CLAYTON UTZ

Brisbane City Council

BCC

Queensland Floods Commission of Inquiry

Inquiry

Statement of Cassandra Sun - 14 September 2011

Volume 1 of 1

Clayton Utz
Lawyers
Level 28, Riparian Plaza 71 Eagle Street Brisbane QLD 4000 Australia
GPO Box 55 Brisbane QLD 4001
T +61 7 3292 7000 F +61 7 3221 9669
www.claytonutz.com

Our reference 12371/12376/80117397

Legal\303901783.1

QFCI

Date: 27/09/11 JM

Exhibit Number: 629

Statement of Cassandra Sun

I, Cassandra Sun, Regional Manager of Development Assessment Central Team, Brisbane City Council, of 266 George Street, Brisbane, in the State of Queensland, affirm as follows:

A. Attachment **CS-01** is a copy of a notice from the Commissioner of the Queensland Floods Commission of Inquiry (**Commission**) dated 9 September 2011 requiring me to provide certain information to the Commission with respect to the existing residential building at 108 Albert Street, Brisbane (also known as Festival Towers) (**Subject Land**) in the form of a statement by 13 September 2011 (**Notice**). This Statement is provided in response to the Notice.

B. For the purposes of responding to the Notice and preparing this Statement I have, in my position as Regional Manager of Development Assessment Central Team of the Brisbane City Council (**Council**), had access to:

(a) the business records of Council; and

(b) Council officers,

to obtain information to provide a response to the Notice. I have also received advice from Clayton Utz solicitors in respect of some matters of statute law stated in this Statement. Unless otherwise stated, the matters set out in this Statement are based on my own knowledge and the information derived from the above sources.

C. The documents from the above sources and attached to this Statement have been collated by Council officers under my instruction.

D. I set out below my responses to each of the questions set out in the Notice.

Qualifications and Background

1. I hold a Bachelor of Regional and Town Planning (Hons), University of Queensland.

2. I have been employed by Council since 1 April 2001. I have been in the Development Assessment Central Team from this date until the present. Since commencing at Council, I have performed the role of Senior Urban Planner (2001 to 2006), Principal Urban Planner (5 December 2006 to 29 May 2007) and Regional Manager (30 May 2007 until the present). My role of Senior Urban Planner involved the assessment of a range of development applications against the City Plan 2000 within the Central region. In the role of Principal Urban Planner

[redacted] [redacted]

Cassandra Sun Witness

my primary duties involved the assessment of complex development applications as well as supervision of some staff.

3. I currently hold the position of Regional Manager of Development Assessment Central Team of Council. I provide leadership to a multi-disciplinary Development Assessment Team in the assessment of development applications.

4. At the time of the development application for the Subject Land I was a Senior Urban Planner. As indicated earlier, in this role I was responsible for assessment of a range of development applications within the Central region.

General observations

5. The Council files indicate that the Subject Land is described as 67-89 Charlotte Street and 104 Albert Street, Brisbane. I have reviewed the relevant Council files.

6. I was not involved in the assessment of the development application for the Subject Land.

Response to the Notice

1. The defined flood level of the Subject Land prior to the January 2011 flood event;

7. Based on Council's records, I am aware that prior to the January 2011 flood event, the defined flood level (**DFL**) of the Subject Land was 3.9 metres AHD. The highest source of flooding is river flooding.

2. Whether Council's records indicate that the Subject Land was subject to surface flooding impacts during the January 2011 flood event;

8. I am not at all familiar with the records which Council has of surface flooding during the January 2011 flood event. I note from advice given by Council officers that Council has access to flood mapping done by the Department of Environment and Resource Management and that that mapping indicates that the Subject Land was partially affected by flooding. I am also generally aware that Council has carried out modelling of flood levels but do not know the technical or other details of that work. I also note from Ms de Lange's submission that there was "*no flood waters immediate to our building particularly on the Charlotte Street side during the floods or entering the ground floor levels*". A more fulsome explanation of the records as to flood extent and modelling of flood depth can be provided by Council officers familiar with this technical area.

[redacted]

Cassandra Sun

[redacted]

Witness

3.	**When approval was given to permit use of the Subject Land for the existing residential development;**

9. A Development Approval was given by Council by Decision Notice dated 29 October 2002 to Devine Limited c/- Mr Chris Buckley of Buckley Vann Town Planning under section 3.5.15 of the *Integrated Planning Act 1997* for a Development Application for Centre Activities (Multi-Unit Dwelling, Shop, Office, Restaurant and Memorabilia Display) (**Development Approval**). A copy of the Decision Notice is Attachment **CS-02.**

4.	**When the development application the subject of the approval referred to in paragraph 3 was assessed, what consideration, if any, was given to the potential for inundation at basement level through adjacent Energex conduit pits and what conditions, if any, were included in the approval to address this issue.**

10. In preparing this Statement, I have been provided with a copy of a submission from Ms Lynn de Lange dated 9 March 2011 which is available on the Commission's website. I note that the submission relevantly provides that:

"*During the floods our basement car park was inundated with water causing considerable damage to the two bottom car park levels which is costing some $300,000 to repair. This water entered the basement from mainly one area in the top basement on the Charlotte Street side to the building.*

We do not have flood insurance. As there were no flood waters immediate to our building particularly on the Charlotte Street side during the floods or entering the ground floor levels we sought an engineer's report on what went wrong to allow so much water to pour in through the top basement in such a short time. The engineer's report is attached.

This report advises us that the water entered via the conduit in which the Energex underground power cables enter the building from the Energex pits in the footpath outside which are very deep. These would have had considerable water in the bottom coming up from the river. Apparently, Energex does not seal around the cables where they enter the conduit that takes the underground cables to our site."

11. I assume that the Notice relates to the matters raised in the submission.

12. From my review of the file and from what I know of Council's development assessment practice, it is unlikely that there was consideration of the potential for inundation at basement

[redacted]

[redacted]

level through adjacent Energex conduit pits. I cannot identify any conditions imposed as part of the Development Approval which specifically relate to this aspect.

13. The Development Approval provided a condition relevant to the supply of underground electricity, which is Condition 41 in Attachment **CS-02.**

14. Condition 41 refers to Council's "Guidelines for the Provision of Underground Electricity" which provides some comment in relation to the installation of underground electricity, however in relation to the standards for design and installation, the Guidelines make reference to "*the appropriate Policies and Standard Working Practices of Energex.*" A copy of the Guidelines for the Provision of Underground Electricity are Attachment **CS-03**.

15. I am advised that under the *Sustainable Planning Act 2009*, Council through its planning scheme is unable to regulate development for:

"All aspects of development for a supply network for electricity, as defined under the Electricity Act 1994, or for private electricity works that form an extension of or provide service connections to properties from the network, if the network operates at standard voltages up to and including 66kV, other than any aspect of development for:

(a) the construction of a new zone substation or bulk supply substation; or

(b) the augmentation of an existing zone or bulk supply substation if the input or output standard voltage is significantly increased."

16. I am also advised that a "supply network" under the *Electricity Act 1994*:

"...is a system, or part of a system, of electric lines, substations and associated equipment, other than a transmission grid, for distributing electricity to customers, whether or not generating plant is connected to it."

17. I note that this is reflected in the following exemption under Chapter 3 of the Brisbane City Plan 2000:

"development for a utility installation, being an undertaking for the supply of water, hydraulic power, electricity or gas, of any development required for the purpose of that undertaking by way of:

- *development of any description at or below the surface of the ground - the installation of any plant inside a building or the installation or erection within the*

[redacted] [redacted]

Cassandra Sun Witness

premises of a generating station of any plant or other structures or erections required in connection with the station

- *the installation or erection of an electricity distribution or supply network (and any components of such a network) which operates at voltages up to and including 33 kilovolts, excluding new substations*
- *the installation or erection of a new electrical transmission line on land on which such a line has already been erected and which is identified as a future line on Plan No: A4–H–303666— Powerlink Electricity Network and Plan No: 7775–A4/A— Energex 110kV Feeder Network*
- *the augmentation of a Powerlink substation identified on Plan No: A4–H–303666— Powerlink Electricity Network and of any Energex substation existing as at the date this clause took effect*
- *the placing of pipes above the surface of the ground for the supply of water, the installation in a water distribution system of booster stations and meter or switchgear houses*
- *any other development not specifically referred to above except where it involves erection of new buildings or reconstruction or alteration of existing buildings that would materially affect their design or external appearance."*

18. I understand that for the reasons above, works by Energex are generally a matter between the utility provider and the developer.

[redacted]

Cassandra Sun

[redacted]

Witness

I make this statement conscientiously believing the same to be true, and by virtue of the provisions of the Oaths Act 1867 (Qld).

Dated 14 September 2011

Signed and declared by Cassandra Sun at
Brisbane in the State of Queensland
this 14 day of September 2011
Before me:

[redacted]

Signature of person before whom the declaration is made

[redacted]

Signature of declarant

Matthew Glen Edwards - Solicitor.

Full name and qualification of person before whom the declaration is made

Statement of Cassandra Sun dated 14 September 2011		
	CS-1	Requirement to provide statement
	CS-2	Decision notice
	CS-3	Brisbane City Council – Subdivision and Development Guidelines – Part B Infrastructure Elements – Chapter 7 Public Utilities

Note

The following attachments were referred to by the witness while giving evidence at the Commission's hearing on 27 September 2011.

Brisbane City Council
ABN 72 002 765 795

Development Assessment Team Central
Development & Regulatory Services
Customer & Community Services Division
Level 12 69 Ann Street
Brisbane Qld 4000
GPO Box 1434
Brisbane Qld 4001

Facsimile [redacted]

Application No: DRS/USE/H02-814927
Project No: DRS/PRO/P02-92126
Contact: Ashley Lane
Telephone: [redacted]

29 OCT 2002

Devine Limited
C/- Mr Chris Buckley
Buckley Vann Town Planning
PO Box 205
FORTITUDE VALLEY QLD 4006

Dear Chris,

Decision Notice under section 3.5.15 of the *Integrated Planning Act 1997:* Development Application for Centre Activities (Multi-Unit Dwelling, Shop, Office, Restaurant & Memorabilia Display) on land at 67-89 Charlotte St & 104 Albert St, Brisbane Qld 4000 and described as Lots 8-9 on RP88593 and Lot 2 on RP90338, Parish of Nth Brisbane.

I am pleased to inform you that your application has been *approved* 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:

Material Change of Use - Development Permit

Should you want to discuss the approval, please do not hesitate to contact me on [redacted]

Yours faithfully,

[redacted]

Ashley Lane
Assessment Manager
Development Assessment Team Central
Development and Regulatory Services
Customer and Community Services

Decision Notice Details
(Section 3.5.15 of the Integrated Planning Act 1997)

INTRODUCTION:
The decision to approve the application subject to conditions was made by Full Council on:

APPLICANT DETAILS:
Devine Limited
C/- Buckley Vann Town Planning
PO Box 205
FORTITUDE VALLEY QLD 4006

29 OCT 2002

SITE:
Address of Site:
67-89 Charlotte St & 104 Albert St, Brisbane Qld 4000
Real Property Description:
Lots 8-9 on RP88593 and Lot 2 on RP90338, Parish of Nth Brisbane
Area Classification:
Multi Purpose Centre 1 - City Centre
Name of Owner:
Stadiums Pty Ltd
Name of Ward:
Central

APPLICATION:
Aspects of development and development approvals sought:
Material Change of Use - Development Permit
Description of Proposal:
Centre Activities (Multi-Unit Dwelling, Shop, Office, Restaurant & Memorabilia Display)
Council File Reference:
DRS/USE/H02-814927
Lodgement Date:
29 April 2002

TYPE OF APPROVAL:
Material Change of Use - Development Permit

FURTHER DEVELOPMENT PERMITS:
Development permits(s) for the following are required before the development can be carried out:

- Building Work

CODES RELATING TO SELF ASSESSABLE DEVELOPMENT:
Light Nuisance Code

REFERRAL AGENCIES:
The following were Advice Agencies for this application:

Department of Main Roads,
Metropolitan District
GPO BOX 70
SPRING HILL QLD 4004

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

SUBMISSIONS
There were no submitters for this application.

BRISBANE CITY COUNCIL'S DEVELOPMENT APPROVAL PACKAGE

DEVELOPMENT APPLICATION DETAILS

This Development Approval package relates to the development application detailed below:

Address of site:	67-89 CHARLOTTE ST & 104 ALBERT ST, BRISBANE QLD 4000
Real property description of site:	RP88593/L8 NTH BRISBANE RP88593/L9 NTH BRISBANE RP90338/L2 NTH BRISBANE
Aspects of development and type of approval:	1. Material Change Of Use (Development Permit) - Centre Activities
Description of proposal:	Centre Activities (Multi-Unit Dwelling, Shop, Office, Restaurant & Memorabilia Display)
Purpose under the Town Plan:	Centre Activities (Multi-Unit Dwelling, Shop, Office, Restaurant & Memorabilia Display)
Council File Reference:	DRS/USE/H02-814927
Printed on:	30th of October, 2002

PROJECT TEAM

The assessment of this application has been undertaken by:

ASHLEY LANE
ASSESSMENT MANAGER
Development Assessment Team CENTRAL
Development and Regulatory Services
Phone: [redacted]

DANNY KEENAN
Architect
Development Assessment Team CENTRAL
Development and Regulatory Services
Phone: [redacted]

JOS RUHLAND
Engineering Officer
Development Assessment Team CENTRAL
Development and Regulatory Services
Phone: [redacted]

DARRELL CZISLOWSKI
Engineering Officer
Development Assessment Team CENTRAL
Development and Regulatory Services
Phone: [redacted]

GREG BERRY
Pollution Officer
Development Assessment Team SOUTH
Development and Regulatory Services
Phone: [redacted]

PHIL EASTGATE
Engineering Officer
Development Assessment Team CENTRAL
Development and Regulatory Services
Phone: [redacted]

CHAD RYAN
Landscape Architect
Development Assessment Team WEST
Development and Regulatory Services
Phone: [redacted]

APPROVED DRAWINGS AND DOCUMENTS

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

Drawing or Document	Number	Plan Date
Elevation Charlotte Street / Streetscape	DA-01	11-OCT-2002 (Received)
Elevation Albert Street / Streetscape	DA-02	11-OCT-2002 (Received)
Albert Street Elevation	DA-03	08-OCT-2002 (Received)
Charlotte Street Elevation	DA-04	08-OCT-2002 (Received)
South-Eastern Elevation	DA-05	08-OCT-2002 (Received)
South-Western Elevation	DA-06	08-OCT-2002 (Received)
Basement Level 5 - Preliminary	DA-07	11-OCT-2002 (Received)
Basement Level 4 - Preliminary	DA-08	11-OCT-2002 (Received)
Basement Level 3 - Preliminary	DA-09	11-OCT-2002 (Received)
Basement Level 2 - Preliminary	DA-10	11-OCT-2002 (Received)
Basement Level 1 - Preliminary	DA-11	11-OCT-2002 (Received)
Level Ground - Preliminary	DA-12	11-OCT-2002 (Received)
Level 1 - Preliminary	DA-13	11-OCT-2002 (Received)
Level 2 - Preliminary	DA-14	11-OCT-2002 (Received)
Level 3 - Preliminary	DA-15	11-OCT-2002 (Received)
Level 4 - Podium - Preliminary	DA-16	16-OCT-2002 (Received)
Level 5 - Preliminary	DA-17	11-OCT-2002 (Received)
Level 6-29 - Preliminary	DA-18	11-OCT-2002 (Received)
Level 30 - Preliminary	DA-19	11-OCT-2002 (Received)
Level 31 - Preliminary	DA-20	08-OCT-2002 (Received)
Level 32 - Preliminary	DA-21	08-OCT-2002 (Received)
Level 33 - Preliminary	DA-22	08-OCT-2002 (Received)
Level 34 & 36 - Preliminary	DA-23	08-OCT-2002 (Received)
Level 35 & 37 - Preliminary	DA-24	08-OCT-2002 (Received)
Level 38 - Preliminary	DA-25	08-OCT-2002 (Received)
Level 39 - Preliminary	DA-26	08-OCT-2002 (Received)
Level 40 - Preliminary	DA-27	08-OCT-2002 (Received)
Level 41 - Preliminary	DA-28	08-OCT-2002 (Received)
Level 42 - Preliminary	DA-29	08-OCT-2002 (Received)
Level 43 - Preliminary	DA-30	08-OCT-2002 (Received)
Level 44 - Preliminary	DA-31	08-OCT-2002 (Received)
Roof Plan	DA-32	08-OCT-2002 (Received)
Acoustic Report	S307.0	23-AUG-2002 (Received)
Wind Effect Statement - Draft	745679_TRP_000980_AA	29-APR-2002 (Received)
Perspective	DA-33	16-OCT-2002 (Received)
External Materials Board	DA-34	16-OCT-2002 (Received)

ADVICE

Please see the attached document for any advices.

DEVELOPMENT APPROVAL CONDITIONS

Section of Approval to Which These Conditions Relate: **1. Material Change Of Use (Development Permit)**

Section Name: **Centre Activities**

GENERAL/PLANNING REQUIREMENTS

CONDITIONS	CONDITION TIMING
1) Carry out the approved development generally in accordance with the approved drawing(s) and/or document(s). *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.*	While development is occurring on site and then to be maintained
2) Complete all building work associated with this development approval, including work required by any of the following conditions. Such building work is to be carried out generally in accordance with the approved plans, drawing(s), and/or documents and, where the building work is assessable development, in accordance with a current development permit. *GUIDELINE* *This condition is imposed to ensure all building work associated with the use are in place before the use commences. It is not appropriate that the site be used without such work being completed. Please note that the work referred to in this condition involves operational work and may therefore constitute 'assessable development'. The Council informs you there fore that this condition does not authorise assessable development to occur and a development permit may therefore be necessary. Please refer to the Council's information sheets. For any enquiries about this condition, please contact the Assessment Manager.*	Prior to the commencement of the use
3) Incorporate into the development the findings and recommendations of the "Wind Effect Statement" prepared by Vipac and dated 12 April 2002 (Report Reference No. 745679_TRP_000980_AA). *GUIDELINE* *This condition is imposed to protect the comfort of pedestrian areas particularly footpaths and open plaza areas from potential arising effects of wind tunnelling and updraught/down draught impacts from the construction of tower development.*	Prior to the commencement of the use

4) Maintain the approved development (including landscaping, parking, driveways and other external spaces) in accordance with the approved drawing(s) and/or documents, and any relevant Council engineering or other approval required by the conditions. *GUIDELINE* *This condition restricts changes that can be made to the approved development. Approved plans and documents are stamped PLANS and DOCUMENTS referred to in the APPROVAL and are dated to reflect the date of determination of the application by the Council's delegate. The extent to which plans can be modified is constrained by the definition of 'minor change' in schedule 10 and the requirements of section 3.5.24 of the "Integrated Planning Act 1997". It will be necessary to make a new application if the change is not a minor change. For any enquires about this condition, please contact the Assessment Manager.*	To be maintained
5) Provide a written statement from a person who is qualified in using a recognisied energy rating system, such as BERS (Brisbane Energy Rating System), Nathers or other recognised system, that the building(s) comply with the *"Brisbane City Plan 2000 - Energy Efficiency Code"*. *GUIDELINE* *This condition is imposed on all building work for offices, hotels and shops with a GFA over 2500m2 and for all new residential guildings except a house.*	Prior to certification of Building Work
6) Submit to the Delegate, Development Assessment documentary evidence from the Civil Aviation Safety Authority (CASA) stating that the proposed building satisfies their requirements with regard to air transport operations.	Prior to site works/building works commencing
7) Car Parking: (a) The car parking within the building is to be maintained exclusively for the ancillary use of the development. The parking is not to be made available to the general public and there is to be no advertising signage erected on or in the vicinity of the site advertising the availability of car parking to the general public. (b) Provide a by-law in the Community Management Statement prohibiting any use, inlcuding by lease or separate sale of any residential car parking space for any use other than for residents and their bona fide visitors.	Prior to the commencement of the use & then to be maintained
8) Submit a separate application to Brisbane Airport in relation to the use of any temporary structures (eg. cranes) in the construction of the building, if those structures would exceed a height of 152.5 metres AHD.	Prior to the commencement of the use & then to be maintained
9) Install and maintain a suitable system of lighting, to operate from dusk to dawn, within all areas where the public will be given access. *GUIDELINE* *This condition is imposed to ensure on-going safe public access to designated public pedestrian spaces within the development*	Prior to the commencement of the use & then to be maintained

10) The areas shown as "Storage Areas" on the approved plans of layout (DA-07, DA-08, DA-09, DA-10, DA-11, DA-13, DA-14, DA-15, received 11/10/2002) are to be used for storage purposes only and are not to be used for car parking or vehicular access or manoeuvring.	Prior to the commencement of the use & then to be maintained
11) Install and maintain suitable screening to all air conditioning, lift motor rooms, plant and service facilities located at the top of or on the external face of the building with materials that are consistent with materials used elsewhere on the facade of the building. There are to be no individual external air conditioning units. *GUIDELINE* *This condition is imposed to protect and enhance the appearance of development within the area. For any enquiries about this condition, please contact the Assessment Manager.*	Prior to the commencement of the use & then to be maintained
12) Treatment of balconies and terraces. (a) All balconies and terraces shown on the approved drawings and documents, are to remain unenclosed with no shutters, glazing, louvres or similar permanent structures other than those clearly depicted on the approved drawings. (b) Any Community Management Statement is to contain a by-law which reflects the requirements of the previous part of this condition. *GUIDELINE* *This condition is imposed to minimise bulk and protect the appearance of the development within the area. For any enquiries about this condition, please contact the Assessment Manager, Development Assessment.*	Prior to the commencement of the use & then to be maintained
13) Submit to the Delegate, Development Assessment documentary evidence that: (a) The level of light reflectivity from the approved development will not exceed 20 percent; and (b) The level of solar (heat) reflectivity from the approved development will not exceed 20 percent. *GUIDELINE* *This condition is imposed to protect the amenity and appearance of the surrounding area from adverse impacts such as heat transmission and light reflectivity arising from the use of excessively reflective glass in building facades.*	Prior to the commencement of the use & then to be maintained
14) External details: (a) Submit for the approval of the Team Leader, Development Assessment Team Central, further details of the building, facade treatment and external materials, colours and finishes generally consistent with the approved plans and External Materials Board (DA-34, received 16 October 2002). (b) Implement the above detailed design treatments.	As indicated Prior to building work commencing Prior to the commencement of the use & then to be maintained

15) Submit a detailed and coloured model at a scale of 1:500 for incorporation into the Council's Central City Model, to the Delegate, Development Assessment.	Prior to building work commencing
16) Install a lighting system to the underside of the proposed awning over the footpath in accordance with the following: (a) A lighting system is to be provided to public footpaths covered by permanent awnings to a minimum of 20 lux (horizontal plane) at footpath level; (b) So that the lighting system meets the requirement of the City Plan 2000 - *Awning Lighting Code*; (c) So that the lighting system adequately illuminates any pedestrian way covered by the subject awning from dusk until dawn; and (d) Is to be maintained by the owner of the building in a safe and good working order. *GUIDELINE* *This condition is intended to ensure that pedestrians can move safely in the front of the site. For any enquiries about this condition, please contact the City Lighting Unit, Local Asset Services Central District (pH 3403 0307).*	Prior to building work commencing Prior to the commencement of the use To be maintained
17) Supply, install and maintain within an area to be approved by the Delegate, Development Assessment, artworks (including but not necessarily limited to, sculptures, ceramic works, mosaics and wall reliefs) by a recognised artist or crafts person. (a) Plan for artworks or sculptures that meet the following criteria: i. Constitute not less than 0.25 per centum of the total estimated project cost as certified by a recognised Quantity Surveyor; ii. Be suitable for the setting in terms of design, choice of materials, durability and resistance to vandalism; and, iii. Be satisfactory to the owner/developer of the subject site and the Delegate, Development Assessment; (b) Enter into a contractual agreement (to be endorsed by the Delegate, Development Assessment) with a recognised artist or crafts person to supply and install the artworks required by the above; and (c) Install the endorsed artworks or sculptures.	Prior to the commencement of the use Within six (6) months of issue of the Development Permit for building works To be maintained

MONETARY CONTRIBUTIONS & SECURITIES

CONDITIONS	CONDITION TIMING
18) Pay to Council any outstanding charges or expenses levied by the Council over the subject land. *GUIDELINE* *This condition is imposed to ensure that there are no outstanding charges existing over the subject site, including outstanding rates. If there are out standing monies, they must be paid prior to commencement of the use.*	Prior to the commencement of the use

19) Pay to Council a monetary contribution towards the cost of sewerage headworks at the rate prevailing at the time when payment is made. The contribution is currently calculated at $2731 per hectare based on the subject area of 0.2747 hectare/s, The amount payable is currently assessed at $750. • Treatment Head works component: $750 • System Head works component: $NIL • Total contribution: $750 *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. For any enquiries about this condition, please contact the Engineering Officer.*	Prior to the commencement of the use
20) Pay to Council a monetary contribution towards the cost of water supply head works at the rate prevailing at the time when payment is made. The contribution is currently calculated at $7656 per hectare based on the subject area of 0.2747 hectare(s), The amount payable is currently assessed at $2103. • Treatment Head works component: $2103 • Distribution Head works component: $NIL • Total contribution: $2103 *GUIDELINE* *This condition is imposed to require the payment of a proportional contribution towards a satisfactory water supply treatment system to the site. For any enquiries about this condition, please contact the Engineering Officer.*	Prior to the commencement of the use
21) Pay to Council a monetary contribution towards the provision of parkland at the rate applicable at the time of payment. The amount is currently calculated at $18.00 per square metre of gross floor area for residential and $2.70 per square metre for commercial. The required contribution currently totals $808475.40.	Prior to the commencement of the use

