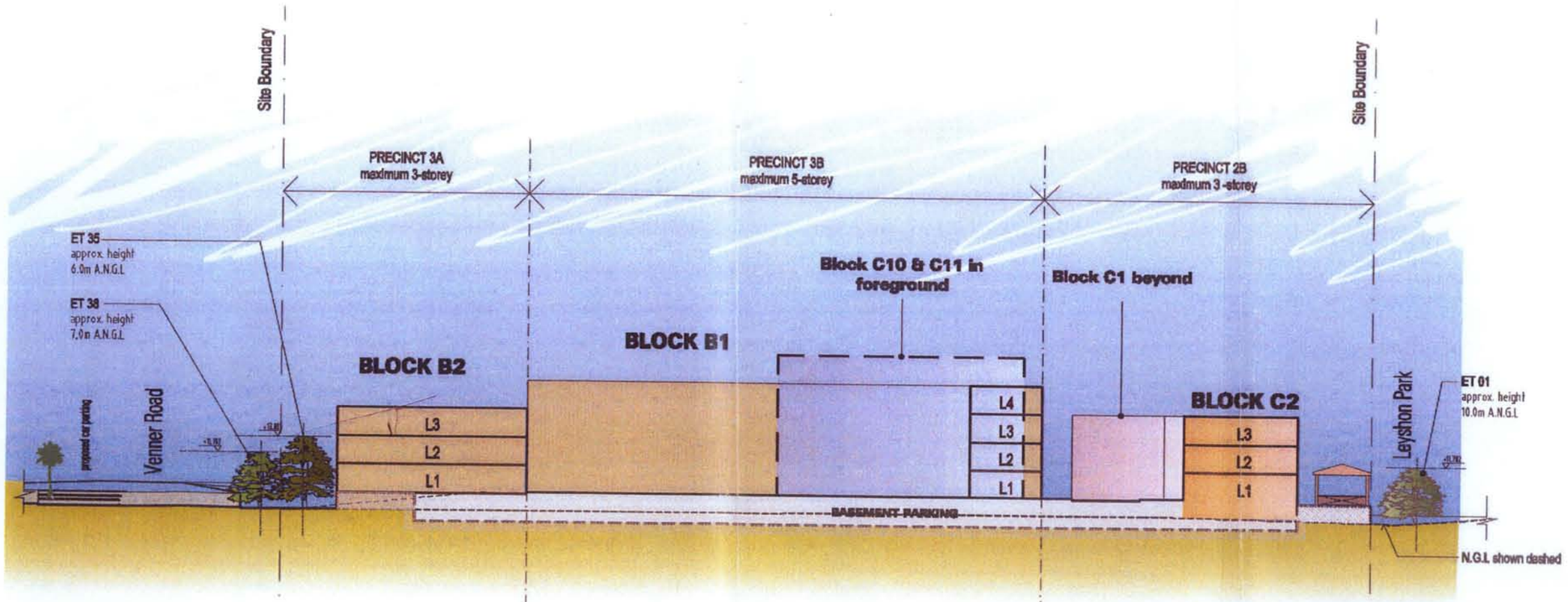
Section B-B

Yeronga Village Complex



section b-b

all levels refer to AUSTRALIAN HEIGHT DATUM A.H.D

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All areas and dimensions are approximate, subject to relevant studies, Survey, Engineering, and Council approvals.

7203-06 date: march 2005 scale: 1:500@A3

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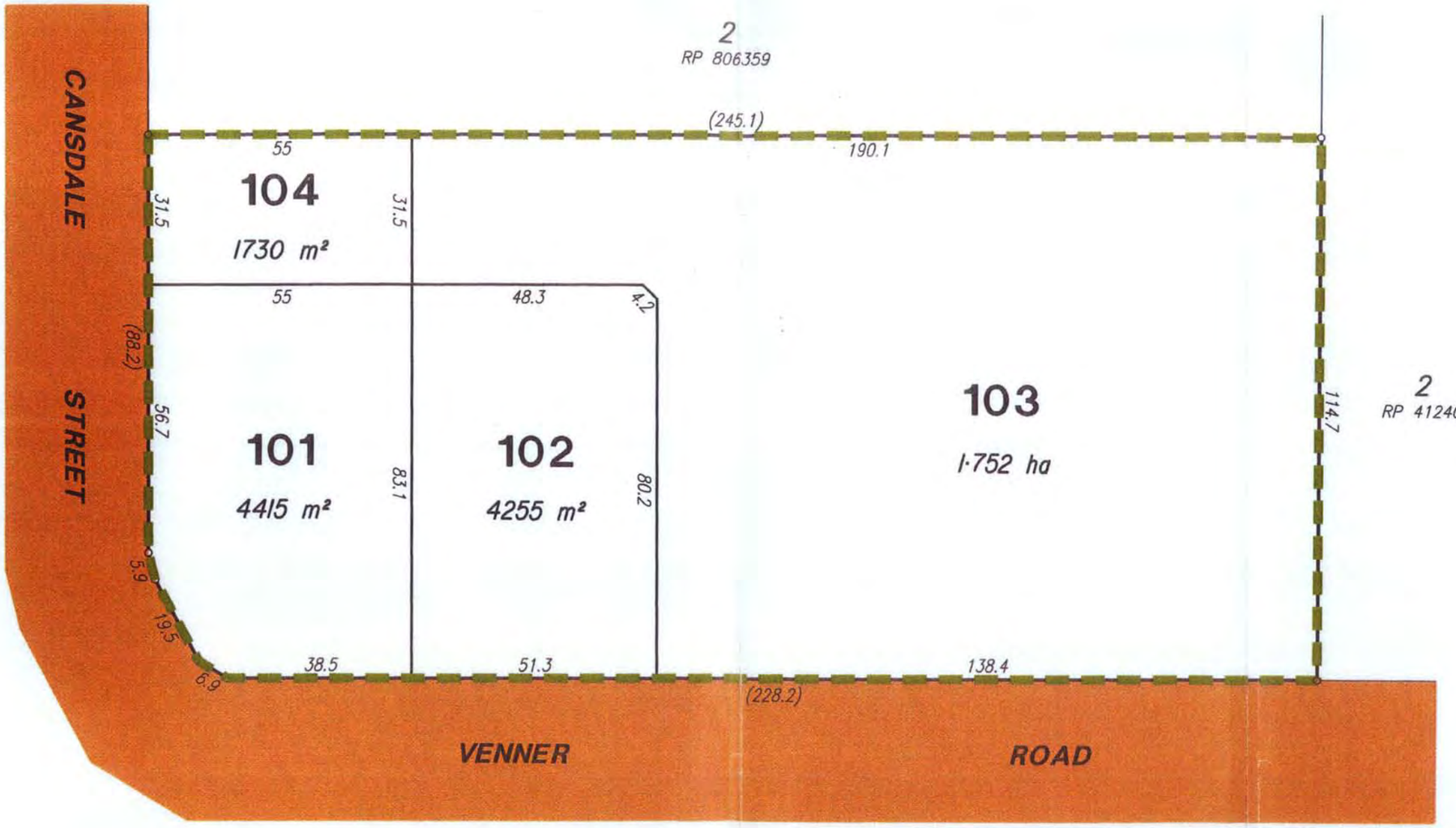