ECOLOGY

CONDITIONS	CONDITION TIMING
22) Prepare and landscape the site in accordance with a Landscape Management, Site Works and Planting Plan. (a) Submit and receive approval by the Delegate, Development Assessment for a Landscape Management and Site works Plan for all on-site landscape works identified on the approved plan(s) of layout. The plan is to be prepared by a suitably qualified and experienced Landscape Architect/Designer, and include at least the following: I. A plan documenting the "Extent of Works" and supporting documentation which includes: • The extent of soft and hard landscape, with clear indication of landscaped areas in natural ground and those in raised planters; • Finished levels to external works particularly in critical areas, including top and toe of retaining structures. All external areas to be positively drained to avoid ponding and flooding; • Underground and overhead services; • Typical details of critical design elements. These are to include sections showing depth of topsoil and drainage for proposed planters, the dimensions of which are to be adequate to accomodate spreading trees and/or buffer planting as per the approved plans; • Specification notes on mulching and soil preparation; and • Provision of a reticulated irrigation system to all common areas within the development. II. A Planting Plan and supporting documentation which indicates: • A satisfactory combination of trees, shrubs and groundcovers to all raised planters as appropriate/indicated in landscape details on approved plans to reduce the visual and climatic impact on blank walls; • Screen planting to utility spaces. III. A planting schedule listing proposed plants by botanical names, numbers and size at time of planting.	Prior to site works commencing
(b) Carry out the landscaping and associated works documented in the approved Landscape Management and Site works Plan in accordance with standard Best Trade Practice.	Prior to the commencement of the use & then to be maintained
(c) Notify the Delegate, Licensing and Compliance to arrange for an on-site inspection of the completed landscape works. *GUIDELINE* *This condition is imposed to ensure that the external areas of the proposed development make a positive contribution to the local character of the area and enhance on-site amenity. For further information about the details to be submitted with such an application, please refer to Council's information sheets for landscaping and street tree planting.*	Prior to the commencement of the use

POLLUTION

CONDITIONS	CONDITION TIMING
23) Air conditioning must be provided to all noise affected rooms as determined in the acoustic report.	Prior to the commencement of the use

24) Submit to the Team Leader, Development Assessment, certification that emissions of noise do not exceed the levels specified in this approval. Certification is to be in accordance with (*Brisbane City Council Certification Guidelines*). Certification is to include the results of noise monitoring conducted in accordance with *Australian Standard 1055 - Acoustics Description and Measurement of Environmental Noise* as follows: Monitoring Location: Any noise sensitive property boundary Parameters: L_{A90} Time: 1000-0700 Monitoring Period: Min 3x15min Noise Source: All Mechanical Plant *GUIDELINE* *This condition is imposed to ensure that noise emissions comply with the conditions of the development permit and do not cause environmental harm or nuisance.*	Prior to the commencement of the use
25) The emitted A-weighted sound pressure level equalled or exceeded for 90 percent of the time, measured over a period of at least 15 minutes, at the boundary of any sensitive use must not exceed: (a) Where the measured background A-weighted sound pressure level equalled or exceeded for 90 percent of the time exceeds the Estimated Average Background Sound Pressure Level specified for the relevant time period for Noise Area Category R5 in Appendix A of AS1055.2 – the background A-weighted sound pressure level equalled or exceeded for 90 percent of the time measured over a period of at least 15 minutes by more than 0dB(A). O (b) Where the measured background A-weighted sound pressure level equalled or exceeded for 90 percent of the time equals or is less than the Estimated Average Background Sound Pressure Level specified for the relevant time period for Noise Area Category R5 in Appendix A of AS1055.2 – Monday to Saturday: 0700 to 1800 60dB(A); 1800 to 2200 55dB(A); 2200 to 0700 50dB(A) Sunday and Public Holidays: 0900 to 1800 60dB(A); 1800 to 2200 55dB(A); 2200 to 0900 50dB(A) *GUIDELINE* *This condition is imposed to prevent a progressive increase in background noise levels due to noise emitting activities.*	Prior to the commencement of the use

26) Design and construct all proposed residential units affected by road traffic in accordance with recommended design sound levels. (a) Design all proposed residential units affected by road traffic to achieve the relevant maximum recommended design sound levels specified in Australian Standard AS2107 *"Acoustics - Recommended Design Sound Levels and Reverberation Times for Building Interiors"* using the methods set out in Australian Standard AS3671- *"Acoustics - Road Traffic Noise Intrusion Building Siting and Construction"*. (b) Construct all proposed residential units affected by road traffic in accordance with the approved design that achieves the relevant maximum recommended design sound levels specified in Australian Standard AS2107 *"Acoustics - Recommended Design Sound Levels and Reverberation Times for Building Interiors"* using the methods set out in Australian Standard AS3671- *"Acoustics - Road Traffic Noise Intrusion Building Siting and Construction"*. (c) Submit to the Delegate, Licensing and Compliance, Development and Regulatory Services, certification from an independent and appropriately qualified acoustic consultant which demonstrates that all necessary acoustic treatments referred to in the acoustic consultant's report prepared by Savery & Associates Pty Ltd, Report No. S307.0 Rev 1 and dated 31 July 2002, have been incorporated into the building envelope of the proposed residential units to achieve the relevant maximum recommended design sound level specified in the above Australian Standard. *GUIDELINE* *This condition is imposed where the achievement of acceptable noise levels is dependent on noise attenuation measures being implemented in the design and construction of the development.*	Prior to the commencement of the use & then to be maintained
27) Minimise on-site erosion and the release of sediment or sediment-laden stormwater from the site at all times. (a) Prepare an Erosion and Sediment Control (ESC) Management Plan for the site in accordance with Council's *Best Practice Guidelines for the Control of Stormwater Pollution from Building Sites* and accompanying fact sheets, Brisbane City Council and Gold Coast City Council, 2000 (or later version); (b) Implement and maintain on-site The ESC Management Plan for the duration of the operational or building works, and until exposed soil areas are permanently stabilised (e.g. turfed, concreted). The documented ESC Management Plan must be available on-site for inspection by Council Officers during these works. *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 a copy of the ESC Management Plan is required on-site. Non-compliance may result in prosecution under Environmental Legislation. For any enquiries regarding this condition please contact the Erosion and Sediment Control Officer, Development and Regulatory Services on 3403 4735.*	Prior to site works commencing (ie. any land-disturbing development) While site works (eg. operational works, building works) are occurring and until exposed soil areas are permanently stabilised (eg. turfed, concreted)

28) Construct a car wash bay. The car wash bay shall be provided with a tap, paved with an impervious material, graded and drained to sewer subject to the requirements and recommendations of Brisbane Water; *GUIDELINE* *This condition is imposed where it is intended to clean refuse containers on site.*	Prior to the commencement of the use & then to be maintained
29) Construct an on-site refuse bin washing area for food outlet refuse bins. The area must be provided with a tap, paved with an impervious material, graded and drained to sewer subject to a trade waste agreement. *GUIDELINE* *This condition is imposed where it is intended to clean refuse containers on site.*	Prior to the commencement of the use & then to be maintained
30) Wastewater from the basement carpark, bin wash bay and vehicle wash bay must be drained to sewer in accordance with the specifications and requirements of Brisbane Water. *GUIDELINE* *This condition is imposed to ensure contaminated water is contained and discharged in an approved manner.*	To be maintained

ENGINEERING

CONDITIONS	CONDITION TIMING
31) Undertake the works on the site in accordance with an earthworks plan approved by the Engineering Delegate, Major Projects. (a) Submit an earthworks plan, prepared by a Registered Professional Engineer of Queensland (RPEQ), and in accordance with Council's *"Subdivision and Development Guidelines"* demonstrating how the development will comply with this requirement and the following: • The location of any cut and/or fill; • The quantity of fill to be deposited and finished fill levels; • The type of fill to be used and the manner in which it is to be compacted; • Details of any proposed access routes to the site which are intended to be used to transport fill to the site; • Engineering details of any haul roads to be built to facilitate the placement of fill on the site; • Maintenance of access roads to and from the site such that they remain free of all fill material and are cleaned as necessary; • Preservation of all drainage structures from the effects of structural loading generated by the earthworks; • Protection of adjoining properties and roads from ponding or nuisance from stormwater; • That all vehicles exiting from the site will be washed down, cleaned and treated so as to prevent material being tracked or deposited on public roads. Obtain approval from the Engineering Delegate, Technical Support Group for the Earthworks Plan. (b) All fill material placed on the site comprising only natural earth and rock and is to be free of contaminants (as defined by section 11 of the Environmental Protection Act 1994), noxious, hazardous, deleterious and organic materials. The fill material is be free draining. No demolition material is to be used. The fill shall be compacted in layers not exceeding 300 mm and to a minimum 95% dry density ratio using standard compaction and in accordance with AS 1289.29. *GUIDELINE* *This condition is imposed for applications when significant earthworks are proposed in conjunction with a development proposal. For any enquiries about this condition, please contact the Engineering Delegate, Major Projects, Development and Regulatory Services.*	Prior to site works/building works commencing
32) Submit and receive approval by the Engineering Delegate, Licensing and Compliance, Development and Regulatory Services for the following details of the construction phase of the approved development : (a) How materials are to be loaded/unloaded; (b) The location of materials, structures, plant and equipment to be stored or placed on the construction site; (c) Anticipated programming; and (d) Hours of construction. *GUIDELINE* *This condition is imposed when the construction activities need to be limited to manage the impact on the surrounding area., This condition is intended to apply throughout the period of site preparation to the completion of the development.*	Prior to site works commencing

33) Dedicate as road the following requirements: (a) A 3 metre by 3 metre by single chord truncation at the corner of Albert Street and Charlotte Street; *GUIDELINE* *This condition is imposed on development sites where new roads are required and/or where safety and capacity of existing and new roads are to be maintained. This requirement will necessitate the preparation of survey plan. A copy of the survey plan together with a written request for the preparation of legal documentation is to be 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 and Regulatory Services [redacted]. For any other enquiries about this condition, please contact the Engineering Officer, Development Assessment, Development and Regulatory Services.*	Prior to the commencement of the use

34) Construct and delineate, relocate modify or sign (as required) the following requirements as indicated on the approved plan(s) of layout: (a) Construct a 6.875 metre wide type B1 permanent vehicular crossover to the Charlotte Street frontage(s) of the site in accordance with Standard Drawing UMS 221. Apart from a short level transition to the channel, the crossover surface is to be flush with the adjacent footpath surface and therefore kerb ramps are not required; (b) Construct a pavement of minimum Type A standard and surface with an impervious material (including associated drainage) to the area on which motor vehicles will be driven and/or parked. [Construction of such pavement is to be certified by a Registered Professional Engineer of Queensland (RPEQ)]; (c) The driveways at grades shown on the approved plans and documents (or if not shown at grades not greater than those set out in *"Brisbane City Plan 2000 - Transport, Access, Parking and Servicing Planning Policy"*); (d) Manoeuvring on site for 1 Large Rigid Vehicle, 1 Van and for the loading and unloading of the vehicle(s); (e) Parking on the site for 381 cars (353 resident, 22 visitor, 6 commercial) and for the loading and unloading of vehicles within the site; (f) 1 of the above parking spaces are to be provided for people with disabilities; (g) A minimum 4.5 metres height clearance to the service vehicle area, 6.5 metres to the refuse truck operating area, 2.3 metres height clearance to all undercover car parking areas other than at spaces for people with disabilities, which require 2.5 metres and under the 400mm diameter stormwater pipe on Basement 1, which requires 2.2 metres (Note, The minimumn clear height shall be measured to the lowest appurtenance on the ceiling - ie. fire sprinklers, services, lighting fixtures, signs etc.); (h) A height clearance sign located at the entrance(s) to the building and to any subsequent reductions in height; (i) Unrestricted access for bona fide visitors to any visitor bay; (j) A directional visitor parking sign at the Charlotte Street frontage of the site adjacent to or clearly visible from the vehicle entrance to the site; (k) An appropriate area for the storage and collection of refuse, including recyclables, in a position which is accessible to service vehicles on the site; *GUIDELINE* *The "Brisbane City Plan 2000 - Transport, Access, Parking and Servicing Planning Policy" requires adequate on-site provision of parking, servicing and manoeuvring areas. This condition specifies detailed design requirements as indicated on the approved drawings and documents to which the approval relates. The assessment of the approved plans of layout has adequately considered these requirements.*	Prior to the commencement of the use & then to be maintained

35) Run off from roof and developed surface areas of the site, and any run off onto the site from adjacent areas, are to be collected internally and piped in accordance with Council's "Subdivision and Development Guidelines" to a lawful point of discharge. (a) Adjoining properties and roads are to be protected from ponding or nuisance from stormwater as a result of the proposed works; (b) Rectify all damage resulting from the ponding of stormwater or nuisance from discharge of stormwater from the site to adjacent properties. *GUIDELINE* *The purpose of this condition is to ensure that stormwater run off from the site and adjacent properties will be handled adequately. Disposal by gravity pipeline is required if practical. Use of pumps for disposal of stormwater may be approved only if the applicant can show evidence to Council of having taken all reasonable steps to obtain written permission from adjacent property owners for construction of a gravity pipeline, and of this being unobtainable. For any enquiries about this condition, please contact the Engineering Officer.*	Prior to undertaking the works While site/operational works/building works is occurring
36) Adjoining properties and roads are to be protected from ponding or nuisance from stormwater runoff. (a) Adjoining properties and roads are to be protected from ponding or nuisance from stormwater as a result of the proposed works; (b) Rectify all damage resulting from the ponding of stormwater or nuisance from discharge of stormwater from the site to adjacent properties. *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 approved by the Engineering Delegate, Major Projects, Development and Regulatory Services. For any enquiries about this condition, please contact the Engineering Officer.*	Prior to the commencement of the use While site/operational works/building works is occurring
37) Remove any redundant drainage outlets from the kerb and channel including any associated pipe work across the footway and reinstate the kerb and channel and the footway area in accordance with Council's *"Subdivision and Development Guidelines"*. *GUIDELINE* *This condition is imposed to ensure that obsolete drainage outlets are removed from the kerb and footway area. For any enquiries about this condition, please contact the Engineering Delegate, Licensing and Compliance, Development and Regulatory Services.*	Prior to the commencement of the use

38) Provide a public lighting system in accordance with an approved street lighting design plan and Council's "Street Lighting Design Guidelines". (a) Lodge street lighting design plans showing the proposed public lighting system and obtain approval from the City Lighting Unit, Local Asset Services Central District; (b) Enter into an agreement with an electricity supplier to provide a public lighting system in accordance with the above approved lighting design plans; and (c) Forward a copy of the agreement to the Engineering Delegate, Licensing and Compliance Team Central, Development and Regulatory Services. *GUIDELINE* *This condition is imposed when a proposed development requires the provision of public lighting facilities in accordance with the "Street Lighting Design Guidelines". Please refer to the Council's information sheet on lodging detailed design applications. For any enquiries about this condition, please contact the City Lighting Unit (ph [redacted] regarding electricity reticulation plans or Energex (pH: 131 253) regarding electricity supply.*	Prior to the commencement of the use Prior to undertaking the works
39) 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. This includes the relocation of any fire hydrants and valves from within the limits of the development's vehicular footway crossings if applicable. (a) Complete the works required by this condition; (b) Submit "As Constructed" plans including an asset register (if required), approved by a registered Professional Engineer Queensland (RPEQ) (in accordance with Council's *"Subdivision and Development Guidelines"* and "Water and Sewerage Reticulation Standards") showing the works required by this condition. *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. Applicants should liaise with the appropriate service authorities. For any enquiries about this condition, please contact the Engineering Officer (regarding advise on traffic signal conduits, stormwater, water supply and sewerage mains etc.) or the relevant public utility authorities (for advice on other services).*	Prior to the commencement of the use
40) Provide underground telecommunication services to the development. (a) Enter into an agreement with a telecommunication company to provide underground telecommunication services within and adjacent to the proposed development; and (b) Forward a copy of the agreement to the Engineering Delegate, Licensing and Compliance Team Central. *GUIDELINE* *This condition is imposed to ensure that the provision of essential communication services are provided to the development. For any enquiries about this condition, please contact relevant service carriers regarding communications or Telstra (pH 132 200).*	Prior to the commencement of the use Prior to undertaking the works

41) Provide underground electricity services in accordance with an approved electricity reticulation plan and the Council's Guidelines for the "Provision of Underground Electricity in New Subdivisions". (a) Lodge electricity reticulation plans showing the proposed electricity services and obtain approval from the City Lighting Unit, Local Asset Services Central District; (b) Enter into an agreement with an electricity supplier to provide underground electricity services in accordance with the above approved electricity reticulation plans; and (c) Forward a copy of the agreement to the Engineering Delegate, Licensing and Compliance Team Central, Development and Regulatory Services. *GUIDELINE* *This condition is imposed when a proposed development would require the provision of electricity services in accordance with Council's "Guidelines for the Provision of Underground Electricity". Please refer to the Council's information sheet on lodging detailed design applications. For any enquiries about this condition, please contact the City Lighting Unit ([redacted] regarding electricity reticulation plans or Energex (pH: 131 253) regarding electricity supply.*	Prior to the commencement of the use Prior to undertaking the works
42) Close all existing redundant vehicular crossing(s) not shown on the approved plans that are associated with the development, and reinstate the kerb and channel, road pavement, footways and footpaths, in accordance with Council's *"Subdivision and Development Guidelines".* *GUIDELINE* *This condition is imposed when existing crossovers become redundant as a result of the new development.*	Prior to the commencement of the use

43) Construct particular footpath treatment works along the full length of the site frontage to Albert Street and Charlotte Street. These works are to be generally in accordance with the Council's "Centres Detail Design Manual" and include complete removal of the existing surface and the reconstruction with paving including the installation of associated street furniture. (a) Submit detail design plans and obtain approval from the Landscape Architect, Development Assessment Team Central, for required works to be undertaken within the Albert Street and Charlotte Street footpath reserves. The works are to be constructed to a standard and of materials consistant with the requirements of Council's *Centres Detail Design Manual.* The plans are to indicate the following: • Resurfacing the entire footpath reserve with flagstone paving in accordance with the *Centres Detail Design Manual.* Include tactile paving across full width of footpath adjacent vehicle crossovers in accordance with *AS1428.4-Design for Access and Mobility*; • Details of the interface of the footpath treatment and the proposed paving within the site boundary; • Identification, retention and protection of existing Crows Ash, *Flindersia australis,* located within the footpath reserve along the Albert Street alignment; • Provision of six street trees along the Charlotte Street alignment (Species selection at discretion of Landscape Architect Team Central) and provision of additional street trees along the Albert Street alignment (Crow's Ash, *Flindersia australis*), as indicated on the approved Level Ground - Preliminary Plan. The trees are to be minimumum 3.5 metres height at time of planting, installed in tree guards and tree grates with dimensions of 1.2 metres by 1.6 metres and with adequate subsoil preparation. • Street furniture to enhance footpath amenity. Such furniture is to include a rubbish bin and a bench seat per frontage, and rate 3 pedestrian amenity lighting in accordance with *AS/NZS1158.3.1 Pedestrian Area (Category P) Lighting.* • The construction of any new awnings is to comply with *Section 11.2 Awnings* in the *Centres Detail Design Manual.* (b) Construct the works to a standard that will be satisfactory to be accepted "on" and "off" maintenance" as a Council asset, by the Engineering Delegate, Licensing and Compliance Team Central, Development and Regulatory Services; and (c) Submit "As Constructed" plans including an asset register, approved by a Registered Professional Engineer of Queensland (RPEQ) (to a standard specified in Council's *"Subdivision and Development Guidelines"*) certifying that the works have been completed in accordance with the approved design and any approved modifications. *GUIDELINE* *This condition is imposed where there are footpath treatments works to be undertaken to enhance the street frontage adjacent to the subject site.*	Prior to the commencement of the use Prior to undertaking the works
44) 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 in association with the approved development. *GUIDELINE* *The intention of this condition is to ensure that any works undertaken as part of the approved development do not damage Council assets or leave Council assets in an unacceptable and unsightly manner. For any enquiries about this condition please contact the Engineering Delegate, Licensing and Compliance.*	Prior to the commencement of the use

45) Be responsible for internal (on-site) collection of refuse and recyclables from the development. (a) Enter into an agreement with Council's City Waste Services to provide a bulk bin collection service to the development; (b) The applicant/owner must indemnify Council and its agents in respect of any damage to the pavement and other driving surfaces; (c) The applicant/owner shall notify future owners/body corporate that the development has been approved on the basis that an indemnity is provided for refuse collection vehicles to enter the property. (d) Forwarded a copy of the written agreement with City Waste Services to the Delegate, Licensing and Compliance Team Central, Development and Regulatory Services. (e) Forwarded a copy of the written undertaking required to advise future owners/body corporate to the Delegate, Licensing and Compliance Team Central, Development and Regulatory Services. *GUIDELINE* *This condition is imposed to ensure that adequate arrangements are made for the collection of refuse and recyclables from the approved development. For any enquiries about this condition, please contact the Co-Ordinator of City Waste Contract Services, Mr Mal Brooks* [redacted]	Prior to the commencement of the use To be maintained Prior to the commencement of the use & then to be maintained
46) Lodge a detailed hydraulics plan which demonstrates how it is proposed to make provision for a future water meter to be installed by the body corporate. The plan must identify the location and proposed method of metering each lot in accordance with AS3565. Obtain approval from the Principal Plumbing Inspector. *GUIDELINE* *This condition is imposed to allow future Community Title owners to install water meters to each unit. The future water meter must be accessible for the purpose of reading and maintenance and be suitable to be read by the body corporate. The meter will become and remain property of the body corporate. A meter box is to be installed where the proposed meter is to be located underground.*	Prior to undertaking the works

47) Provide a water service with approved Council meter assembly and meter box to the boundary of the development in accordance with Council's "Water and Sewerage Reticulation Standards".	Prior to undertaking the works
(a) Submit engineering plans prepared by a registered Professional Engineer Queensland (RPEQ), and in accordance with Council's *"Water and Sewerage Reticulation Standards"* showing service and meter works. (The size of the service shall be determined by the water supply requirement of the proposed development.). Obtain the approval from the Engineering Delegate, Technical Support Group, Development and Regulatory Services;	
(b) Pay to Council the cost of live connection to the water main;	
(c) Such construction is to be to a standard that is satisfactory to be accepted on and off maintenance.	Prior to the commencement of the use
(d) If the meters are purchased other than from Council, pay to Council a documentation fee for each water service provided at the rate of $25.00 each. If the meters are purchased from Council, forward a copy of the receipt of purchase to the Engineering Delegate, Licensing and Compliance, Development and Regulatory Services.	Prior to the commencement of the use
GUIDELINE *This condition is imposed to supply a water service and a meter to a development/Community Title development. The meter should be accessable to BCC employees or agents for the purpose of reading and maintaining the meter. The meter will become and remain property of the BCC.*	
48) Provide a Sewerage property connection and associated sewerage works to serve the development designed and constructed in accordance with approved engineering plans and Council's "Water and Sewerage Reticulation Standards". Floors below ground level are to be protected by anti backflow devices.	Prior to undertaking the works
(a) Submit engineering plans prepared by a registered Professional Engineer Queensland (RPEQ), and in accordance with Council's *"Water and Sewerage Reticulation Standards"* showing the design the works. Obtain the approval from the Engineering Delegate, Major Projects, Development and Regulatory Services;	
(b) Pay to Council the cost of live connection to the sewer main;	
(c) Construct the works in accordance with the approved engineering plans to a standard that will be satisfactory to be accepted "on" and "off" maintenance as a Council asset, by the Engineering Delegate, Licensing and Compliance, Development and Regulatory Services;	Prior to the commencement of the use
(d) Submit "As Constructed" plans including an assest register, approved by a Registered Professional Engineer Queensland (RPEQ) (to a standard specified in Council's *"Water and Sewerage Reticulation Standards"*) certifying that the works have been completed in accordance the approved design and any approved modifications;	Prior to the commencement of the use
GUIDELINE *This condition is imposed to provide a separate new sewerage connection to the development. For any enquiries about this condition, please contact the Engineering Officer.*	

**** End of Conditions ****

ADVICE SCHEDULE

1. Equitable Access

You are advised of your responsibility to ensure that the proposal complies with the requirements of the *Queensland Anti Discrimination Act 1991* the *Federal Disability Discrimination Act 1992*, and *Australian Standard AS 1428 Parts 1-4 Australian Standard for Access and Mobility*. This development approval does not indicate compliance with the requirements of these Acts. Determination of compliance with these Acts is the responsibility of the owner/builder/developer. It is suggested you ensure adequate access for persons with disabilities to and within the site.

2. Noise & Dust from Construction Activities

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

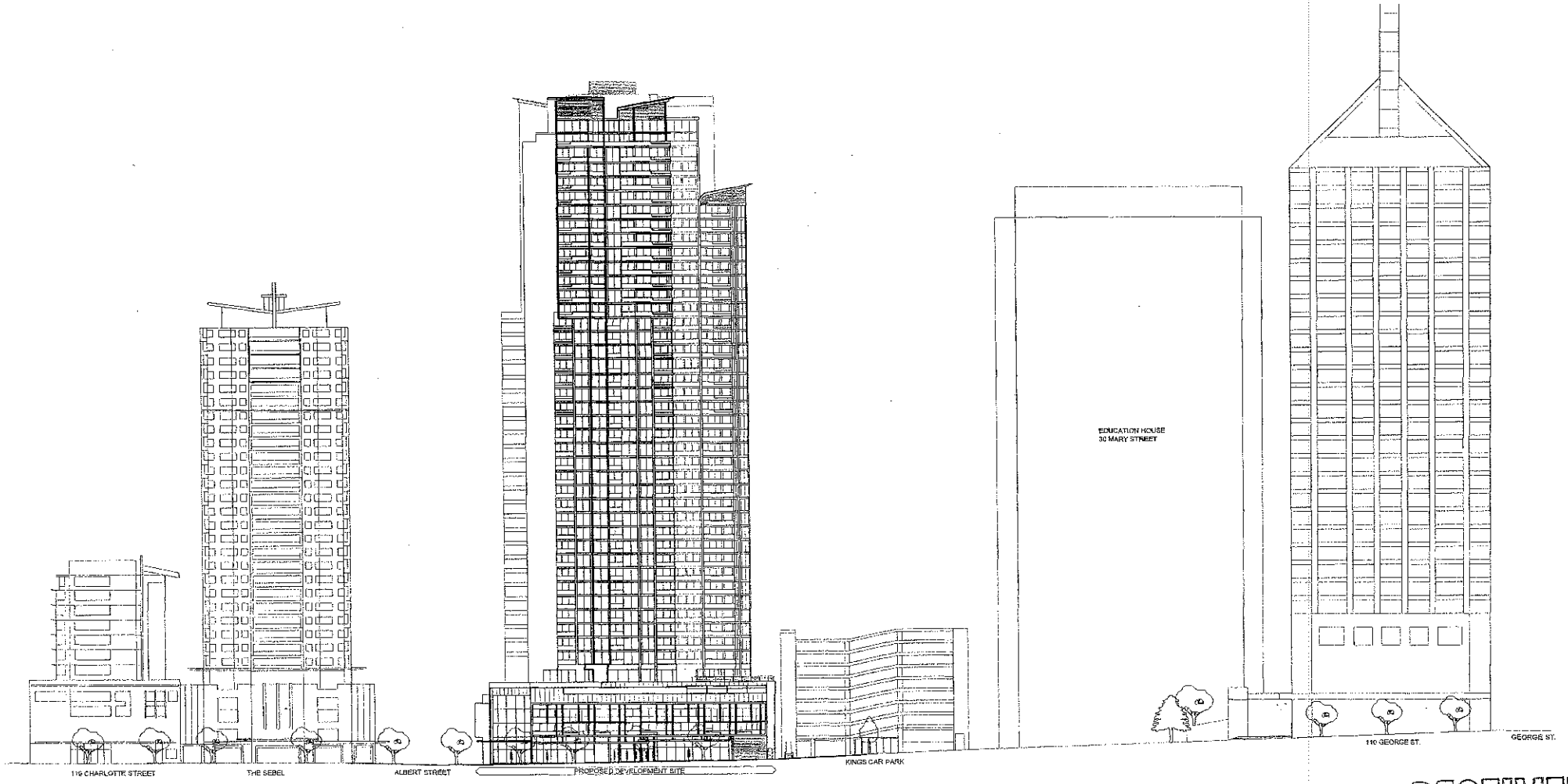
Pursuant to the Environmental Protection Regulation 1998 Part 2A - Environmental Nuisance,

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.

ADVICE SCHEDULE

1.	**Pursuant to the Environmental Protection Act 1994 Part 9B - Contaminated Land,** **A118E.(1)** If the owner or occupier of land becomes aware a notifiable activity is being carried out on the land, the owner or occupier must, within 30 days after becoming aware the activity is being carried out, give notice to the administering authority in the approved form. The administering authority for contaminated land matters is the Environmental Protection Agency.
2.	**All development involving the preparation, packing, storing, handling, serving, selling or carrying of food** requires that its design, installation and operation be approved pursuant to the Food Hygiene Regulations of 1989. The premise is required to be registered and the operator is to hold a license to operate the business under the above regulations. Prior to building works plans and specifications are to be lodged for approval to the Food Section at the Central Licensing and Compliance Office of the Customer and Community Services Division.
3.	**All development involving an Environmentally Relevant Activity** as defined by the Environmental Protection Regulation 1998 (eg **ERA 11(a) Petroleum Product storage of 10 000 litre Fuel Storage Tank for Emergency Generator)** requires that an application for material change of use for an environmentally relevant activity be submitted to the administering authority, (Environmental Protection Agency or Brisbane City Council), in accordance with the Environment Protection Act 1994 and the Integrated Development Assessment System.
4.	**Where the amount of flammable and combustible liquids** on the site (eg **Fuel Storage Tank for Emergency Generator**) exceeds the minor storage quantities as defined in AS 1940-1993 *The storage and handling of flammable and combustible liquids,* plans and specifications shall be lodged for approval prior to building works with the Dangerous Goods Officer of the Customer and Community Services Division. A current license is required for any storage of flammable and combustible liquids on the site where the amount of this material exceeds the minor storage quantities as defined in AS 1940-1993 *The storage and handling of flammable and combustible liquids, and the Dangerous Goods Safety Management Regulations 2001.*
5.	**The discharge of waste liquids to the sewerage system** shall be conducted in accordance with the conditions of a Trade Waste Approval.



ELEVATION CHARLOTTE STREET / STREETSCAPE

FESTIVAL TOWERS
108 ALBERT STREET

Devine LIMITED

COX RAYNER PTY. LTD.
Architects & Planners

~~DWG NO. 012110/SK00/01~~

09.10.2002

0 5 10 15 20 25 30

DWG NO. DA-01

RECEIVED
11 OCT 2002

PLANS and DOCUMENTS
Referred to in the
DEVELOPMENT PERMIT
Dated 29 OCT 2002

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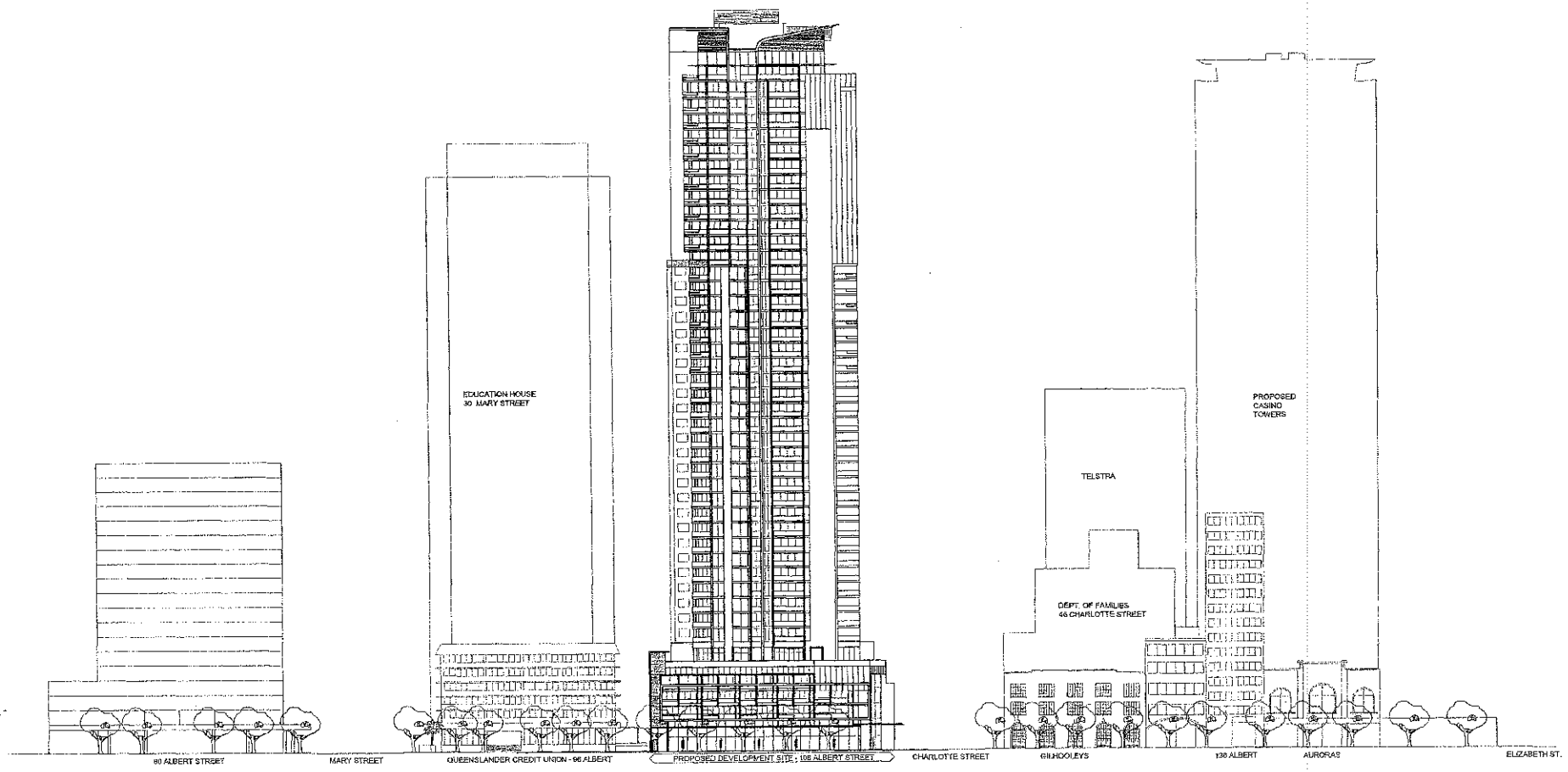

ELEVATION ALBERT STREET / STREETSCAPE
FESTIVAL TOWERS
108 ALBERT STREET

Devine LIMITED

COX RAYNER PTY. LTD.
Architects & Planners

~~DWG NO. 012419/SK09/01~~

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DWG NO. DA-02

RECEIVED
11 OCT 2002

PLANS and DOCUMENTS
Referred to in the
DEVELOPMENT PERMIT
29 OCT 2002
Dated .....

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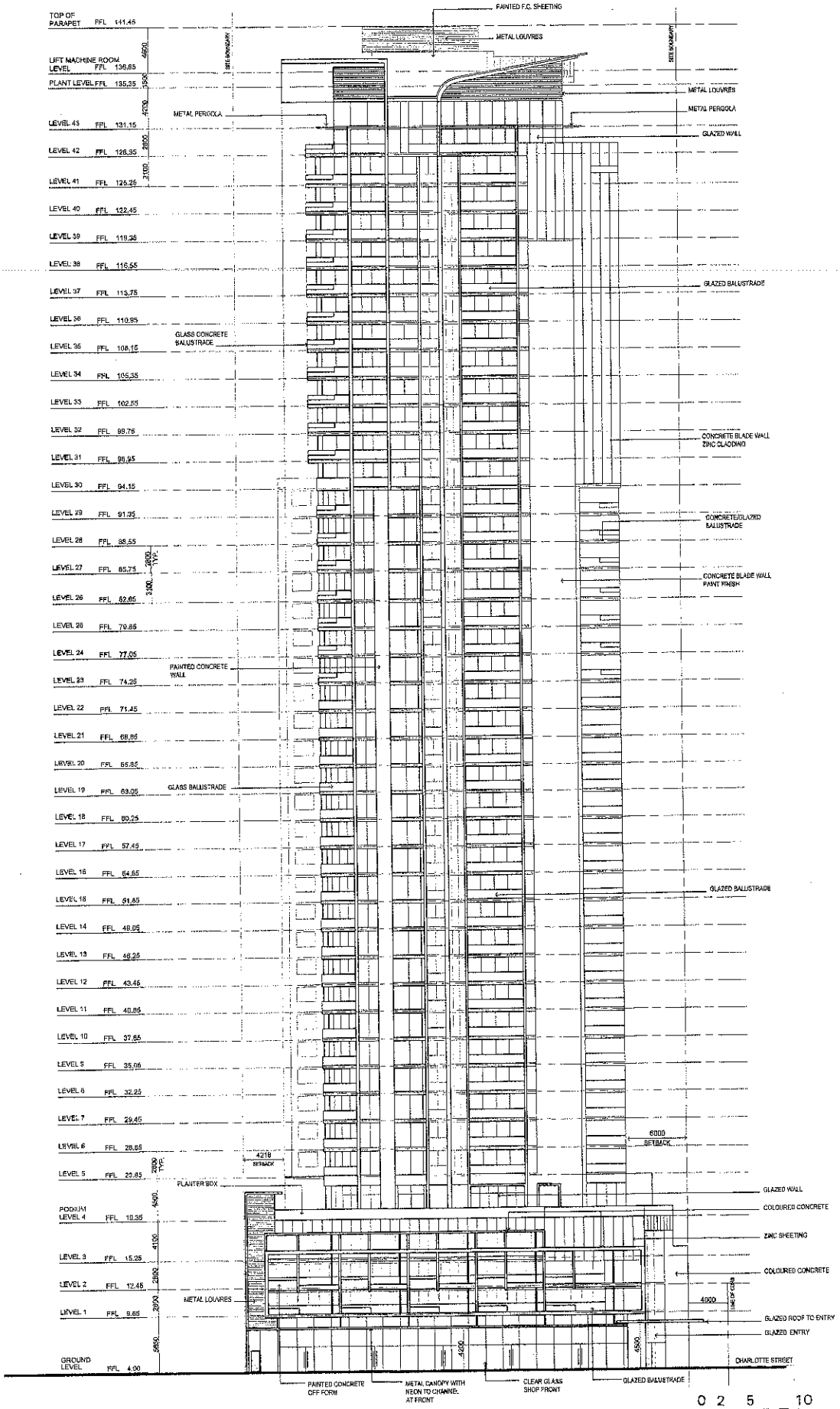

PLANS and DOCUMENTS Referred to in the DEVELOPMENT PERMIT Dated ...29.OCT.2002...

RECEIVED - 8 OCT 2002 BRISBANE CITY COUNCIL

ALBERT STREET ELEVATION
FESTIVAL TOWERS
108 ALBERT STREET

0 2 5 10

1:400 @ A3, 1:200 @ A1

Devine LIMITED

COX RAYNER PTY. LTD. Architects & Planners

~~DWG NO: 01/2110/DA25~~

08.10.2002

DWG NO. DA-03

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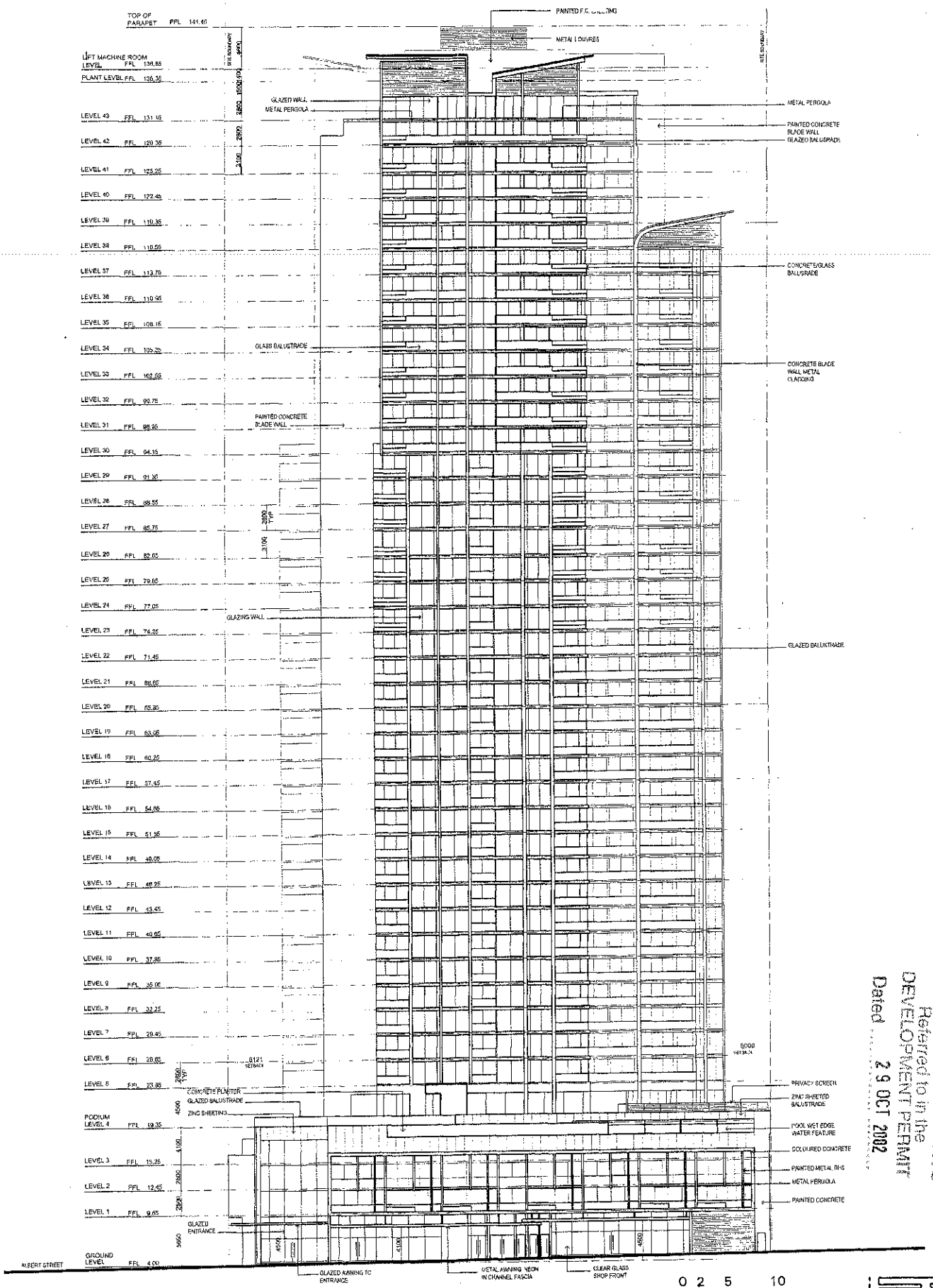

PLANS AND DOCUMENTS Referred to in the DEVELOPMENT PERMIT Dated 29 OCT 2002

CHARLOTTE STREET ELEVATION

FESTIVAL TOWERS
108 ALBERT STREET

Devine LIMITED

0 2 5 10
1:400 @ A3, 1:200 @ A1

COX COX RAYNER PTY. LTD. Architects & Planners

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~~DWG NO: 018110/DA06~~ 08.10.02

DWG NO. DA-04

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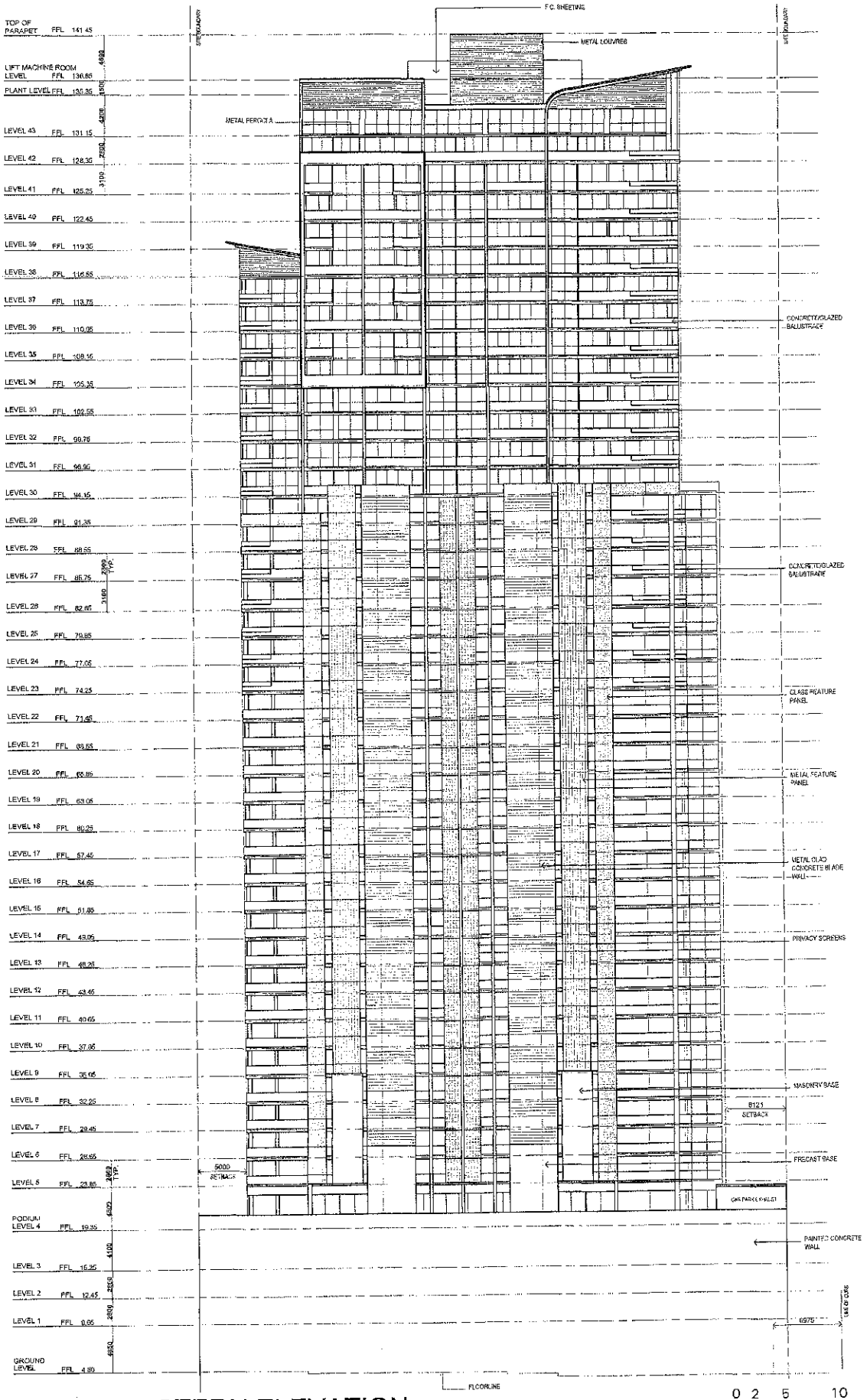


PLANS and DOCUMENTS Referred to in the DEVELOPMENT PERMIT Dated 29 OCT 2002

SOUTH-EASTERN ELEVATION
FESTIVAL TOWERS
108 ALBERT STREET

0 2 5 10

Devine LIMITED

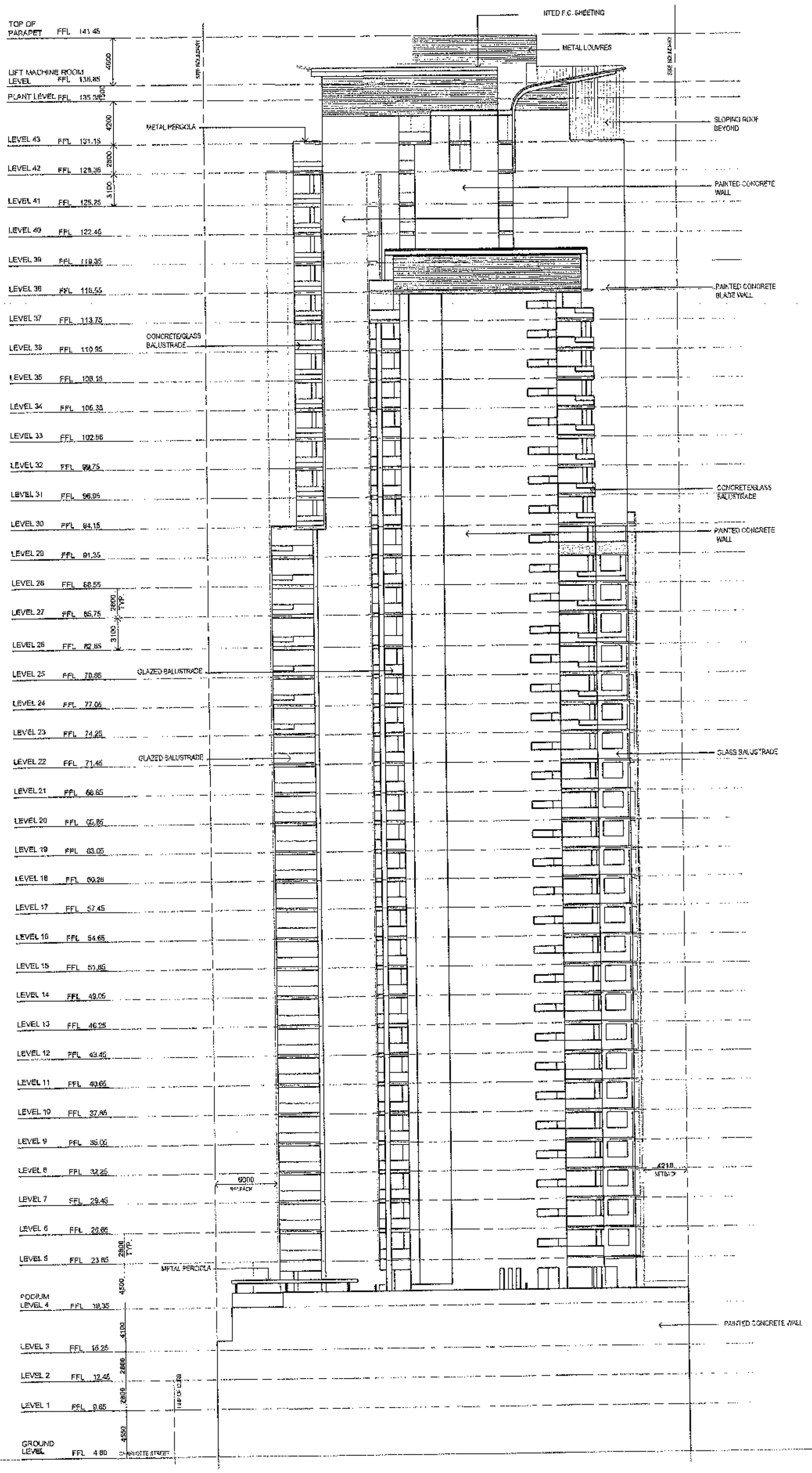
COX RAYNER PTY. LTD. Architects & Planners

08.10.02

RECEIVED - 8 OCT 2002 BCC.086.0390

~~DWG NO. 812110/DA07~~

DWG NO. DA-05



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SOUTH-WESTERN ELEVATION
FESTIVAL TOWERS
108 ALBERT STREET

Devine LIMITED

COX
COX RAYNER PTY. LTD.
Architects & Planners

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08.10.02

DWG NO. DA-06

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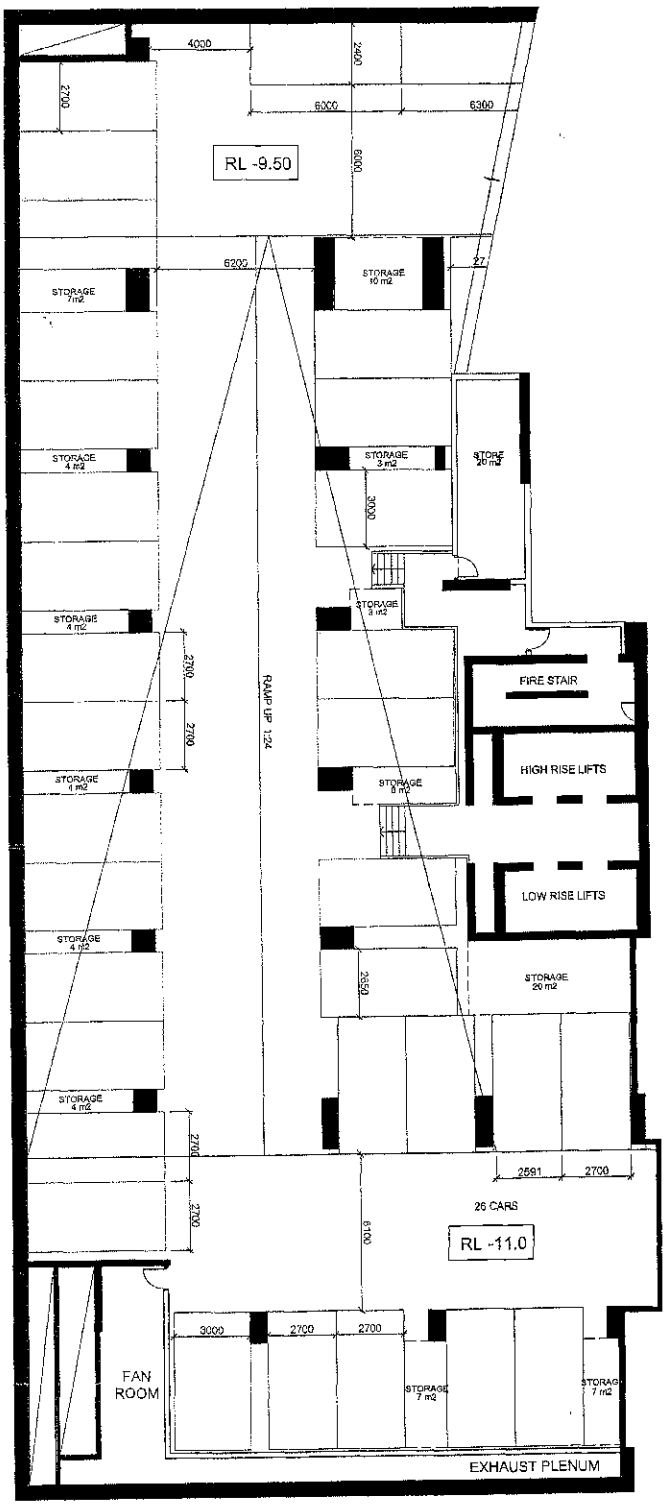

PLANS and DOCUMENTS Referred to in the DEVELOPMENT PERMIT Dated ....29 OCT 2002.....