Note
All dimensions and areas are approximate only, and are subject to survey and Council approval.

Dimensions have been rounded to the nearest 0.1 metres.

The boundaries shown on this plan should not be used for final detailed engineers design.

PROJECT	**PROPOSED SUBDIVISION**
LEVEL DATUM	SCALE **1:1000**
ORIGIN	Date. 11 MAR 2005
	Surveyed.
	Comp by. KH
FB : LB :	DWG Name. 7203-Pro

CLIENT	**HARRISON REAL ESTATE DEVELOPMENT**
	PROPOSED LOTS 101 - 104 OVER LOT 1 ON RP 150512
Parish	YEERONGPILLY
Local Authority	BRISBANE CITY COUNCIL
Job Ref	7203

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Reference **7203-03**

BCC.100.3787

Our ref: 1704972

8 September 2011

Mr Rory Kelly
Regional Manager - South
Brisbane City Council
GPO Box 1434
BRISBANE QLD 4001

REQUIREMENT TO PROVIDE STATEMENT TO COMMISSION OF INQUIRY

I, Justice Catherine E Holmes, Commissioner of Inquiry, pursuant to section 5(1)(d) of the *Commissions of Inquiry Act 1950* (Qld), require Mr Rory Kelly to provide a written statement, under oath or affirmation, to the Queensland Floods Commission of Inquiry, in which the said Mr Kelly gives an account of the following with respect to the development of aged care accommodation at 5 and 15 Cansdale Street, Yeronga:

1. the defined flood level of the Subject Land prior to the January 201 flood event;
2. whether Council's records indicate that the Subject Land was subject to surface flooding impacts during the January 2011 flood event;
3. what approvals (including any section 3.1.6 preliminary approval under the *Integrated Planning Act 1997* but excluding any development approvals for building work and/or operational work) were given to permit the development of land at 5 and 15 Cansdale Street, Yeronga for the existing aged care accommodation;
4. with respect to each of those approvals:
    a. how potential flooding impacts were identified;
    b. what assessment process was followed specific to flood impacts;
    c. what consideration, if any, was given to:
        i. the proximity of the Subject Land to the Brisbane River;
        ii. the proximity of the Subject Land to the waterway which traverses the adjoining land which is currently within the Sport and Recreation Area in Brisbane City Plan 2000;
        iii. flood risk or the potential impact of flooding on the Subject Land and measures to address such risk or impact;
        iv. the potential for flooding of access roads to the Subject Land;
        v. the attributes of the intended occupants and their ability to evacuate in the event of flooding;
5. in relation to each of the approvals, what conditions, if any, were included with respect to:
    a. protection from flooding (regardless of its source);

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GPO Box 1738 Brisbane
Queensland 4001 Australia
Telephone 1300 309 634
Facsimile +61 7 3405 9750
www.floodcommission.qld.gov.au
ABN 82 696 762 534

b. availability of access (or evacuation) routes in the event of flooding of the surrounding area.

In addressing these matters, Mr Kelly is to:

- provide all information in his possession and identify the source or sources of that information;
- make commentary and provide opinions he is qualified to give as to the appropriateness of particular actions or decisions and the basis of that commentary or opinion.

Mr Kelly may also address other topics relevant to the Terms of Reference of the Commission in the statement, if he wishes.

The statement is to be provided to the Queensland Floods Commission of Inquiry by Tuesday, 13 September 2011.

The statement can be provided by post, email or by arranging delivery to the Commission by emailing [redacted]

[redacted]

Commissioner
Justice C E Holmes