BASEMENT LEVEL 5 - Preliminary

89 CHARLOTTE STREET RESIDENTIAL TOWER

~~DWG NO. 012110~~ - PRELIMINARY - 9 OCTOBER 2002

DWG NO. DA- 07

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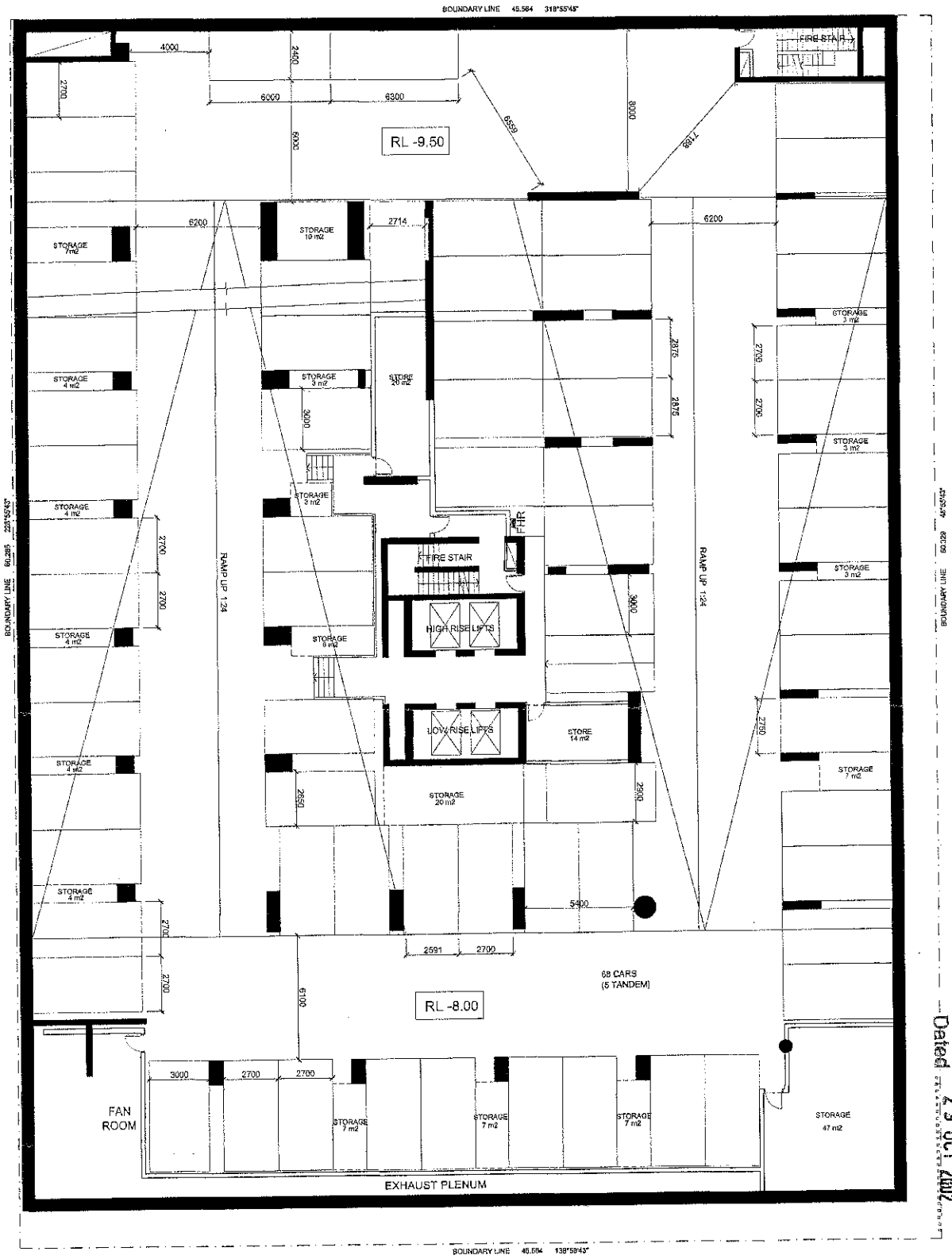

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DEVELOPMENT PERMIT
Dated 29 OCT 2002

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BASEMENT LEVEL 4 - Preliminary
FESTIVAL TOWERS
108 ALBERT STREET

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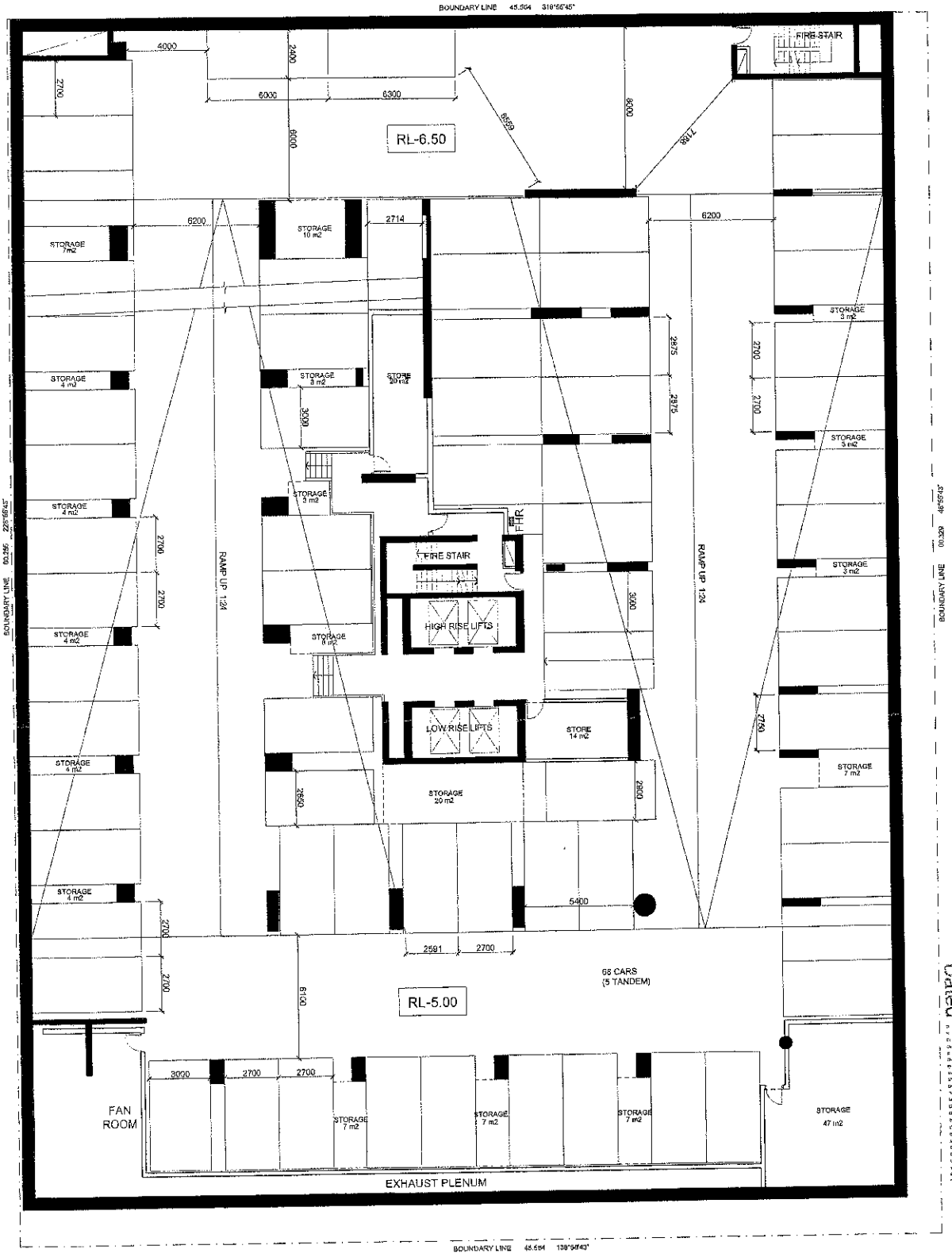

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DEVELOPMENT PERMIT
Dated 29 OCT 2002

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BASEMENT LEVEL 3 - Preliminary
FESTIVAL TOWERS
108 ALBERT STREET

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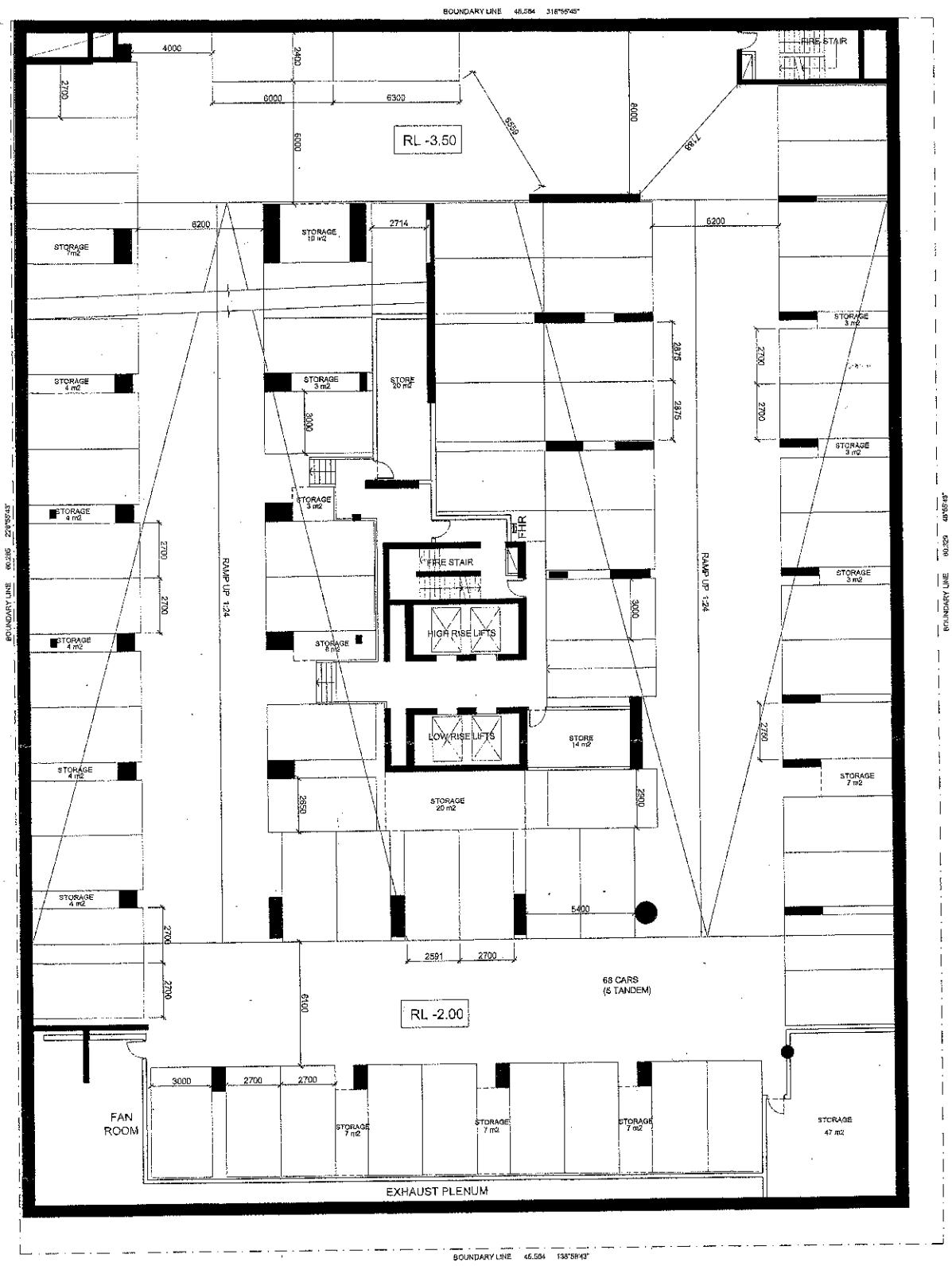
BCC.086.0394



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BASEMENT LEVEL 2 - Preliminary

FESTIVAL TOWERS
108 ALBERT STREET

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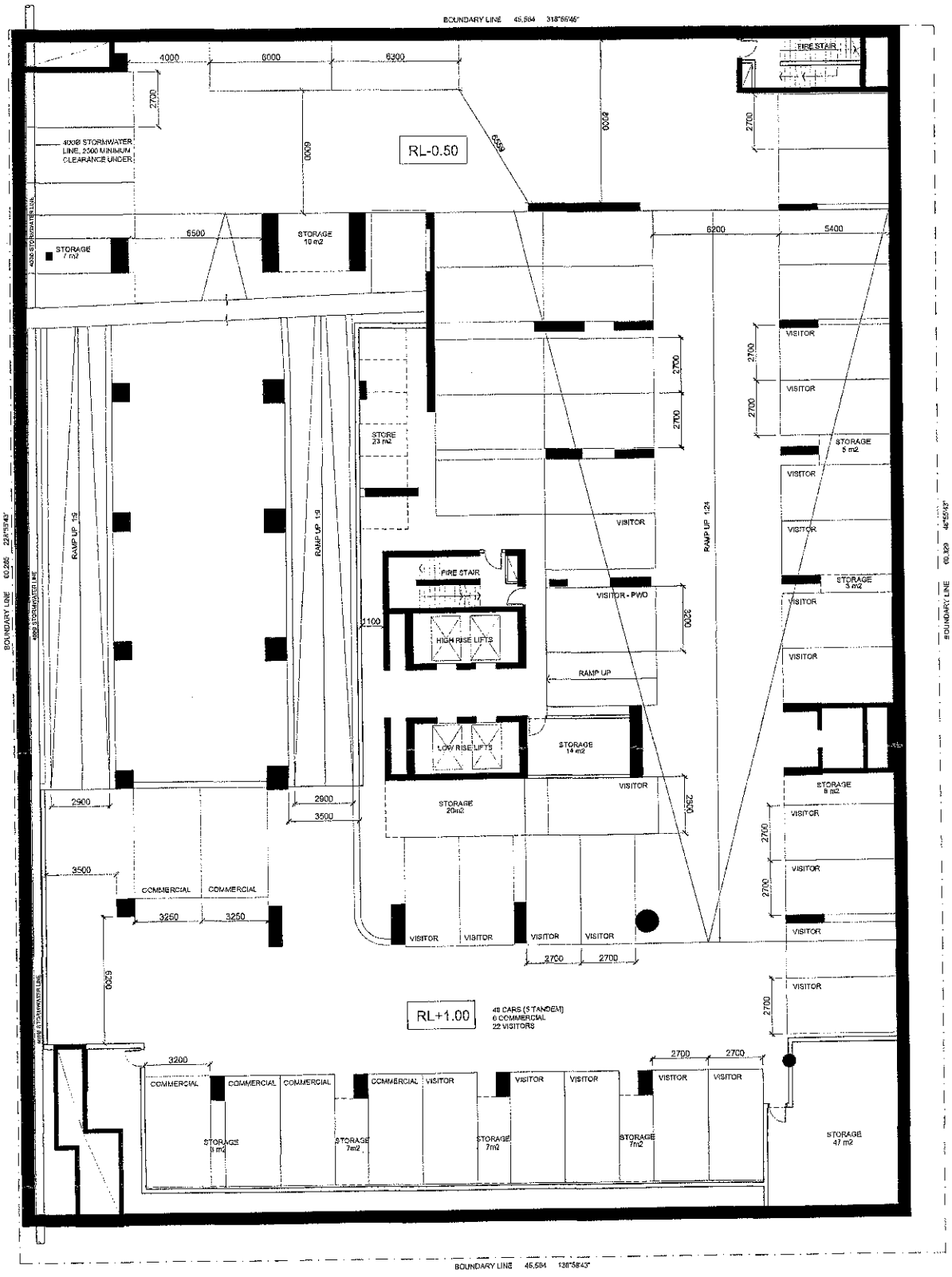

PLANS and DOCUMENTS
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DEVELOPMENT PERMIT
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BASEMENT LEVEL 1 - Preliminary
FESTIVAL TOWERS
108 ALBERT STREET

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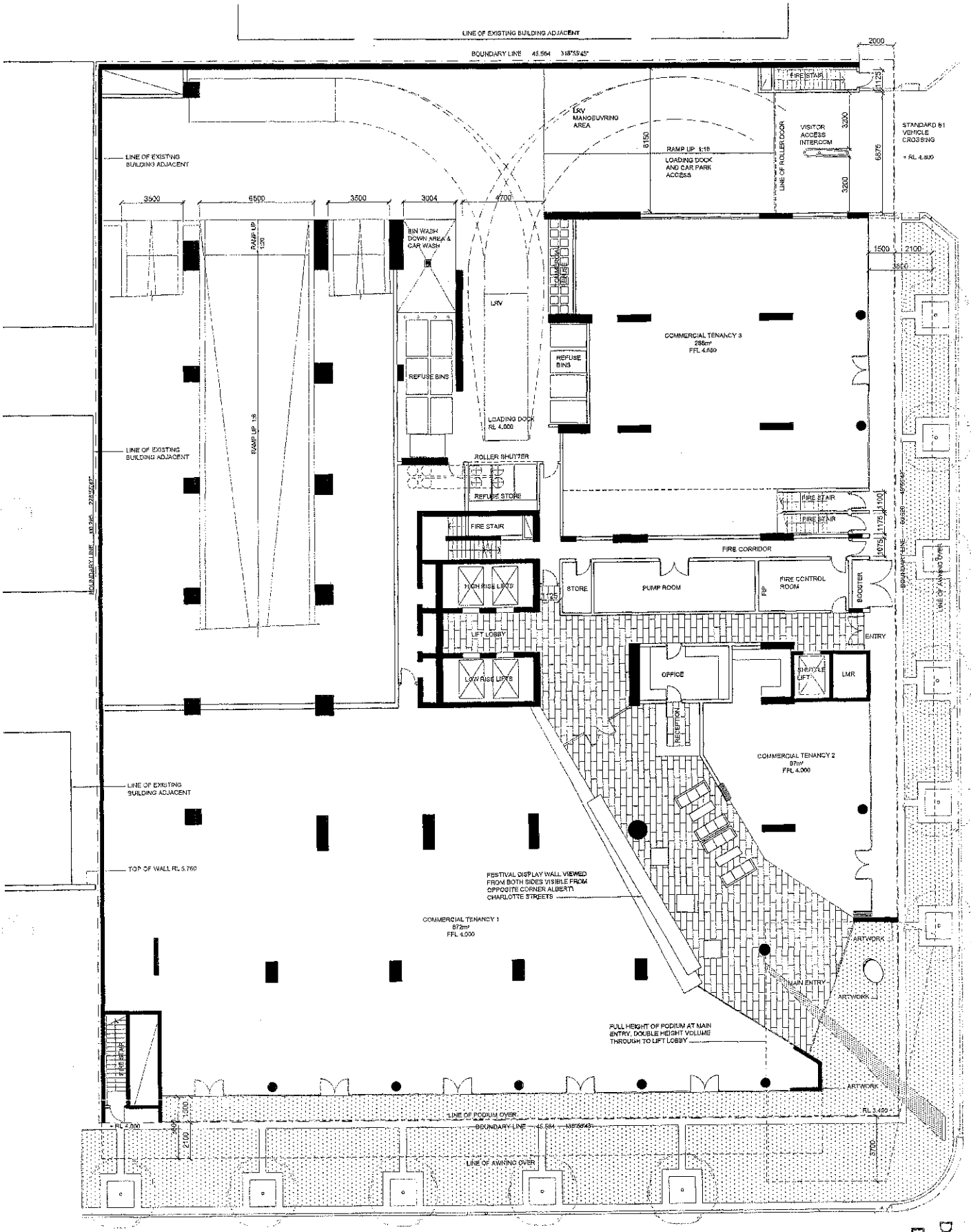

LEVEL Ground - Preliminary
FESTIVAL TOWERS
108 ALBERT STREET

JOB NO. 012110 - PRELIMINARY - 9 OCTOBER, 2002

DWG NO. DA - 12

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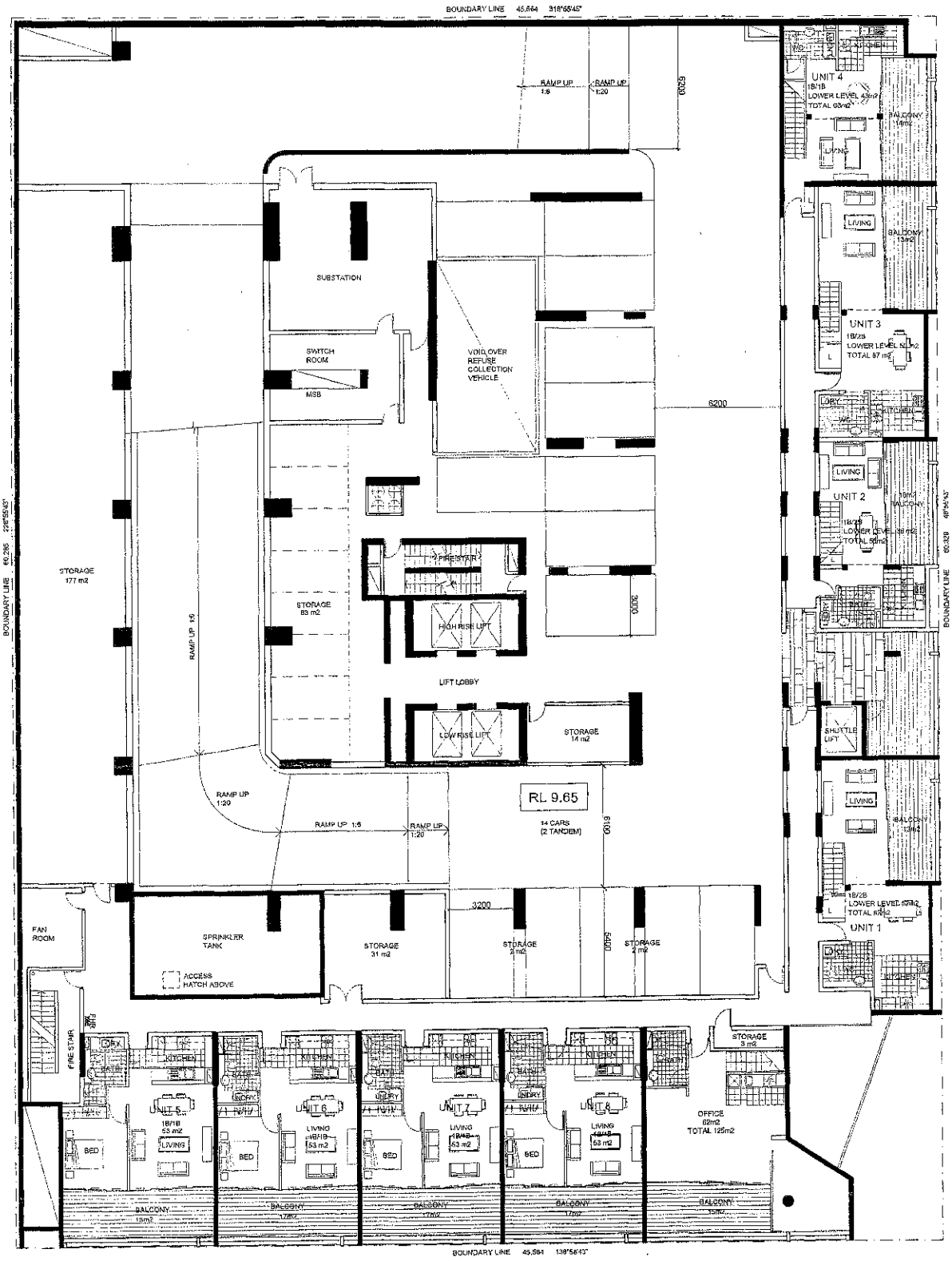

LEVEL 1 - Preliminary
FESTIVAL TOWERS
108 ALBERT STREET

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DEVELOPMENT PERMIT
Dated 29 OCT 2002

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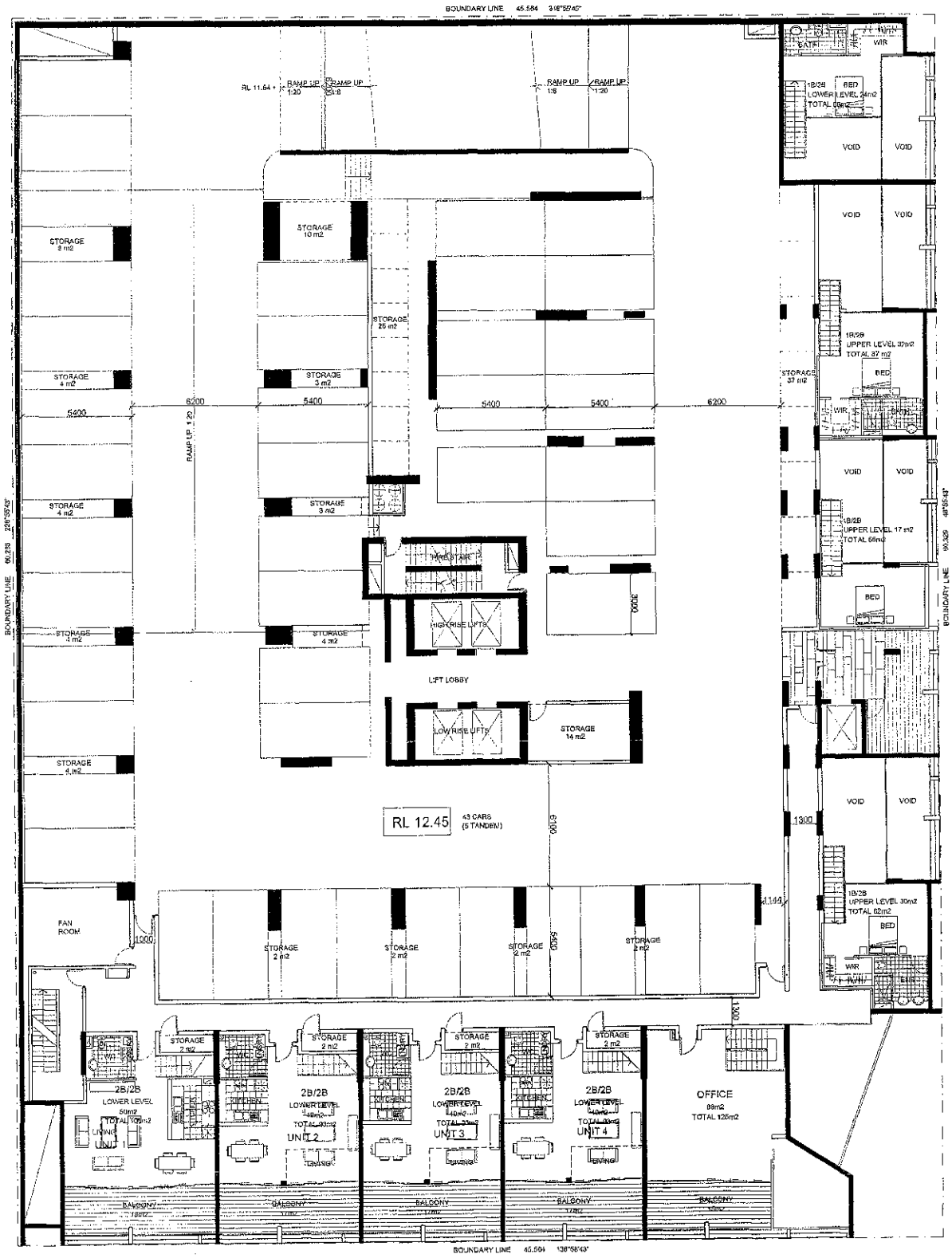

LEVEL 2 - Preliminary
FESTIVAL TOWERS
108 ALBERT STREET

JOB NO. 012110 - PRELIMINARY - 8 OCTOBER, 2002

DWG NO. DA - 14

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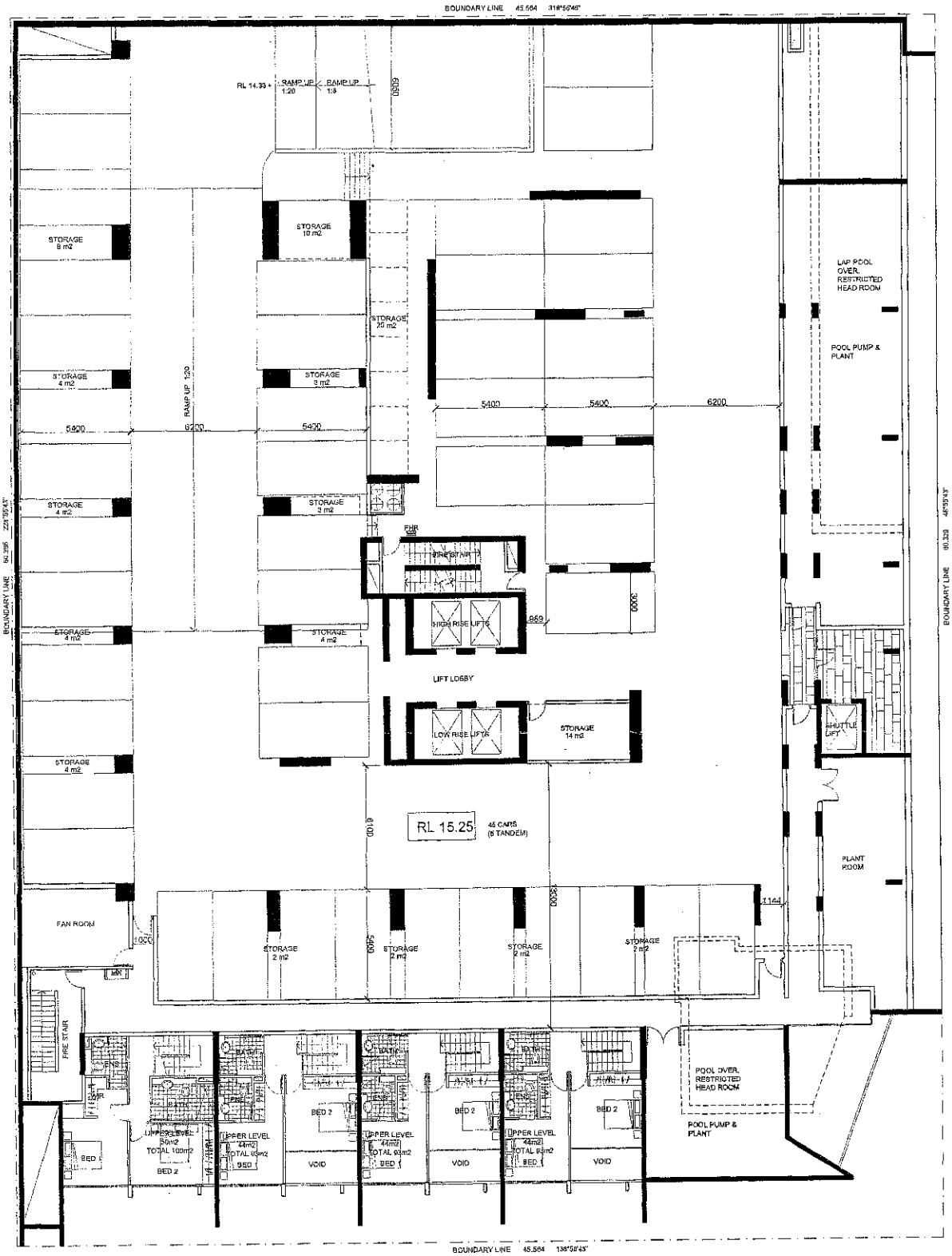

LEVEL 3 - Preliminary
FESTIVAL TOWERS
108 ALBERT STREET

JOB NO. 012110 - PRELIMINARY - 8 OCTOBER, 2002

DWG NO. DA-15

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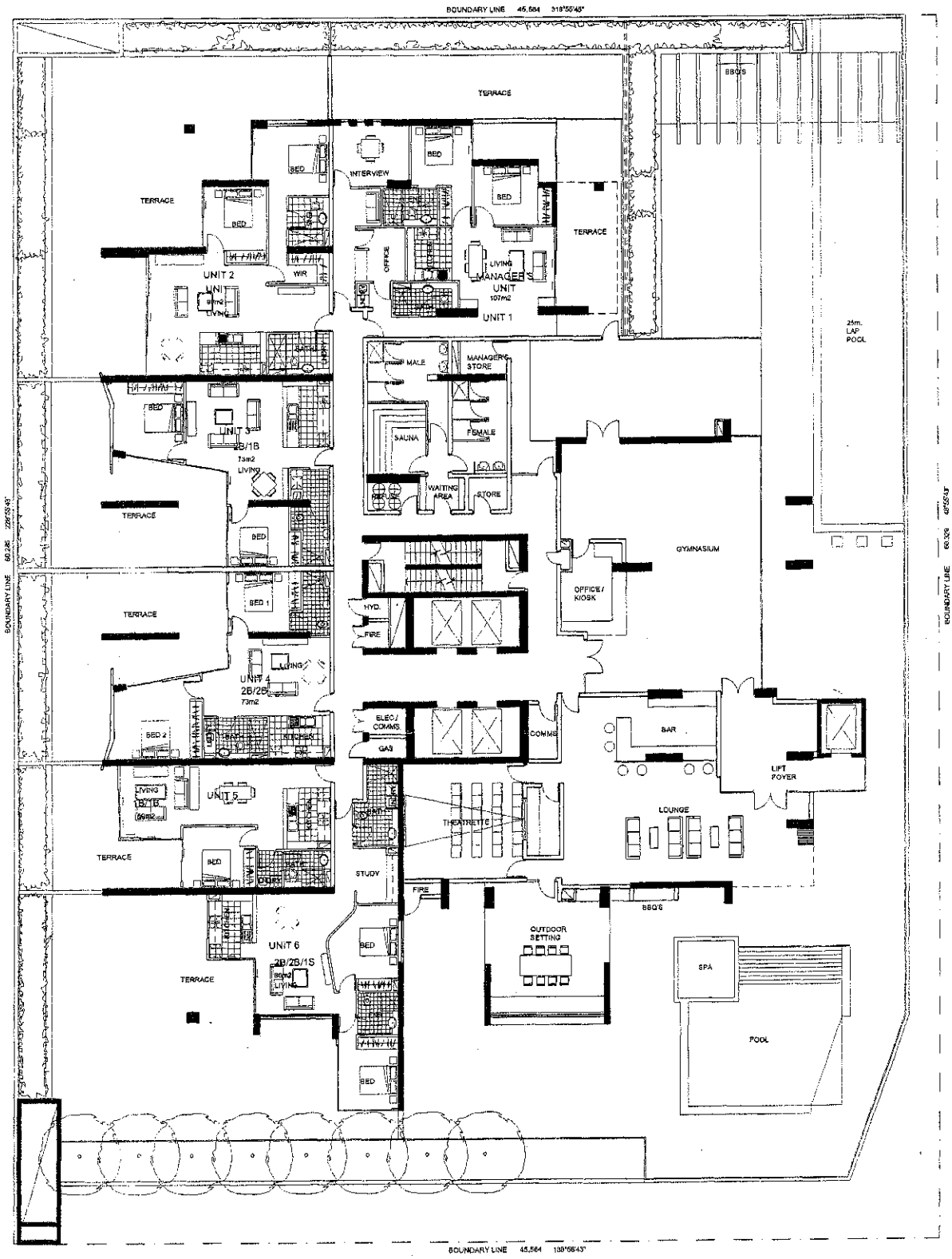

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NORTH

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LEVEL 4 - Podium - Preliminary

FESTIVAL TOWERS
108 ALBERT STREET

JOB NO. 012110 - PRELIMINARY - 15 OCTOBER, 2002

DWG NO. DA-16

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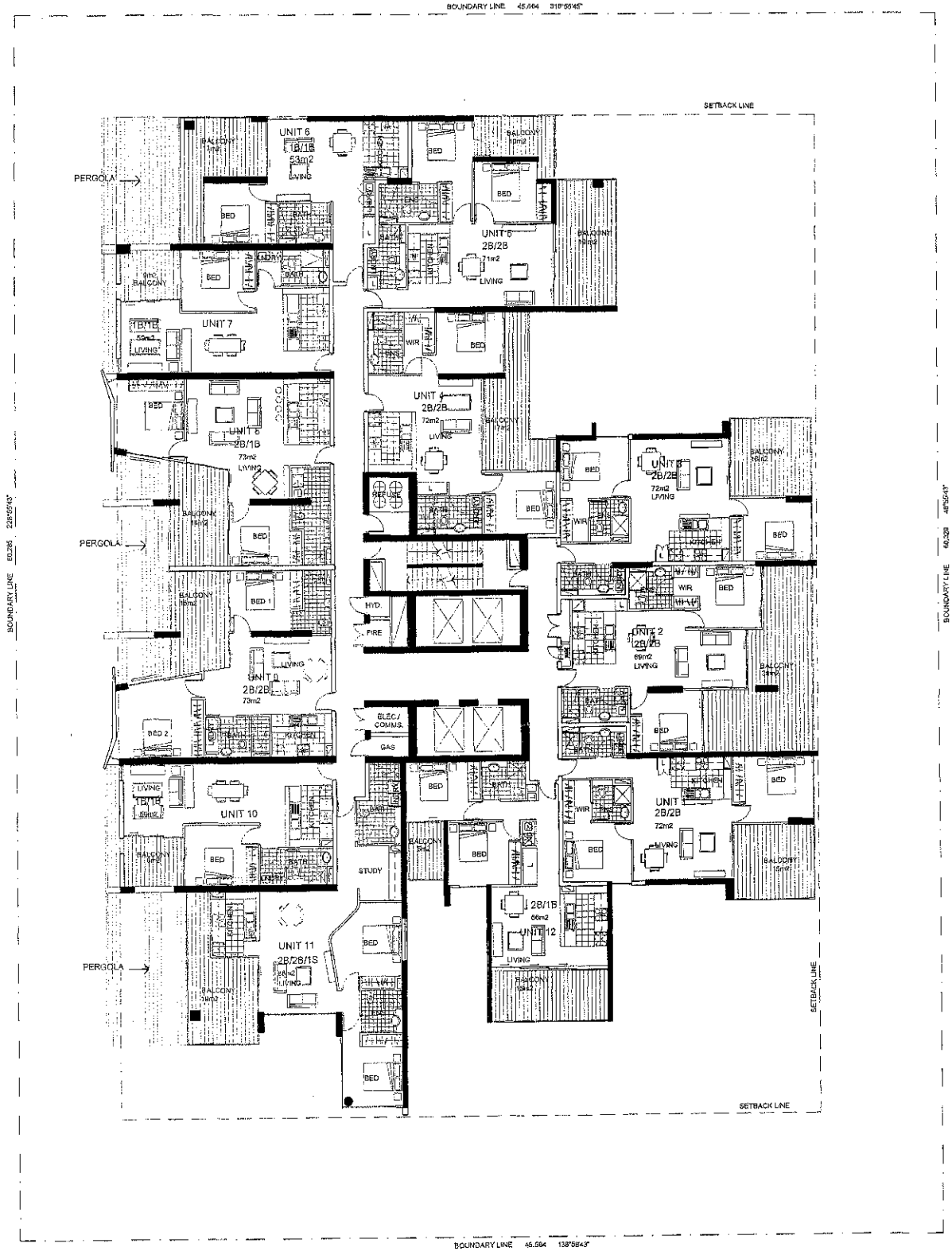

PLANS and DOCUMENTS
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DEVELOPMENT PERMIT
Dated
29 OCT 2002

LEVEL 5 - Preliminary

FESTIVAL TOWERS
108 ALBERT STREET

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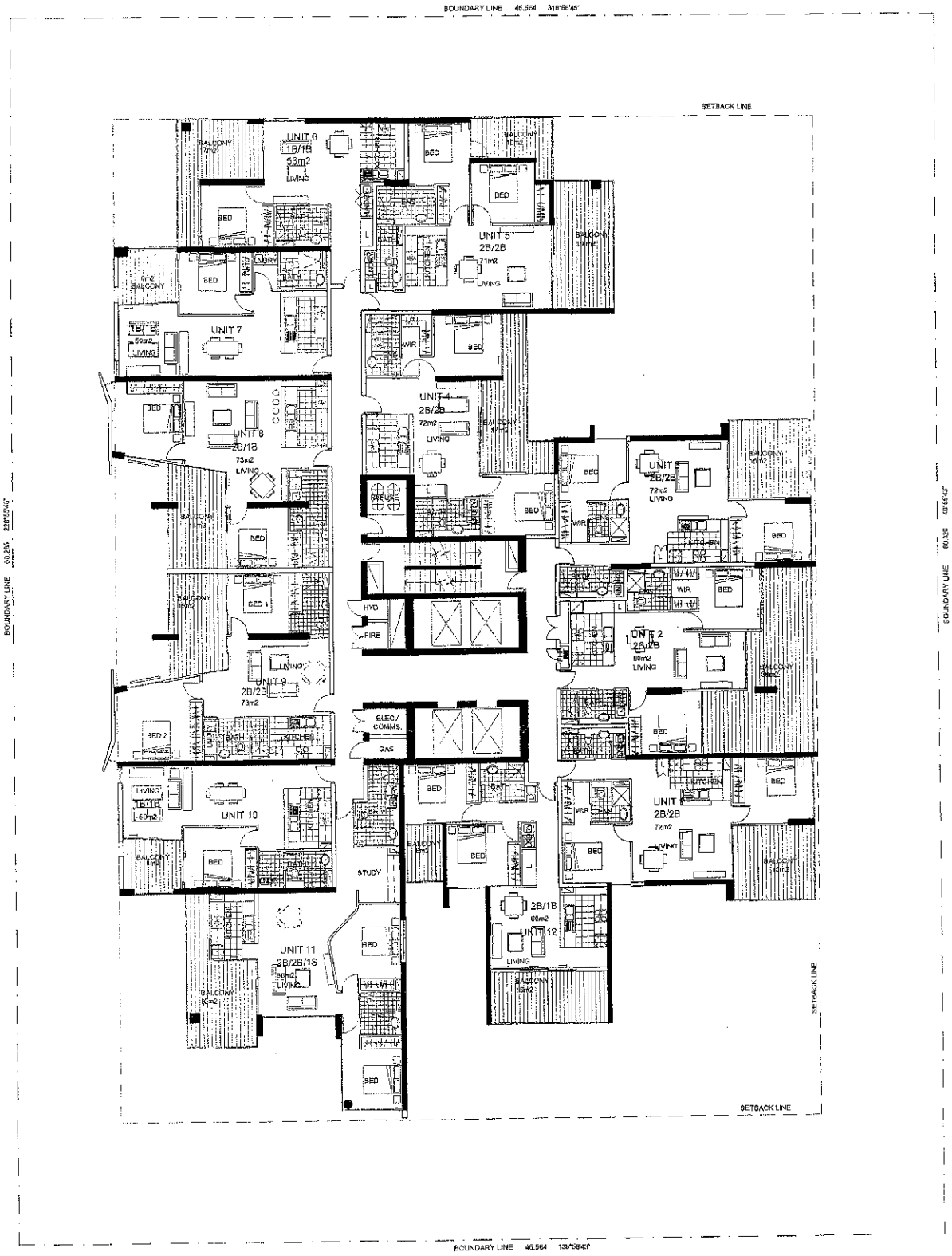

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DEVELOPMENT PERMIT
Dated 29 OCT 2002

LEVEL 6 - 29 - Preliminary

FESTIVAL TOWERS
108 ALBERT STREET

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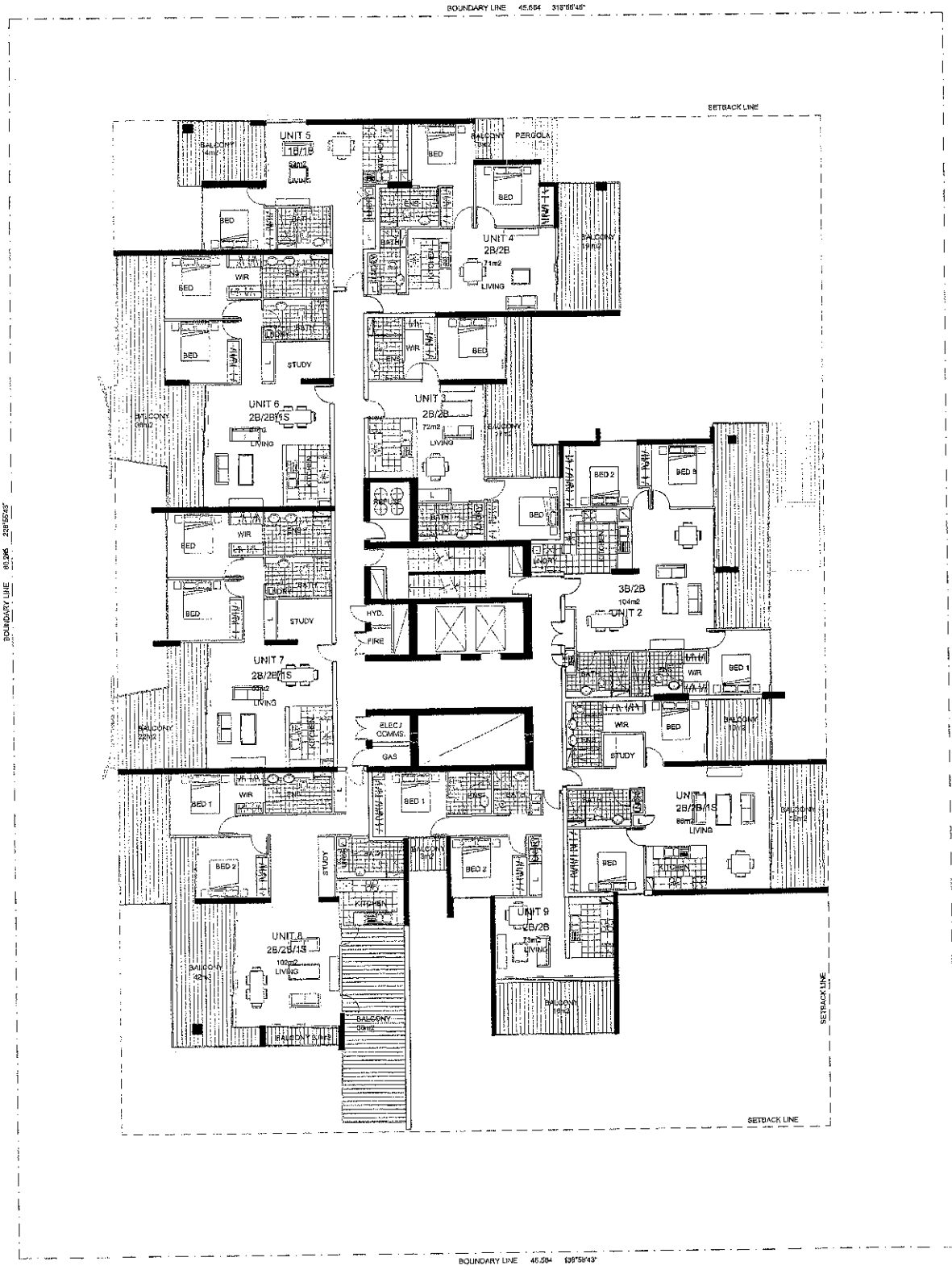

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DEVELOPMENT PERMIT
Dated 29 OCT 2002

LEVEL 30 - PRELIMINARY

FESTIVAL TOWERS
108 ALBERT STREET

JOB NO. 012110 - PRELIMINARY - 9 OCTOBER, 2002

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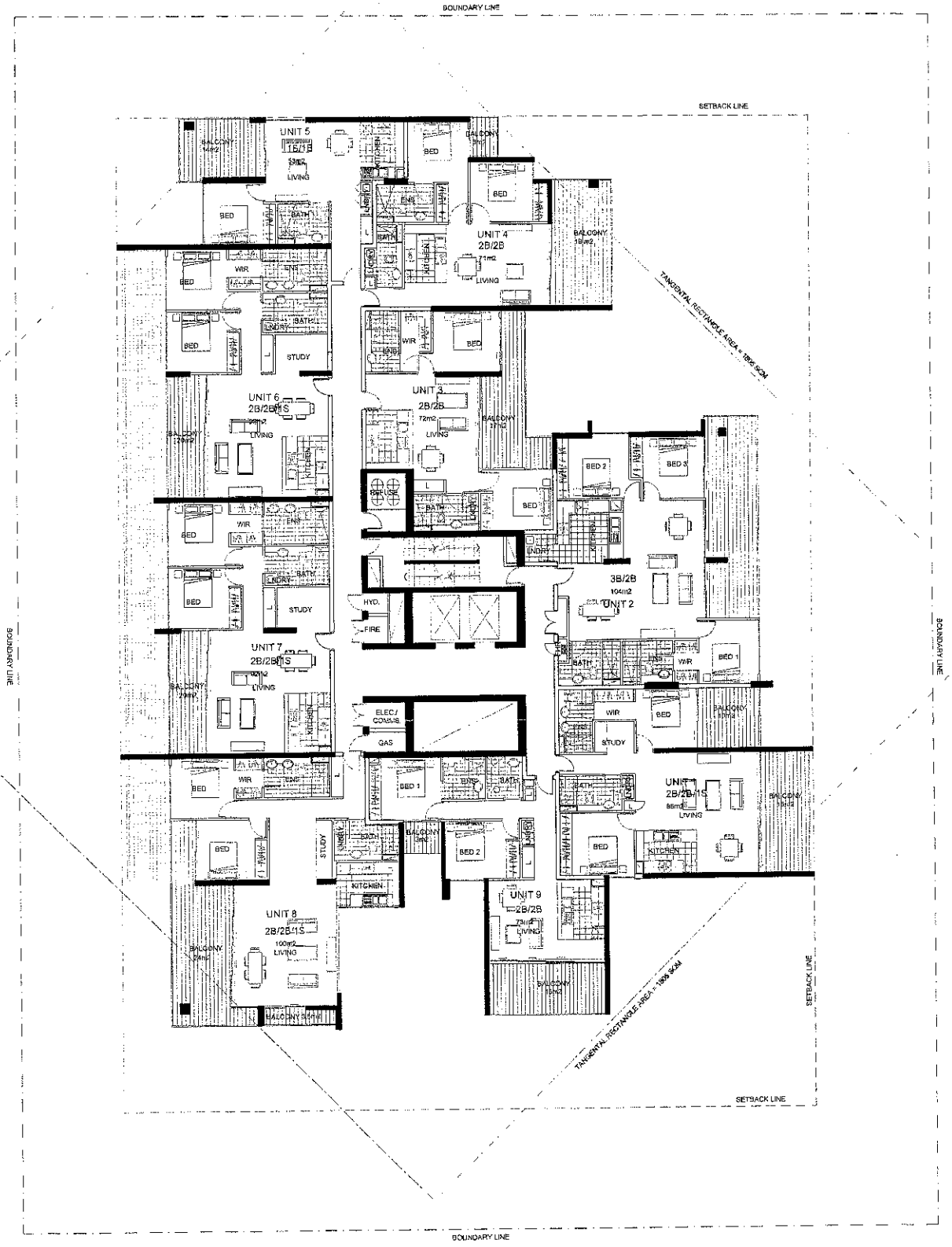

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DEVELOPMENT PERMIT
Dated 29 OCT 2002

LEVEL 31 - PRELIMINARY

FESTIVAL TOWERS
108 ALBERT STREET

JOB NO. 012110 - PRELIMINARY - 8 OCTOBER, 2002

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Architects & Planners

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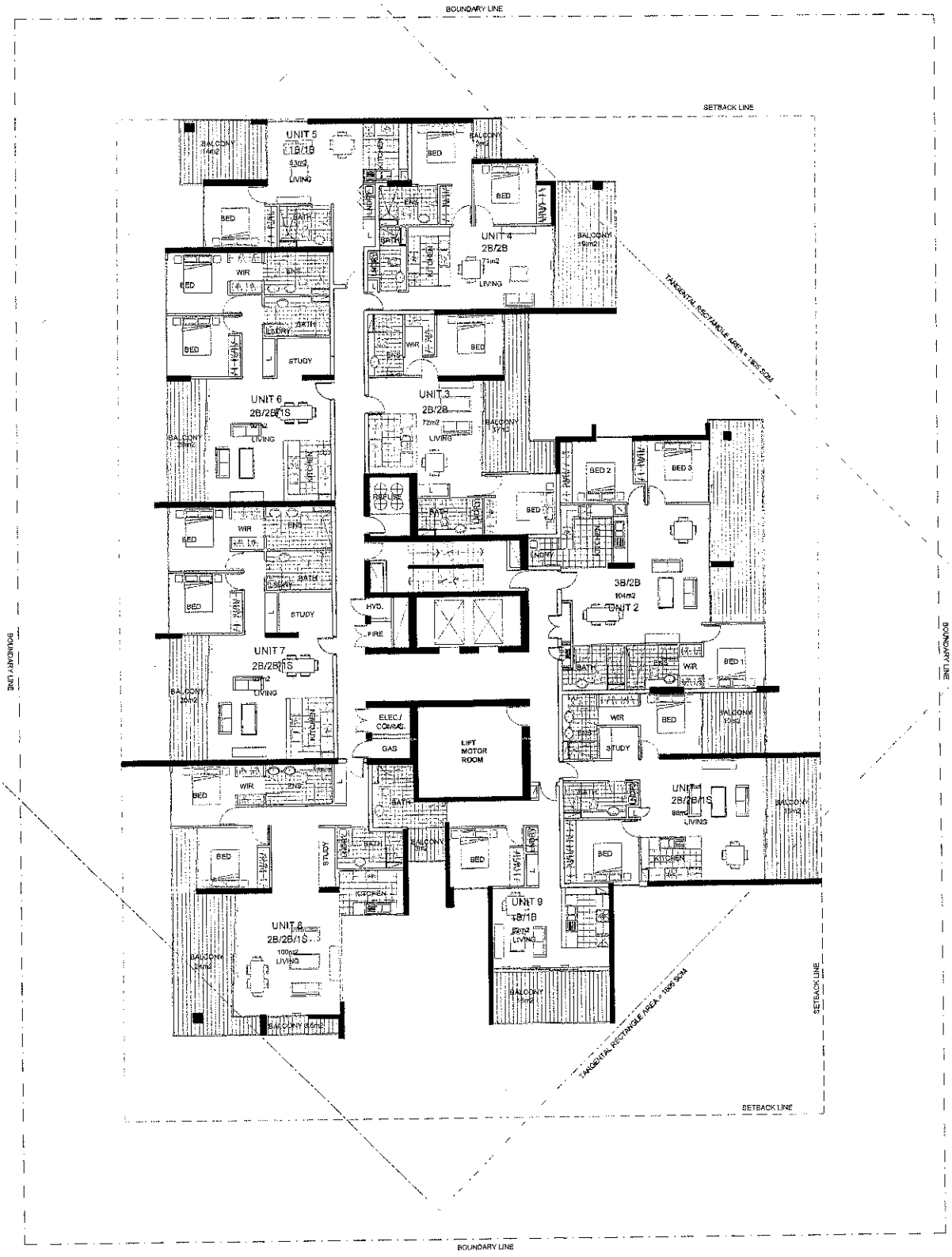

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NORTH

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LEVEL 32 - PRELIMINARY

FESTIVAL TOWERS
108 ALBERT STREET

JOB NO. 012110 - PRELIMINARY - 8 OCTOBER, 2002

DWG NO. DA - 21

RECEIVED - 8 OCT 2002

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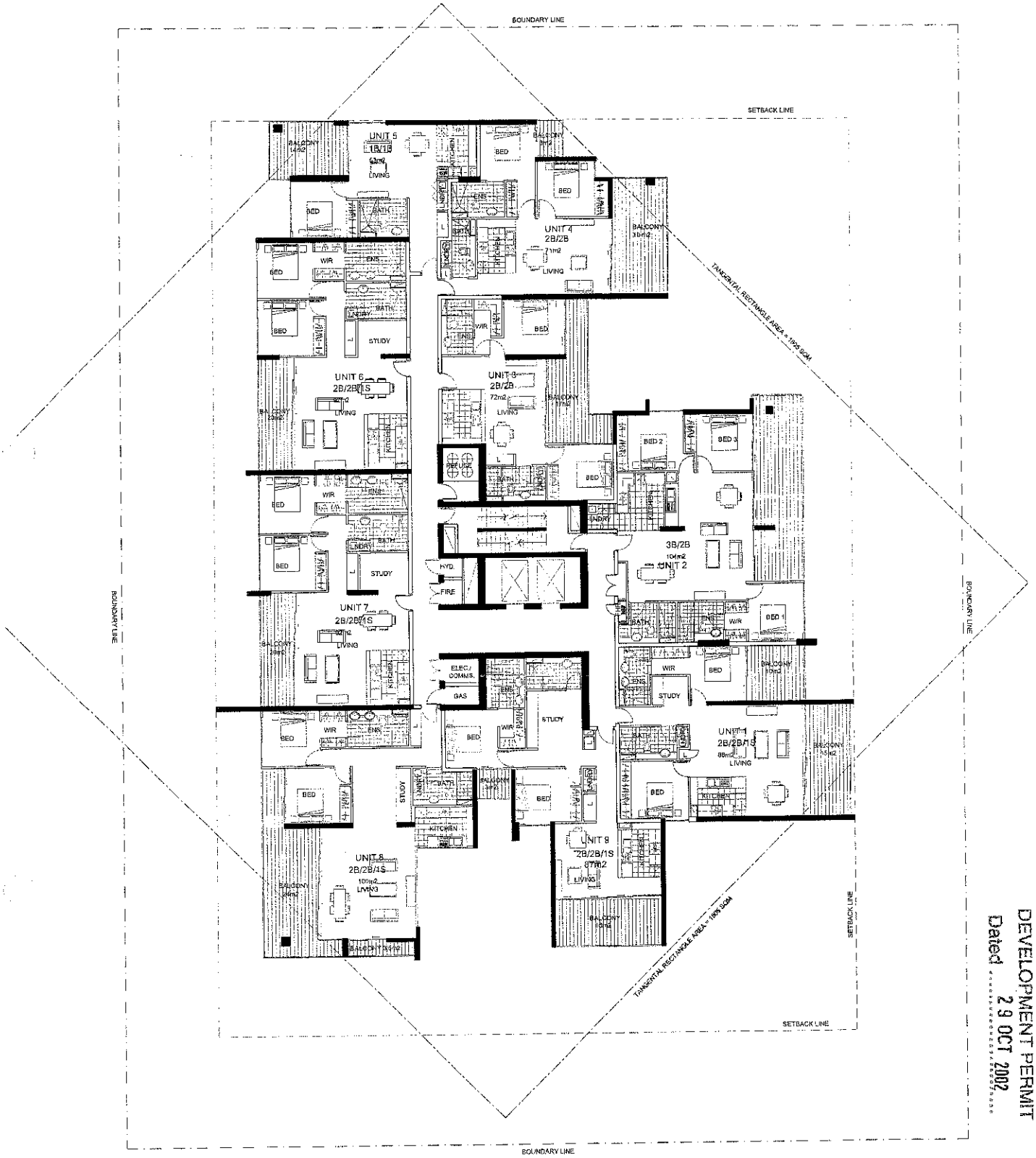

PLANS and DOCUMENTS
Referred to in the
DEVELOPMENT PERMIT
Dated 29 OCT 2002

LEVEL 33 - PRELIMINARY
FESTIVAL TOWERS
108 ALBERT STREET

JOB NO. 012110 - PRELIMINARY - 8 OCTOBER, 2002

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COX RAYNER PTY. LTD.
Architects & Planners

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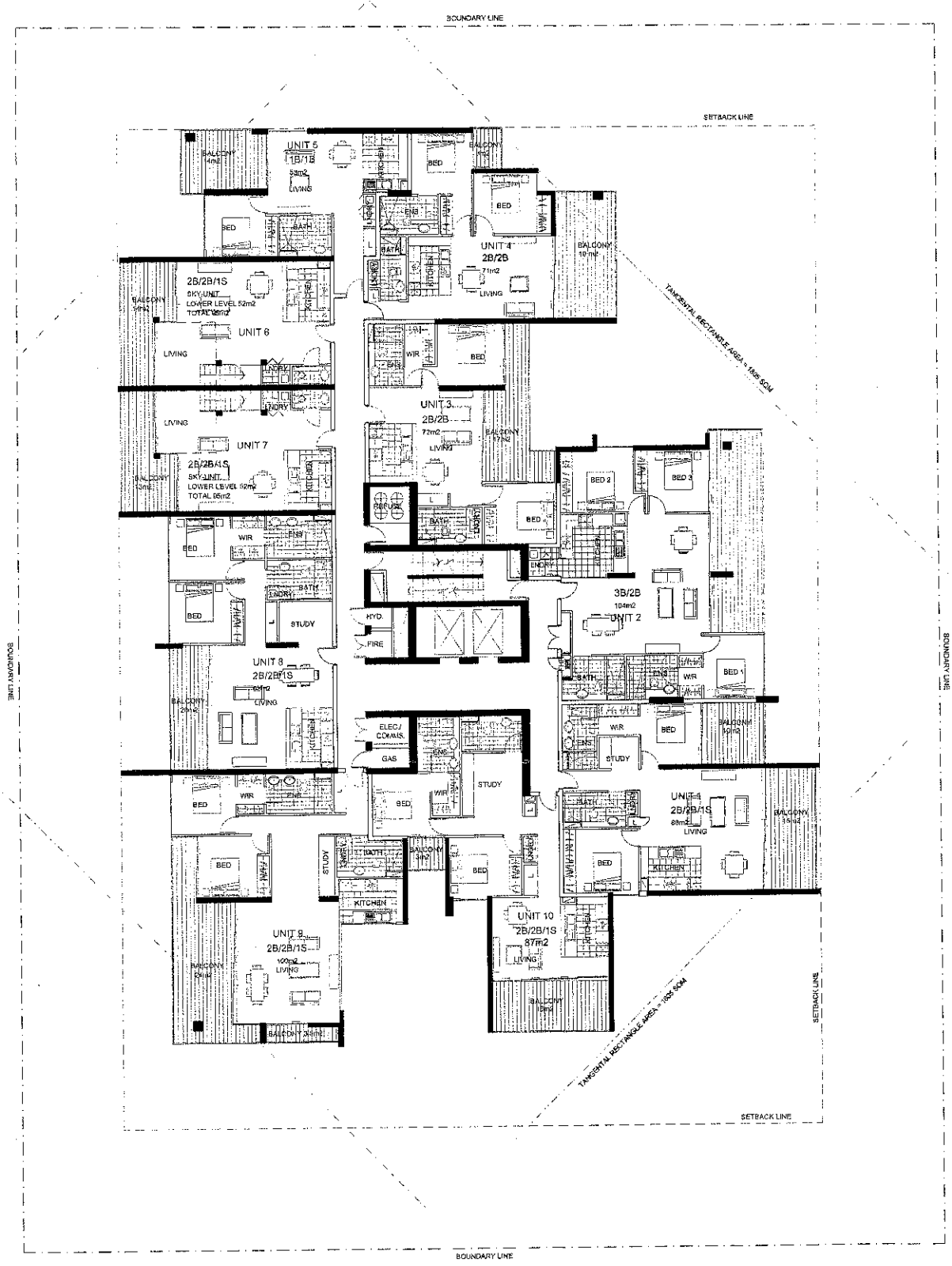

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LEVEL 34 & 36 - PRELIMINARY

FESTIVAL TOWERS
108 ALBERT STREET

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NORTH

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Architects & Planners

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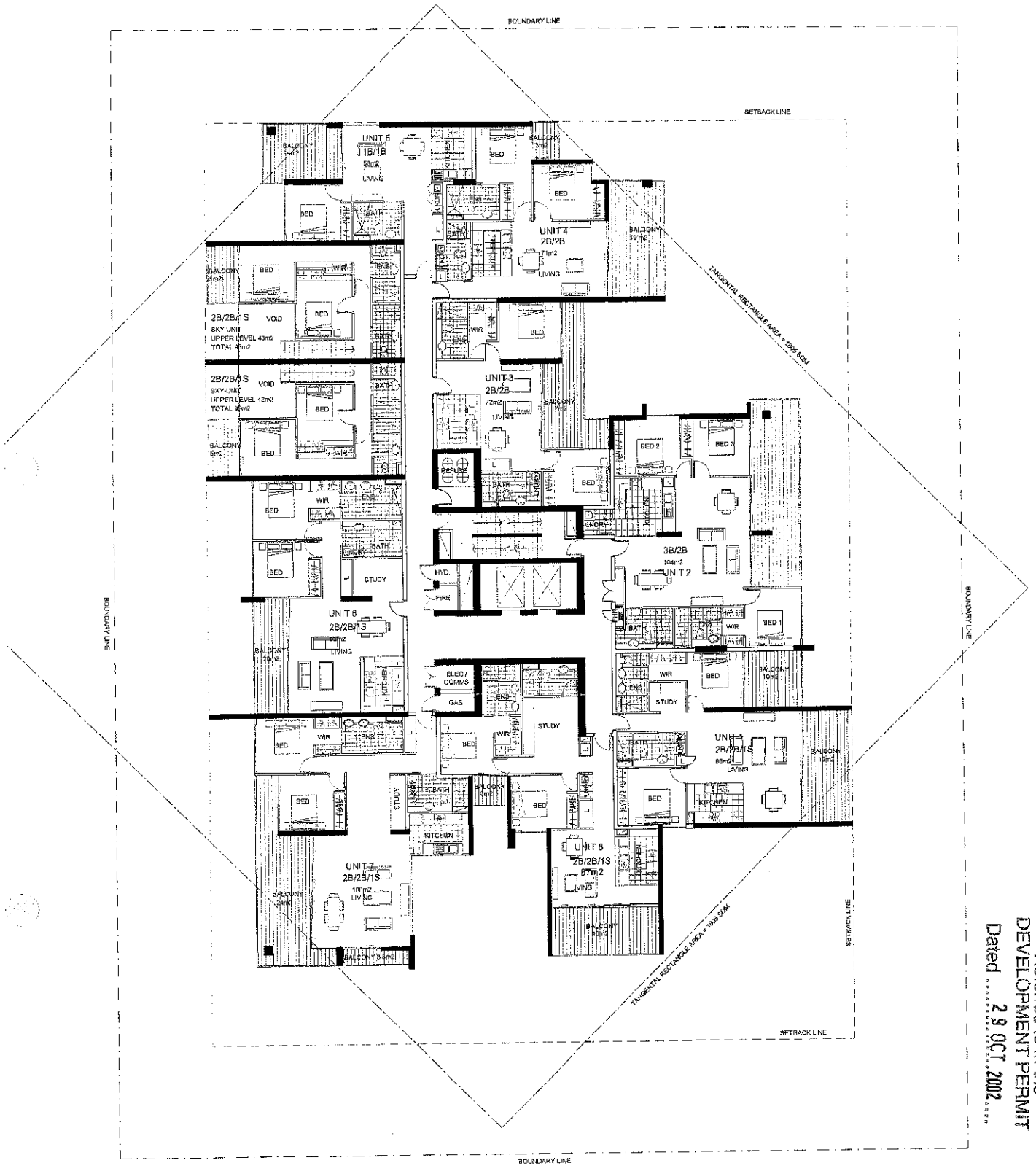

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DEVELOPMENT PERMIT
Dated 29 OCT 2002

LEVEL 35 & 37 - PRELIMINARY

FESTIVAL TOWERS
108 ALBERT STREET

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COX RAYNER PTY. LTD.
Architects & Planners

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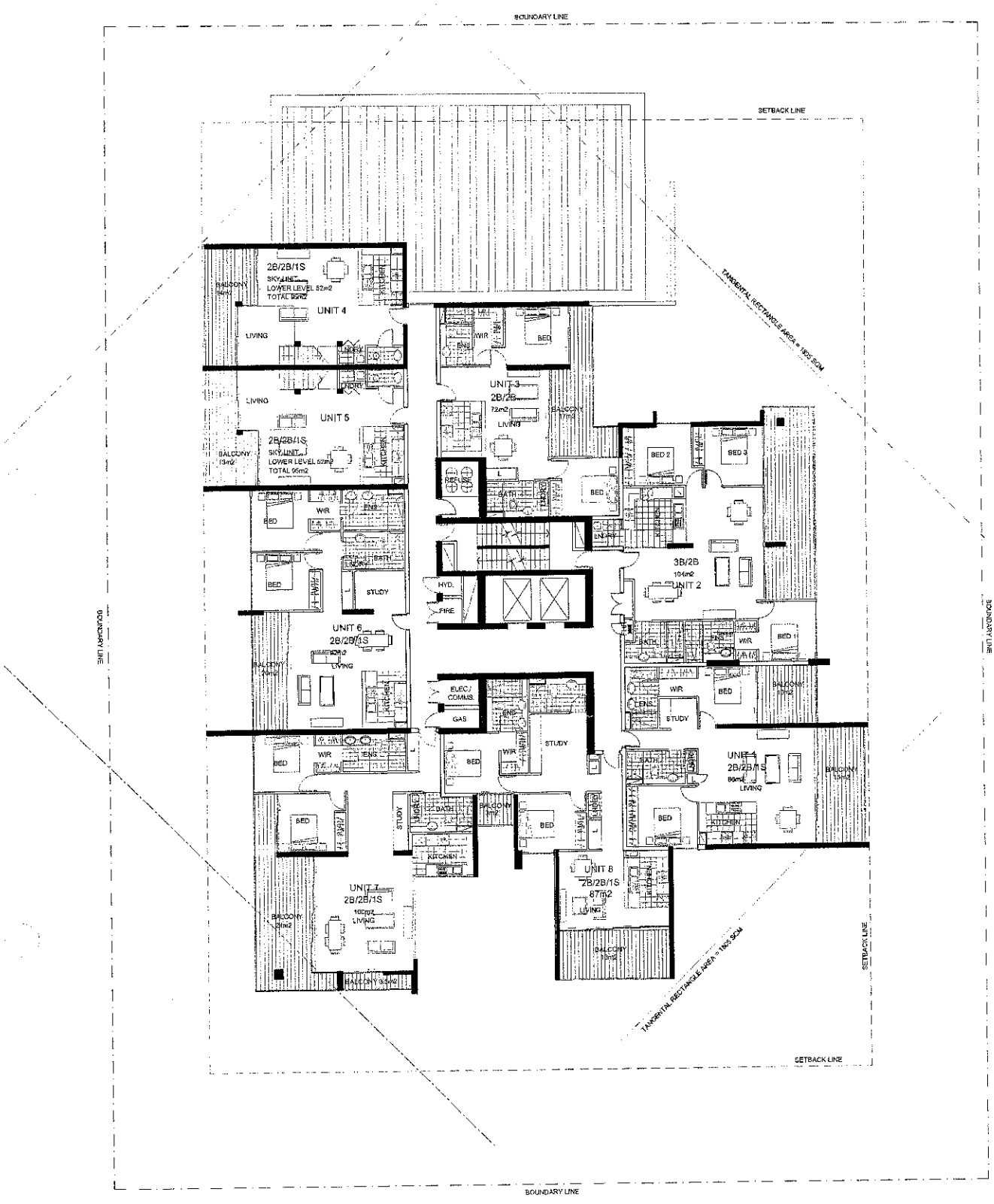

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DEVELOPMENT PERMIT
Dated 29 OCT 2002

LEVEL 38 - PRELIMINARY
FESTIVAL TOWERS
108 ALBERT STREET

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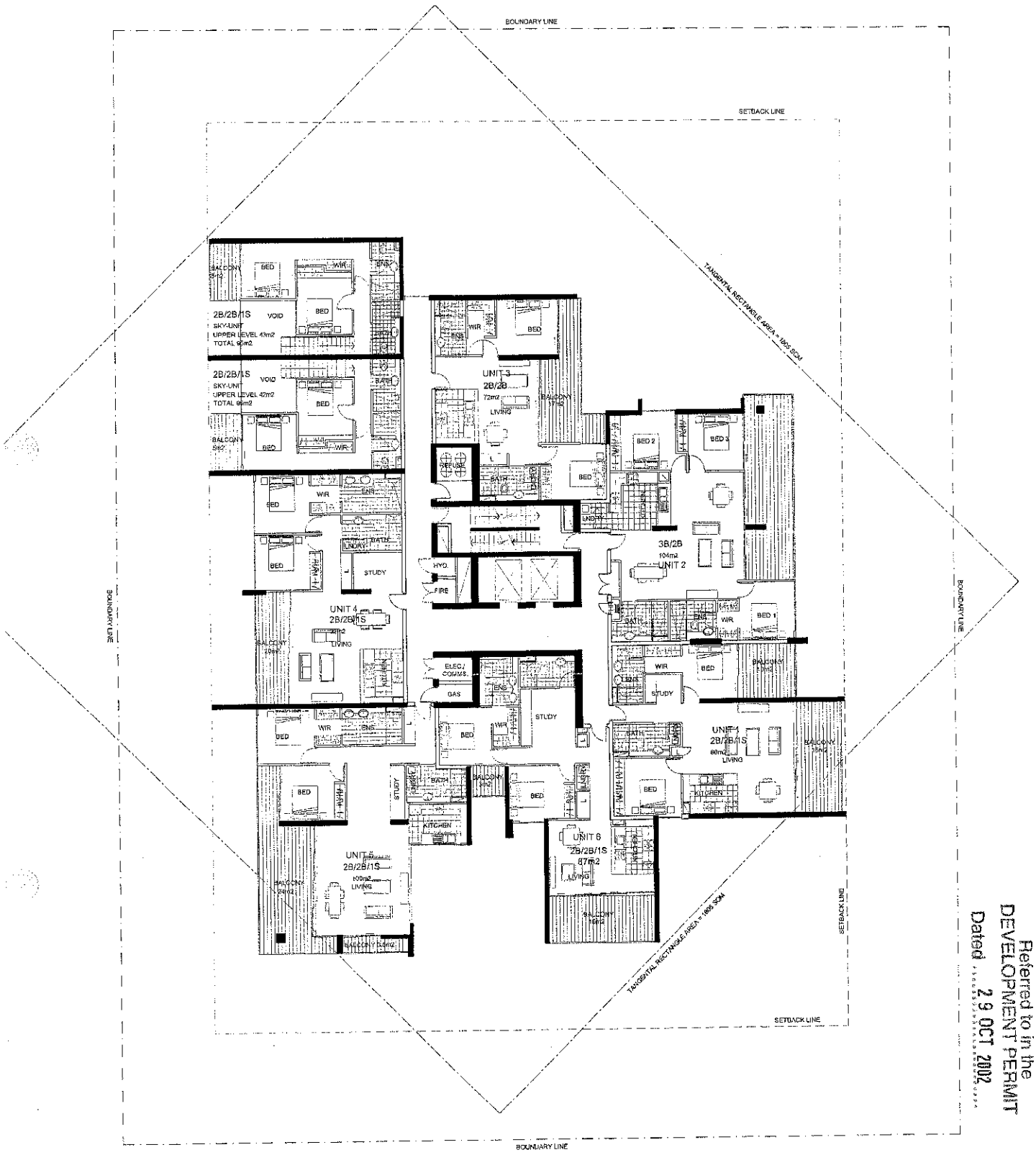

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Referred to in the
DEVELOPMENT PERMIT
Dated 29 OCT 2002

LEVEL 39 - PRELIMINARY
FESTIVAL TOWERS
108 ALBERT STREET

JOB NO. 012110 - PRELIMINARY - 8 OCTOBER, 2002

DWG NO. DA-26

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COX COX RAYNER PTY. LTD.
Architects & Planners

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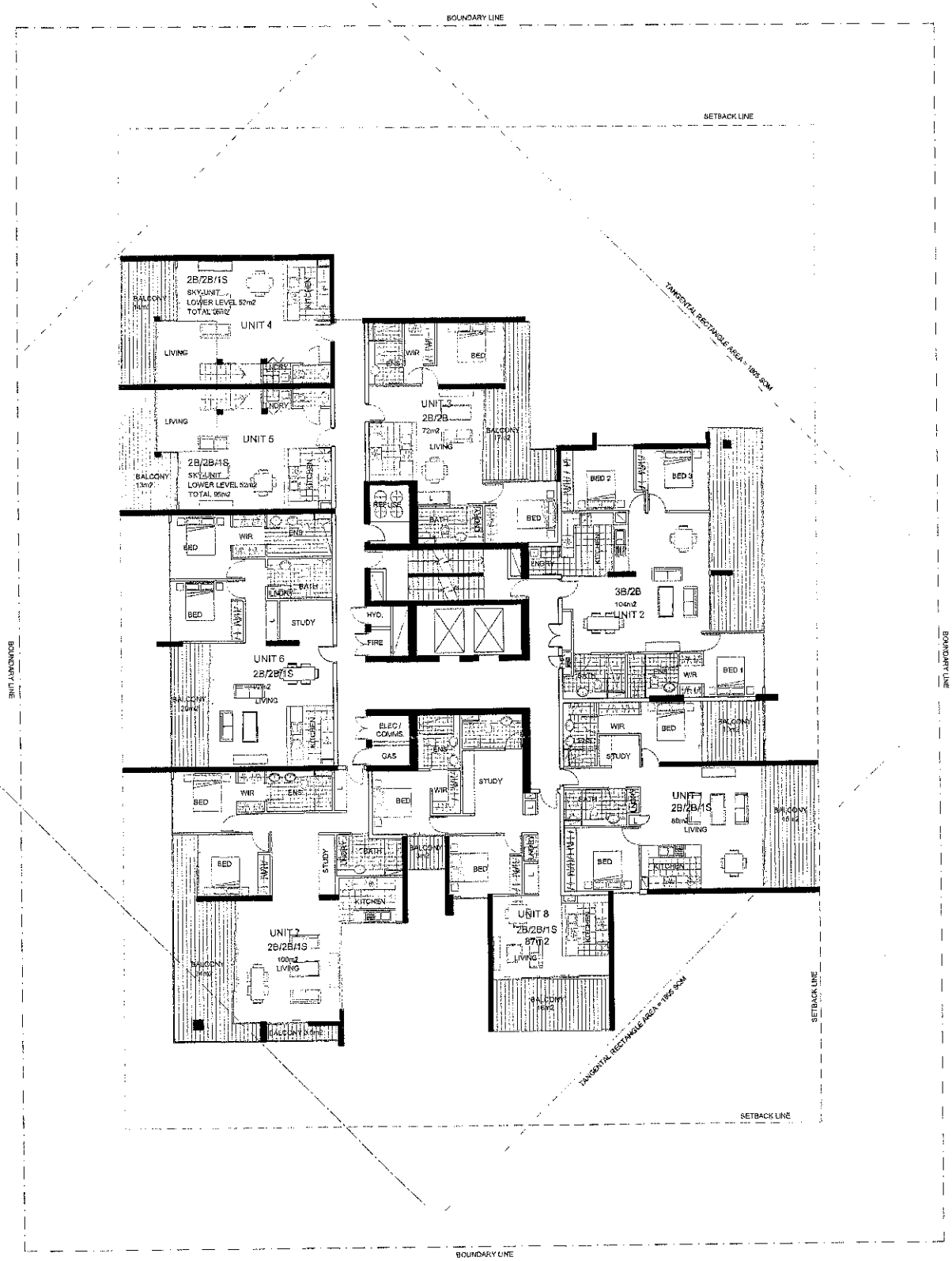

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DEVELOPMENT PERMIT
Dated ....29 OCT 2002....

LEVEL 40 - PRELIMINARY
FESTIVAL TOWERS
108 ALBERT STREET

JOB NO. 012110 - PRELIMINARY - 8 OCTOBER, 2002

DWG NO. DA-27

PRELIMINARY
- 8 OCT 2002

NORTH

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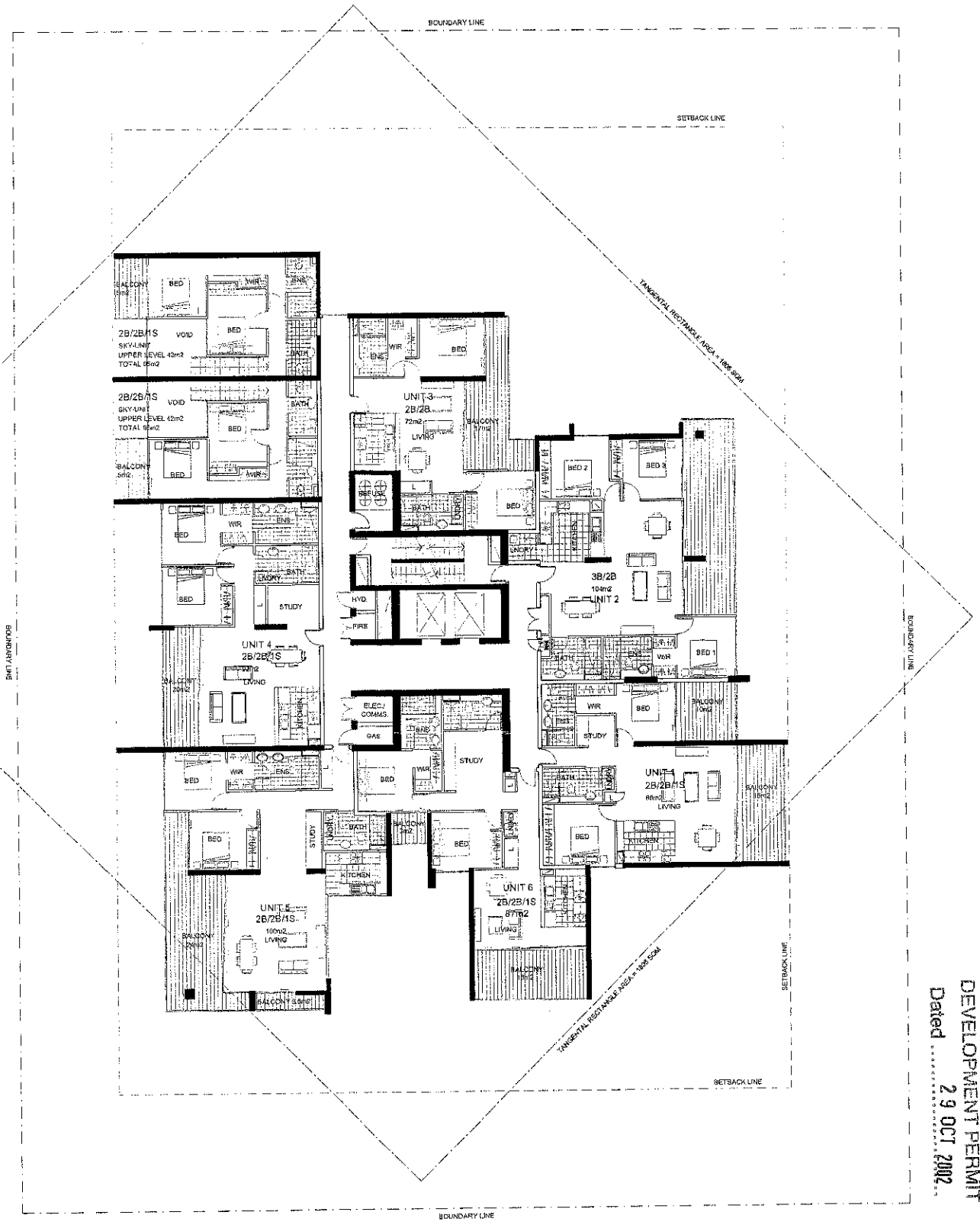

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DEVELOPMENT PERMIT
Dated 29 OCT 2002

LEVEL 41 - PRELIMINARY
FESTIVAL TOWERS
108 ALBERT STREET

JOB NO. 012110 - PRELIMINARY - 8 OCTOBER, 2002

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COX RAYNER PTY. LTD.
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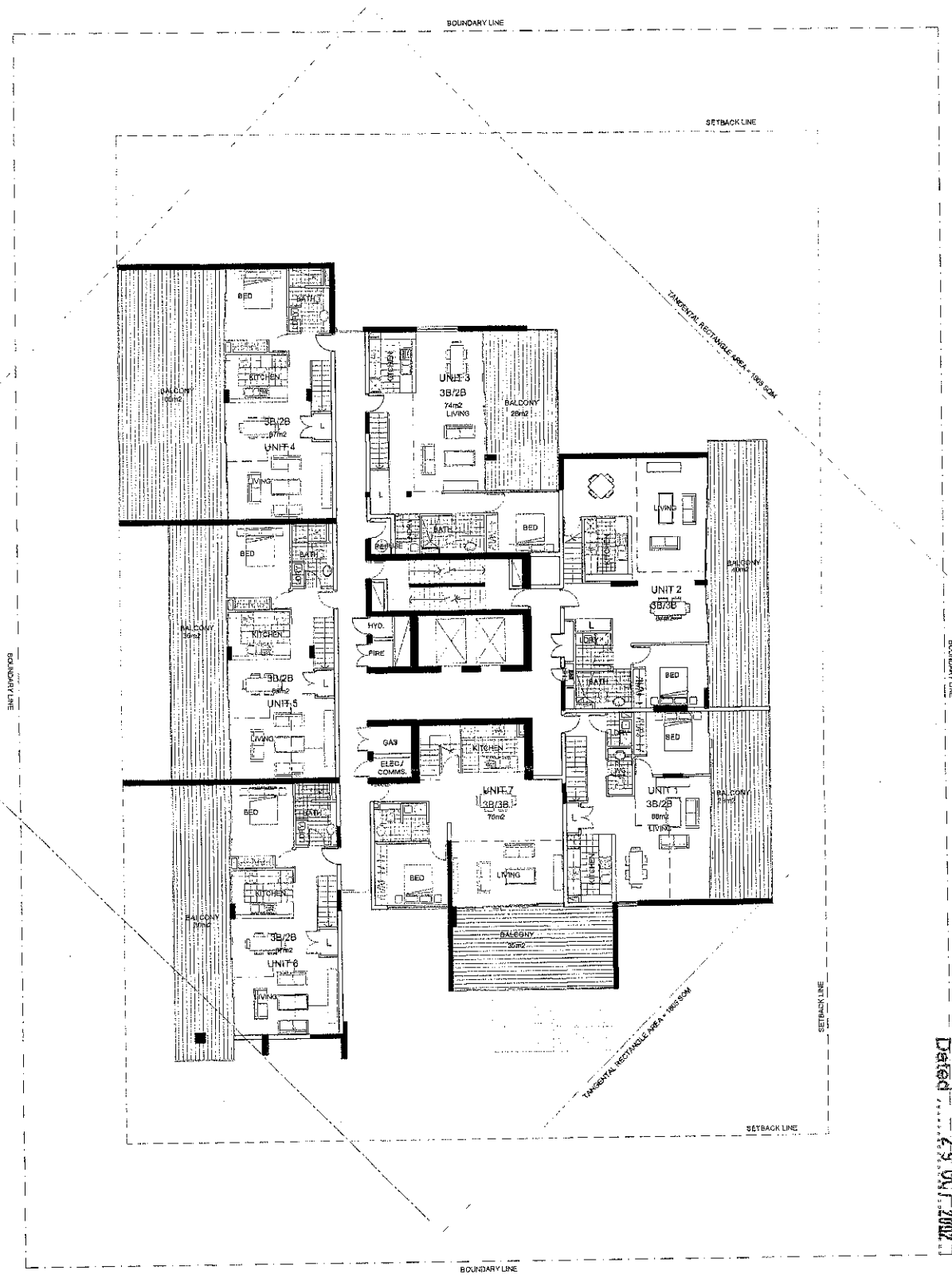

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Referred to in the
DEVELOPMENT PERMIT
Dated 29 OCT 2002

LEVEL 42 - Preliminary

FESTIVAL TOWERS
108 ALBERT STREET

JOB NO. 012110 - PRELIMINARY - 8 OCTOBER, 2002

DWG NO. DA-29

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COX RAYNER PTY. LTD.
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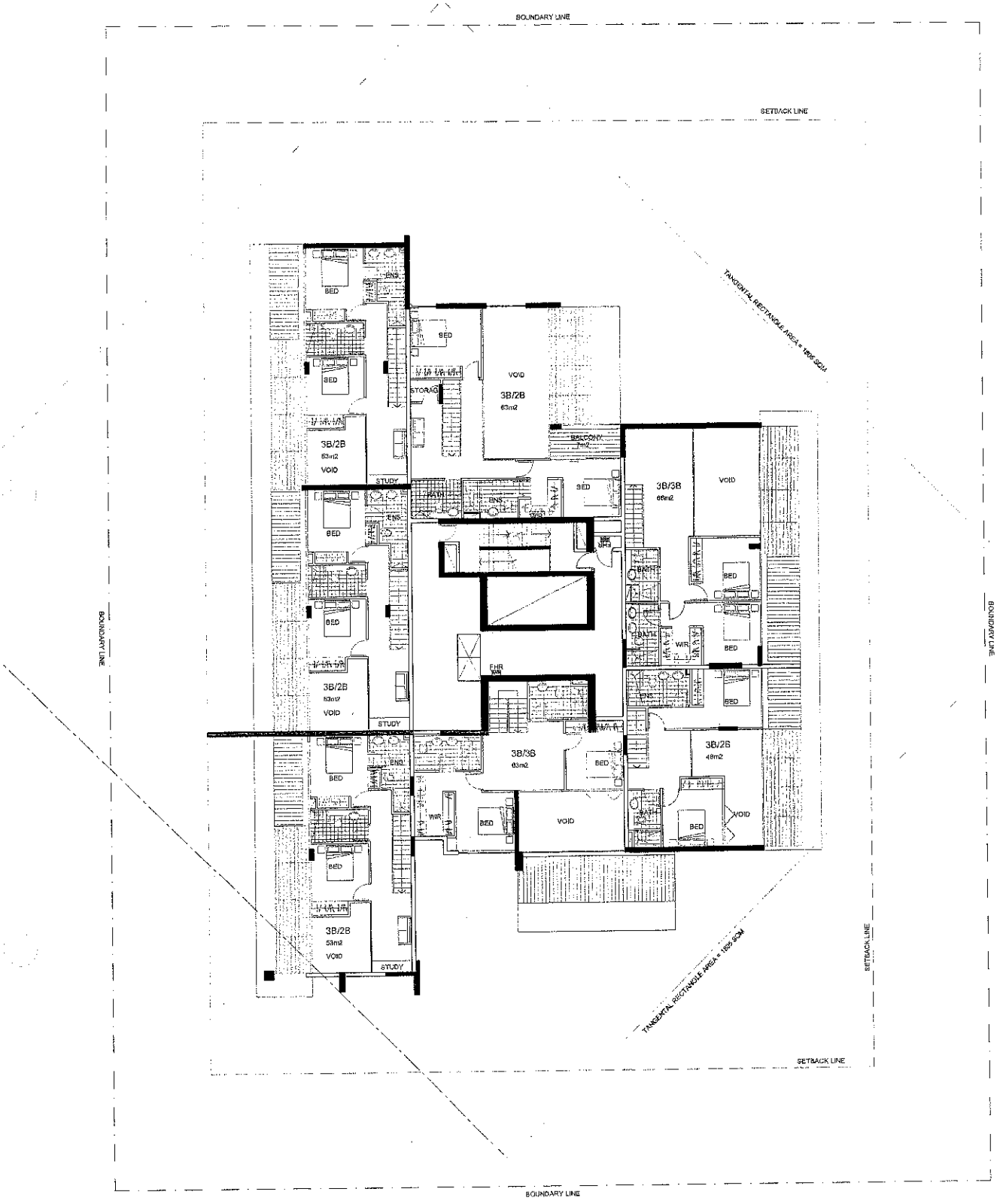

PLANS and DOCUMENTS
Referred to in the
DEVELOPMENT PERMIT
Dated 29 OCT 2002

NORTH

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LEVEL 43 - Preliminary
FESTIVAL TOWERS
108 ALBERT STREET

JOB NO. 012110 - PRELIMINARY - 8 OCTOBER, 2002

DWG NO. DA-30

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- 8 OCT 2002

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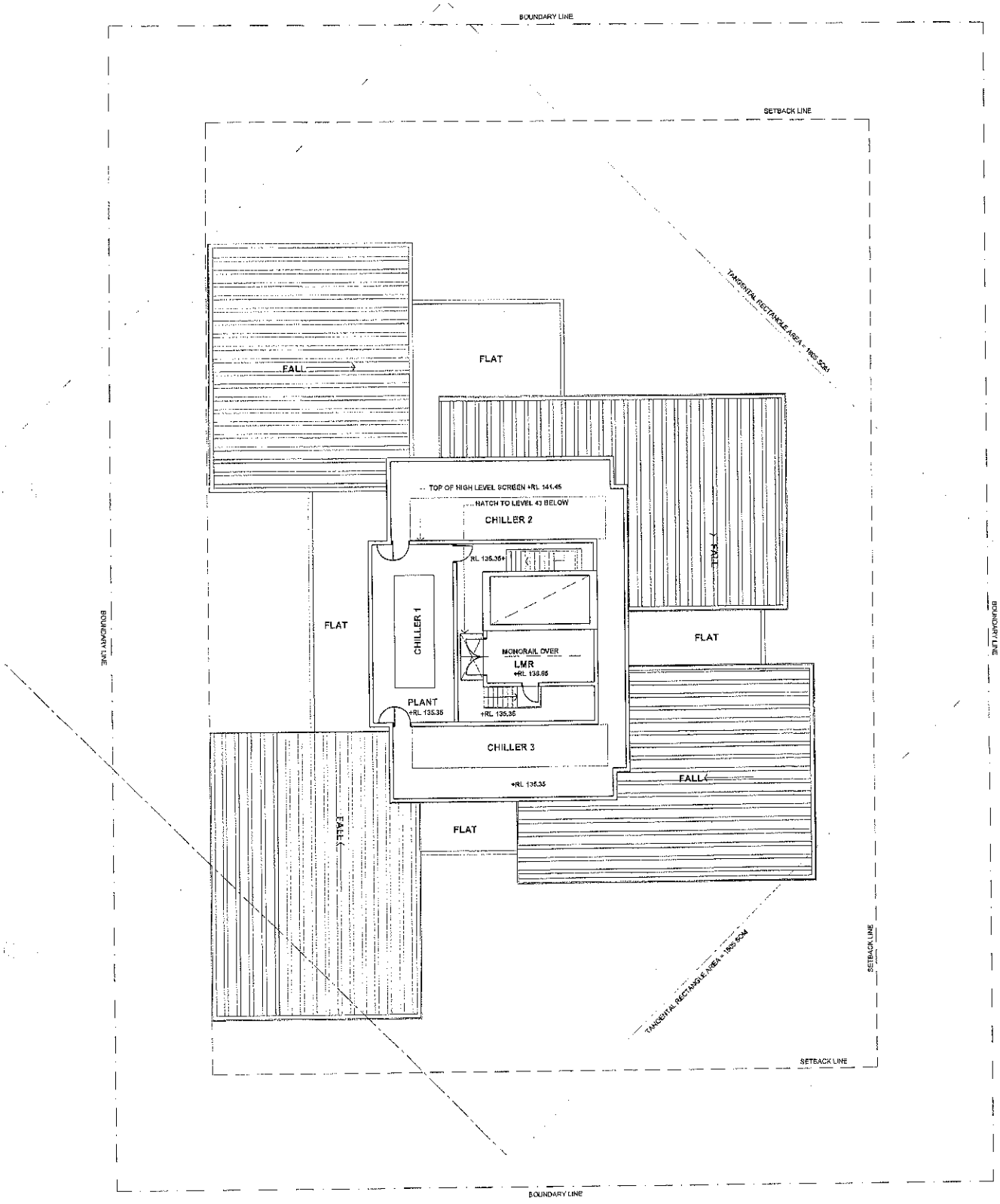

PLANS and DOCUMENTS
Referred to in the
DEVELOPMENT PERMIT
Dated 29 OCT 2002

NORTH

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1:100@A1, 1:200 @ A3

LEVEL 44 - PLANT ROOM
FESTIVAL TOWERS
108 ALBERT STREET

JOB NO. 012110 - PRELIMINARY - 8 OCTOBER, 2002

DWG NO. DA-31

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Architects & Planners

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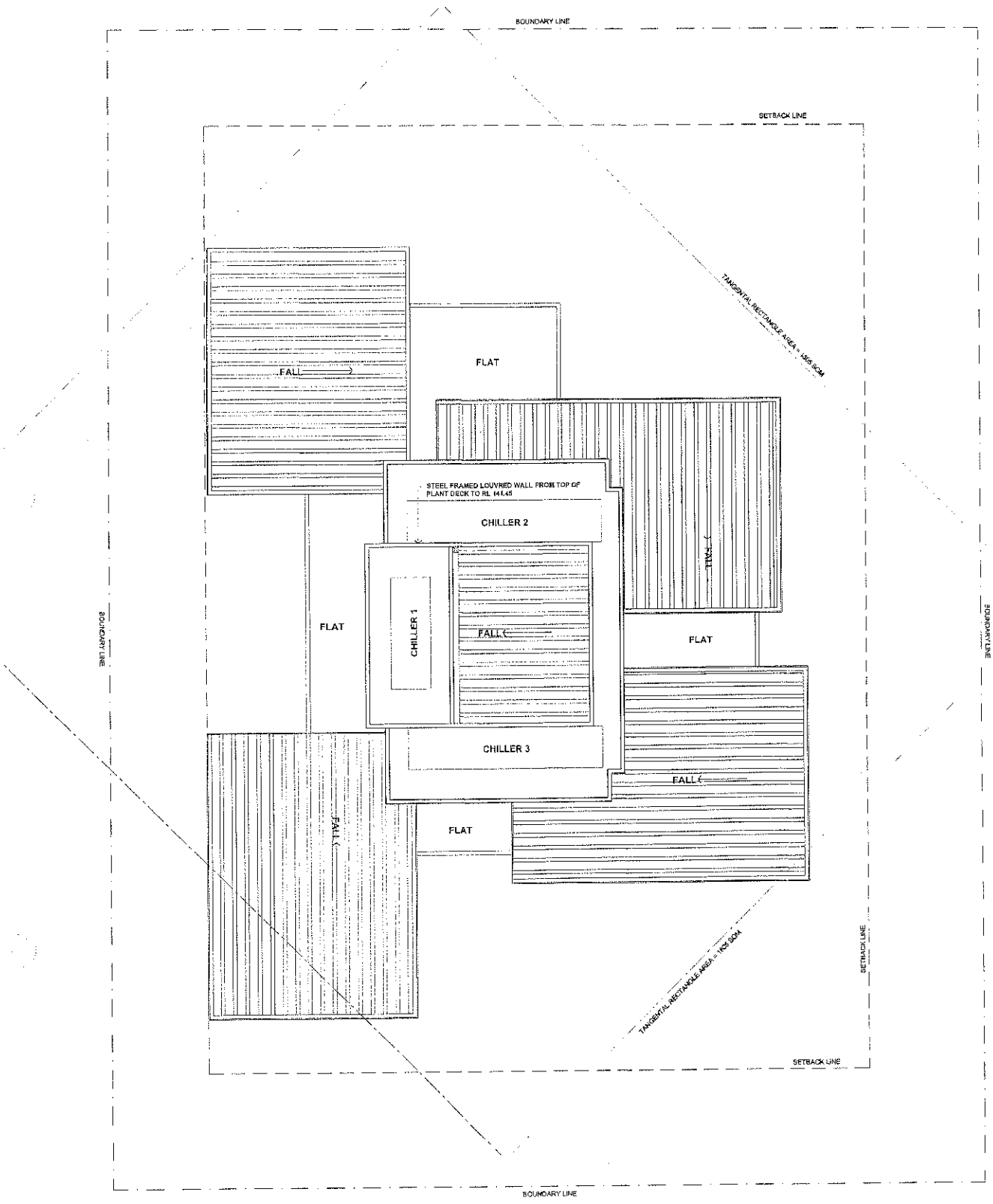

PLANS and DOCUMENTS
Referred to in the
DEVELOPMENT PERMIT
Dated 29 OCT 2002

NORTH

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1:100@A1, 1:200 @ A3

ROOF PLAN
FESTIVAL TOWERS
108 ALBERT STREET

JOB NO. 012110 - PRELIMINARY - 8 OCTOBER, 2002

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SAVERY & ASSOCIATES PTY LTD
PO BOX 265
THE GAP QLD 4061
PHONE (07) 3300 6288
FAX (07) 3300 6244

SAVERY & ASSOCIATES

Acoustic Report
89 Charlotte Street
Residential & Commercial Development
Brisbane

Report No S307.0

31 July 2002

Attachment 5.

DOCUMENT CONTROL PAGE

SAVERY & ASSOCIATES PTY LTD
4 PALTARRA STREET
PO BOX 265
THE GAP QLD 4061
Telephone:(07) 3300 6288
Facsimile: (07) 3300 6244
E-mail: [redacted]

Author: John Savery

Report No. S307.0

Copy No 1

REVISION HISTORY

Revision No	Issue Date	Revision Description	Checked By	Issued By
0	9/4/02	Draft	GLS	[redacted]
1	31/7/02	Final	GLS	

DISTRIBUTION RECORD

Copy No(s)	Rev No	Destination
1	1	MCD(Aust) Pty Ltd
2	1	Savery & Associates – File

Executive Summary

Savery & Associates Pty Ltd were commissioned by MCD (Aust) Pty Ltd on behalf of Devine Limited to prepare an Acoustic Report for re-development of the Festival Hall site in the Brisbane CBD. A forty-two level residential tower that incorporates ground level commercial space, basement and podium car parking and a podium recreation level is proposed for the site.

The purpose of this report is to assess the acoustic impacts of road traffic and the surrounding land use upon the proposed development, as well as assessing any acoustic impacts upon the surrounding land uses that may result from the development.

The report concludes that the 89 Charlotte Street residential tower development may be constructed on the proposed site in compliance with the Codes and Performance Specifications of the Brisbane City Council City Plan 2000.

The ambient noise monitoring conducted at the most exposed corner of the proposed site has confirmed that the site is exposed to ambient and background noise levels that are consistent with a busy CBD location. The ambient and background noise levels were found to be dominated road traffic noise and people noise from users of the CBD.

The report concludes that standard glazing constructions of up to Rw 33 dB, using 6.38mm laminated glass, will be required to achieve compliance with the internal noise levels of AS2107 for the units most exposed to Charlotte Street road traffic noise. The glazing for each level and unit will be specified during the detail design and documentation stage of the project.

The report also concludes that noise emissions from the proposed project development will not impact adversely upon surrounding land use. It recommends that the noise emissions from the Level 4 plantroom and the Roof-Top plantrooms be reviewed during the detail design and documentation stage to confirm compliance with the Brisbane City Plan 2000 Noise Impact Assessment Planning Scheme Policy requirements at the nearest noise sensitive locations.

The report also concludes that noise emissions from the roof-top plant of the Sebel Suites Hotel may potentially impact adversely upon the nearest units of the proposed development. It recommends that the noise emissions be reviewed with the co-operation of the Sebel site maintenance manager during the design and documentation stage of development. If necessary, glazing constructions will be upgraded to achieve compliance with the requirements of AS2107 and the Brisbane City Plan 2000 Noise Impact Assessment Planning Scheme Policy.

The report also identifies internal acoustic issues that are recommended to be reviewed and acoustically specified during the detail design and documentation stage of the project.

The acoustic issues that have been identified for review during detail design are:

- Review of wall constructions that separate units directly from the car-park (e.g. Units 10, 8A, 9A, 10A and other units (impact and sound isolation)
- Review of wall/ceiling/floor constructions between Unit 6.2B and the Theatrette;
- Review of sound/vibration isolation for laundries adjacent to neighbours' bedrooms;
- Noise and vibration attenuation of mechanical equipment from Lift Motor Room (Level 1) and Plant Room on Level 42.
- Vibration isolation of swimming pools, spas and associated equipment.

Contents

1.0 Introduction

Savery & Associates Pty Ltd were commissioned by MCD (Aust) Pty Ltd on behalf of Devine Limited to prepare an Acoustic Report for re-development of the Festival Hall site in the Brisbane CBD. A forty-two level residential tower that incorporates ground level commercial space, a podium recreation level, basement and podium carparking is proposed for the site.

The purpose of this report is to assess the acoustic impacts of road traffic and the surrounding land use upon the proposed development, as well as assessing any acoustic impacts upon the surrounding land uses that may result from the development.

Noise mitigation measures will be recommended in this report, as required, to satisfy the noise criteria applicable to the development.

2.0 Development Description

2.1 Site Information

Development Name:	89 Charlotte Street
Applicant's Name:	Devine Limited
Application Type:	Material Change of Use
Site Address:	Corner of Charlotte and Albert Streets, Brisbane
Lot and RP Description	Lot 2 RP90338, Lots 8 & 9 RP88593
City Plan Use:	Mixed Use
City Plan Area:	Multi-purpose Centre 1 – City Centre

2.2 Location and Description

2.2.1 General

The development site is located on an allotment at the corner of Charlotte and Albert Streets in, as shown in **Figure 1**. The development consists of a 42 level residential tower with a podium at level 5. The ground level incorporates the vehicle and pedestrian entry to the building plus commercial space.

Vehicle access to the building services area and the car-park will be via an entrance in Charlotte Street

The development will incorporate seven levels of car-parking space. There will be four basement parking levels plus three above ground levels (Levels 2-4).

Supply and discharge fittings for the car-park ventilation system will be located at the podium level (i.e. Level 5).

Three chillers will be located in the roof –top plant room of the tower and chilled water will be provided throughout the building. Individual commercial and residential units will be fitted with fan-coil units that are connected to the main chilled water supply.

Toilet ventilation discharges will be via ducts in the service duct.

Refrigeration plant for the commercial areas, if required, will be installed on Level 1 in the ground level services area.

2.2.2 Residential Units and Recreation Area

The number of units per level in the residential tower is described below:

Level 2 & 3	10 Units
Level 4	4 Units
Level 5 – Podium	Manager apartment/office, gymnasium, lap, spa and recreational swimming pool, bar, lounge/meeting area, theatrette, communal multi-use, 6 Units
Levels 6 – 28	13 Units
Levels 29 – 30	9 Units
Levels 31 - 32	9 Units
Levels 33 - 36	9 Units
Levels 37 –40	8 Units
Levels 41 – 42	7 Units
Level 43	Lift Motor Room, Plant Room and Roof

There will also be a lift motor room located at Level 31. The Level 43 plant room will include three chillers, a boiler and pumps.

2.2.3 Commercial Use

The development contains two commercial areas of 281m^2 and 914 m^2 respectively at Level 1 (i.e. street level). The potential occupants for these areas are not known at the time of preparatiou of this report.

2.3 Surrounding Land Uses

Surrounding land uses that may be impacted upon by the development, or which may contribute to the noise environment of the development, are detailed in this section.

2.3.1 Adjacent Buildings

There are commercial buildings located adjacent to two sides of the development site with other nearby commercial buildings located on the opposite side of Charlotte and Albert Streets. The nearest buildings, locations and heights are listed below:

Adjacent Buildings:

Kings Car Park	120 Charlotte Street	RL 30.7m
Queensland Credit Union	96 Albert Street	RL 27.8m

Opposite Buildings:

Wilson Car Park	Cnr Charlotte & Albert Streets RL 22.0m
Sebel Suites Hotel	Cnr Charlotte & Albert Streets RL 96.3m
Gilhooleys	124 Albert Street RL 18.4m
Shops	Albert Street RL 14.5m

The nearest buildings to the development site generally have heights similar to the podium level of the planned development. Some mechanical plant (generally kitchen exhaust fans, cooling towers or condensers) is located on the roofs of surrounding buildings. The noise levels were observed to be low and will therefore not impact upon the podium or higher residential levels of the proposed 89 Charlotte Street tower.

The Sebel Suites Hotel has mechanical plant at the roof level at approximately RL 92.

The Wilson Car Park on the corner of Charlotte and Albert Streets has 6 levels of car parking whilst the Kings Parking car park in Charlotte Street (adjacent to the western boundary of the development site) has 9 levels of car parking.

2.3.2 Road Traffic

The road traffic in both Charlotte and Alberts Streets consists predominantly of car traffic with some service and delivery vehicles. No Brisbane City Council buses travel in Albert Street and only a limited number of buses travel in Charlotte Street. Eighteen buses per weekday (Bus Nos 377 & 378) travel along Charlotte Street between 7:50am and 6:15pm weekdays.

The existing and ultimate traffic volumes on the streets adjacent and near to the development site are given in **Table 1**.

Table 1 Existing and Ultimate Traffic Volumes (Supplied by BCC Transport & Traffic Urban Management Division)

Street	Traffic Volumes, vehicles per day			
	Existing		Ultimate	
	Daily volume	Commercial %	Daily volume	Commercial %
Streets Adjacent to 89 Charlotte Street Development				
Charlotte Street	16,000	4.0	18,000	4.0
Albert Street (between Charlotte & Mary Streets)	6,000	2.0	7,000	2.0
Streets Near 89 Charlotte Street Development				
Elizabeth Street (between Edward & Albert Streets)	20,000	8.0	25,000	8.0
Mary Street (between George & Albert Streets)	6,000	3.0	7,000	3.0
Mary Street (between Edward & Albert Streets)	10,000	4.0	13,000	4.0

Indicative weekday peak AM and PM traffic volumes for the two streets fronting the development site are given in **Table 2**:

Table 2 Peak Weekday Road Traffic (Supplied by HTC)

Time	Peak Weekday Traffic Volumes, vph	
	Albert Street	Charlotte Street
AM Peak	320	410
PM Peak	490	700

2.3.3 Nightclubs and Bars

There are two nightclubs located near the proposed development site:

Auroras Microbrewery, Bar, Restaurant & Club, 142 Albert Street (towards the Queen Street Mall), and

Adrenalin Sports Bar, 127 Charlotte Street

The Auroras Bar is located approximately 90 metres along Albert Street from the nearest units of the 89 Charlotte Street development (i.e. in the direction towards the Queen Street Mall). The nightclub is located on the same side of Albert Street as the new development. The nearest units of the development are visually and acoustically shielded from Auroras Bar by the intervening buildings in Albert Street.

The Adrenalin Sports Bar is located approximately 125 metres along Charlotte Street from the nearest units of 89 Charlotte Street (i.e. in the direction towards Edward Street).

There was no entertainment noise audible outside the Adrenalin Sports Bar during the spot noise measurements recorded at 1:00am on Friday night although the venue appeared to be operating with a busy crowd.

Noise from the Auroras Bar was audible at the top level of the Wilson Carpark on the opposite side of Albert Street from the development site at 1:00am on Friday night but the noise was only at very low levels.

3.0 Assessment Criteria

3.1 BCC City Plan Requirements

Codes: **Centre Amenity and Performance Code**

Performance Criteria:	**P1**	The proposal must enhance the amenity, character and identity of the Centre.
Acceptable Solutions:	**A1**	Land owners and operators of premises shall locate air-conditioning units and/or refrigeration units so that they...do not cause adverse noise impacts on adjoining properties.
Performance Criteria:	**P4**	All residential uses within a Centre must be designed, constructed and maintained to attenuate noise from external sources.
Acceptable Solutions:	**A4**	Compliance with *AS3671 Acoustics – Road Traffic Noise Intrusion – Building Siting and Construction* and *AS2107 Acoustics – Recommended Design Sound Levels and Reverberation Times for Building Interiors.*

Codes: **Residential Design – High Density Code**

Performance Criteria:	**P24**	Noise from the development must not affect existing or likely future dwellings on adjacent land unreasonably.
Acceptable Solutions:	**A24.3**	Communal open space is located a minimum of 3m from adjoining dwellings or provided with acoustic screening.
	A24.4	The development complies with the **Noise Impact Assessment Planning Scheme Policy**.
Performance Criteria:	**P25**	Exposure of new dwellings to noise must be minimised.
Acceptable Solutions:	**A25.1**	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 of 20 ANEF or greater are mitigated to comply with the requirements of the **Noise Impact Assessment Planning Scheme Policy.**

Noise Impact Assessment Planning Scheme Policy (NIAPSP)

Three methodologies for noise impact assessment are recommended by NIAPSP. The methodologies are as follows:

Methodology 1: Comparison of Like Parameters or Descriptors – Comparison, using a suitable descriptor, of the ambient sound character of an area without the development to that resulting with the development.

Methodology 2: Application of AS2107 – Comparison with a defined set of sound pressure levels for specified indoor areas occupied by people, as set out in Table 1 of AS2107-1997.

Methodology 3: Sleep Disturbance

NIAPSP states "Any one or a combination of the three methodologies may be needed to assess the acoustic acceptability of a particular development, depending upon the nature and characteristics of the sound or vibration. Meeting the requirements of one particular methodology may not be an acceptable overall solution if another applicable methodology is not satisfied."

Methodologies 2 & 3 will be applied in the assessment of this development along with other relevant acoustic criteria, as described in **Section 3.2** below.

3.2 Other Relevant Criteria

3.2.1 Australian Standard AS1055

The Australian Standard AS1055-1997, *Acoustics – Description and Measurement of Environmental Noise, Part 1: General Procedures; Part 2: Application to Specific Situations, and Part 3: Acquisition of Data Pertinent to Land Use* provides the technical framework upon which quasi-steady environmental noise may be measured, assessed and applied for a development noise assessment report.

Although the standard states that it should be applied to "noise sources that operate for long time periods and emit steady levels", the standard contains the underlying principles that are applied in the measurement and assessment of all environmental noise.

The definitions and methods of the standard will therefore be applied during this assessment.

3.2.2 Guidelines for Community Noise (WHO 1999)

Guidelines for Community Noise, Berglund, B., Lindvall, T. & Schwela, D.(Eds)., World Health Organisation, April 1999, recommends guidelines for environmental health authorities and professionals to protect people from the effects of noise in non-industrial environments. The purpose of the WHO Task Force was to derive guidelines for community noise that consolidated current scientific knowledge on the health impacts of community noise. The Task Force considered a broad range of noise impacts and effects, including interference with communication, annoyance responses, sleep disturbance and other work related impacts.

The Guidelines for Community Noise Report is a reference document in the Users Guide to the Qld EPP(Noise). It is the most recent and significant summary of community noise effects and guidelines for protection of people from adverse impacts of noise in non-industrial environments.

Guidelines to prevent sleep disturbance in dwellings are based upon a combination of values of $L_{Aeq,T}$ 30 dB(A) for continuous noise levels and $L_{Amax,T}$ 45 dB(A) for individual noise events.

4.0 Noise Assessment

4.1 Existing Ambient Noise Levels

Existing ambient noise levels ($L_{A10,T}$, $L_{Aeq,T}$ and $L_{A90,T}$) were measured using a noise logger placed on the roof of Festival Hall near the corner of Charlotte and Albert Streets. The noise logger recorded noise levels for a period of five days, including one weekend. Spot noise levels were also recorded from the top parking levels of the two adjacent car-parks at various times of the day to identify the noise sources contributing to the logged noise levels. The monitoring locations are shown in **Figure 2**.

The ambient and background noise levels for weekdays and weekends from the noise logger are summarised in **Tables 3 - 5**. The average background noise levels for each daily time interval, measured as the statistical noise parameter, L_{A90}, are shown in **Table 3**. The measured levels show that the average background noise level at the Charlotte and Albert Street corner of the development site is reasonably consistent throughout the day and night (i.e. 2 – 6 dB variation per daily time interval).

Table 3 Background L_{90} (Average) Noise Levels, dB(A)

Daily Time Interval	Monday -Thursday	Friday	Saturday	Sunday
Day (7am – 6pm)	63	63	61	60
Evening (6pm – 10pm)	61	63	61	60
Night (10pm – 7am)	57	59	59	55

Further analysis of the background noise levels to determine the background noise level that was exceeded for ninety percent of each time interval (termed 90 percentile), indicates that the average and 90 percentile background noise levels were very similar for the day and evening intervals for Monday to Saturday, and evening for Sunday, as shown in **Table 4**. This indicates that the background noise level is fairly constant throughout the

time interval for days and evenings, as would be expected with vehicles, people and mechanical plant as the main noise sources. The night (10pm – 7am) 90 percentile background noise levels are lower than the average background levels thereby indicating that there were some periods during the night when the noise from vehicles, people and mechanical plant was less than during the day and evening.

Table 4 Background L_{90} (90 Percentile) Noise Levels, dB(A)

Daily Time Interval	Monday -Thursday	Friday	Saturday	Sunday
Day (7am – 6pm)	62	61	59	56
Evening (6pm – 10pm)	61	63	60	59
Night (10pm – 7am)	53	54	55	52

The equivalent continuous noise level, L_{Aeq}, of noise from all sources measured at the corner of Charlotte and Albert Streets indicates that the overall noise exposure level is fairly constant for all daily time intervals throughout the week, with slightly lower noise levels on Sunday evening and night, as shown in **Table 5**. The overall noise levels are typical of a location in the centre of a modern city.

Table 5 Ambient L_{Aeq} Noise Levels, dB(A)

Daily Time Interval	Monday -Thursday	Friday	Saturday	Sunday
Day (7am – 6pm)	65	66	65	65
Evening (6pm – 10pm)	65	67	65	64
Night (10pm – 7am)	64	66	66	63

Noise levels and frequency spectra were recorded for 15 minute periods at two locations near to the development site at heights approximately similar to the proposed Level 5 Podium of the development, as shown in **Table 6**.

Table 6 Noise Levels at Monitoring Locations Near to the Site

Day	Time	Sound Pressure Levels, dB(A)				Contributing Sources
		L_{01}	L_{10}	L_{eq}	L_{90}	
1. Charlotte St Carpark Top Level (west of site)						
Tuesday	5:40pm	67	65	64	63	A, B
2. Wilson Carpark Top Level (diagonally opposite site)						
Saturday	1:31am	73	68	66	62	A, B, C

Note 1 Sources contributing to the measured noise levels are listed below:

A Motor vehicles in Charlotte & Albert Streets

B Roof-top mechanical plant from nearby buildings

C Voices of pedestrians

The noise levels indicate that during the day time interval the levels are fairly constant with minimal short duration noise contributions (L_{01} and L_{10}), predominantly due to vehicle noise. On Saturday night, however, there were occurrences of short duration noise events from voices and individual cars.

The frequency spectra of the noise in each instance exhibited broad band characteristics, centred upon 630-1000 Hz, without dominant low frequency components (e.g. typical of noise levels dominated by cars and voices, with only minor contributions from mechanical plant).

4.2 Impact of Noise from the Development on Surrounding Land Uses

Noise sources associated with the development that have the potential to impact upon surrounding land uses include the following:

- Service vehicles and cars entering and departing from the site;
- Car park ventilation discharge
- Roof-top mechanical plant
- Other mechanical plant.

4.2.1 Service Vehicles and Cars

The peak traffic flows on the streets adjacent to the site were provided by Holland Traffic Consulting, as shown in **Table 2** above.

The traffic volumes in the surrounding streets would need to increase by more than 25% as a result of the residential tower development to cause an increase of only 1 dB in road traffic noise levels. For Albert Street this would mean an increase of 1750 movements per day and for Charlotte Street an additional 4500 movements per day.

The service vehicles and cars accessing the site via either Albert Street or Charlotte are therefore not expected to materially change road traffic noise levels in the streets surrounding the site.

4.2.2 Car Park Ventilation Discharge

The car park ventilation discharge duct is located at the Podium, Level 5. The noise level will be controlled by fan selection and inclusion of sound attenuators in the duct system. The noise emission level (adjusted for tonality) will comply with L_{eq} 55 dB(A) measured at the nearest noise sensitive location on the development site, i.e. unit balcony or garden footpath on the podium level, or nearest noise sensitive location on an adjacent building or adjacent public space.

Fans and attenuators will be selected during the detail design and documentation stage of the project.

4.2.3 Roof-Top Mechanical Plant

Three chillers, a boiler and associated pumps, as well as lift motors, will be housed in a plant room and lift motor room located on the roof-top of the development, above Level 42. The building envelope of the plant rooms, including ventilation louvres, will be acoustically designed during the detail design and documentation stage of the project. Noise controls will be designed to achieve a noise criterion level (adjusted for tonality) of L_{eq} 50 dB(A) at the nearest noise sensitive location or facade. This level is based upon a maximum internal noise level in a bedroom of 40 dB(A) plus a 10 dB increase for an open window, or alternatively for balconies represents the level at which people may become moderately annoyed (by WHO Guidelines). Given that the measured background noise level at three storeys above street level exceeded 57 dB(A) for ninety percent of all daily time intervals this criterion a reasonable noise control objective.

The plant level is approximately 10 storeys above the height of the nearest residential units in the neighbouring Sebel Suites Hotel (on the opposite side of Albert Street). The plant rooms are arranged so that the Lift Motor Room will face the Sebel building and shield the plant

room from it. The Lift Motor Room will be separated by approximate 65 metres from the balcony of the highest unit in the Sebel building.

It is expected that standard noise attenuation measures will control the plant noise to achieve compliance at the nearest noise sensitive locations.

4.2.4 Other Mechanical Plant

Pumps and other plant associated with the recreation area and swimming pools on the Podium, Level 5, will be located in plantrooms that are located within the building at Level 4. Ventilation to the plant rooms will be via louvres in the walls. Plant noise attenuation will be reviewed during the detail design and documentation phase of the project. Noise control measures will be designed to comply with an L_{eq} 45 dB(A) level at the nearest noise sensitive location, or public space (e.g. the footpath). This criterion has been set approximately 10 dB below the existing measured background noise level for all daily time periods to prevent background noise creep at street level. It is expected that standard noise attenuation measures will achieve compliance with the criteria.

4.3 Impact of External Noise on the Development

External noise that may impact upon the development includes the following:

- Road traffic noise;
- Mechanical equipment noise from adjacent buildings;

4.2.1 Road Traffic Noise

The vehicle traffic on the perimeter streets to the development, as well as traffic on Elizabeth and Mary Streets, will be major contributors to the ambient noise levels at all levels of the proposed residential tower. The traffic noise contribution will diminish with height above ground level. By assuming that all of the measured existing noise results from road traffic alone, the traffic noise levels for the ultimate traffic volumes on Albert and Charlotte Streets may be estimated for various levels in the proposed development, as shown in **Table 7**. Noise levels were predicted for the facade location nearest to the Albert and Charlotte Street corner of the site.

Table 7 Predicted Traffic Noise Levels for Selected Levels on the Tower Facade

Level	Traffic Noise Level, $L_{A10,18hour}$ dB(A)	
	Existing	Ultimate
6	64	65
10	62	63
20	58	59
30	56	57
40	53	54

Traffic noise intrusion to the tower units may be calculated using standard acoustic methods, the dimensions of the building envelope and layout of units at each floor level. Internal noise levels, L_{Aeq}, may be predicted and compared to the internal noise levels recommended by AS2107 for bedrooms, living and work areas. Intrusive short duration internal noise levels, L_{A01}, may be predicted and compared to the maximum noise level of 45 dB(A) recommended by the WHO guidelines for sleep disturbance in bedrooms.

Glazing constructions recommended following the preliminary acoustic assessment are listed in **Table 8** for various floors of the building.

Table 8 Preliminary Glazing Specifications for Traffic Noise Attenuation

Floors	Room	Component	Rw (min) dB	Construction	Predicted Sound Pressure Level, dB(A)	
					L_{eq}	L_{max}
6-9	Bedroom	Window/Glazed door	30	6.38mm laminated sliding window/door acoustic seals	35	43
	Living	Window/Glazed door	26	6.38mm laminated sliding window/door	40	
10-19	Bedroom	Window/Glazed door	28	6.38mm laminated sliding window/door acoustic seals	35	45
	Living	Window/Glazed door	25	6.38mm laminated sliding door, 6mm float fixed window	40	
20-29	Bedroom	Window/Glazed door	26	6.38mm laminated sliding door, 6mm float fixed window	35	44
	Living	Window/Glazed door	25	6.38mm laminated sliding door, 6mm float fixed window	38	
30-39	Bedroom	Window/Glazed door	26	6.38mm laminated sliding door, 6mm float fixed window	31	38
	Living	Window/Glazed door	25	6.38mm laminated sliding door, 6mm float fixed window	33	
40+	Bedroom	Window/Glazed door	26	6.38mm laminated sliding door, 6mm float fixed window	31	38
	Living	Window/Glazed door	25	6.38mm laminated sliding door, 6mm float fixed window	33	

The constructions listed in Table 8 achieve compliance with the internal L_{eq} level recommended by AS2107 for bedrooms or living areas and the maximum level for sleep disturbance (45 dB(A)) recommended by WHO.

Glazing constructions for bedrooms and living rooms will be confirmed in the detail design and documentation phase of the project for all units in the tower to achieve compliance with the respective internal criteria.

4.3.2 Mechanical Noise from Adjacent Buildings

The Sebel Snites Hotel Building has a mechanical plant room at RL 92m. Ventilation louvres from the plant room face towards the proposed development. The facade of the nearest units will be located approximately 40 metres from the plant room facade. Noise emission from the Sebel roof-top plant room will be determined during the detail design and documentation stage of the project. Approval has been provided by the Sebel management to measure noise levels at the facade of the plant room. Noise levels will be calculated at the facades of the nearest units in the 89 Charlotte Street project and the glazing will be checked to ensure that compliance with the recommended internal noise levels of AS2107 is achieved in the new units (i.e. 35 dB(A) for bedrooms and 40 dB(A) for living rooms).

There are some kitchen exhaust fans, cooling towers and condensers located on the roofs of the buildings on the opposite side of Charlotte Street to the development site. The noise levels are not considered to be intrnsive, however, given the relatively high ambient and

background noise levels that exist in the immediate area surrounding the development site due to traffic and people noise. Construction using the glazing constructions listed in Table 8 above will ensure that mechanical plant noise from the northern side of Charlotte Street complies with the internal design criteria recommended by AS2107 for units on major road.

4.4 Internal Acoustics within the Development

Internal acoustic issues will be addressed during the detail design and documentation phase of the project. The acoustic issues that have been identified for review are as follows:

- Review of wall constructions that separate units directly from the car-park (e.g. Units 10, 8A, 9A, 10A
- Review of specification of sound transmission isolation and impact isolation for constructions between units;
- Review of wall/ceiling/floor constructions between Unit 6.2B and the Theatrette;
- Review of laundry sound/vibration isolation for laundries adjacent to neighbours bedroom;
- Noise and vibration attenuation of mechanical equipment from Lift Motor Room (Level 1) and Plant Room on Level 42.
- Vibration isolation of swimming pools, spas and associated equipment.

5.0 Conclusions & Recommendations

It is concluded that the 89 Charlotte Street residential tower development may be constructed on the proposed site in compliance with the Codes and Performance Specifications of the Brisbane City Council City Plan 2000.

The ambient noise monitoring conducted at the most exposed corner of the proposed site has confirmed that the site is exposed to ambient and background noise levels that are consistent with a busy CBD location. The ambient and background noise levels were found to be dominated road traffic noise and people noise from users of the CBD.

The report specifies glazing constructions of up to Rw 30 dB, using 6.38mm laminated glass, for windows and sliding doors to achieve compliance with the internal noise levels of AS2107 for the units most exposed to Charlotte Street road traffic noise. The preliminary glazing specification is provided in Table 8 of this report and will be confirmed during the detail design and documentation stage of the project.

The report also concludes that noise emissions from the proposed project development will not impact adversely upon surrounding land use. It recommends that the noise emission of the carpark ventilation fans be designed to comply with L_{eq} 55 dB(A) at the nearest noise sensitive locations to the discharges.

It also recommends that the noise emissions from the Level 4 plantroom and the Roof-Top plantrooms be reviewed during the detail design and documentation stage to comply with a design level of L_{eq} 50 dB(A) at the nearest facades of nearby buildings.

The report also concludes that noise emissions from the roof-top plant of the Sebel Suites Hotel may potentially impact adversely upon the nearest units of the proposed development. It recommends that the noise imissions be reviewed with the co-operation of the Sebel site maintenance manager during the design and documentation stage of

development. If necessary, glazing constructions will be upgraded to achieve compliance with the requirements of AS2107, namely L_{eq} 35 in bedrooms and L_{eq} 40 dB(A) for living areas.

The report concludes that the glazing specified for the Charlotte Street facade of the building for the lower levels will be sufficient to ensure that other plant noise from buildings on the northern side of Charlotte Street will comply with the internal noise levels recommended by AS2107 for buildings near major roads.

The report also identifies internal acoustic issues that are recommended to be reviewed and acoustically specified during the detail design and documentation stage of the project.

The acoustic issues that have been identified for review during detail design are:

- Review of wall constructions that separate units directly from the car-park (e.g. Units 10, 8A, 9A, 10A
- Review of specification of sound transmission isolation and impact isolation for constructions between units;
- Review of wall/ceiling/floor constructions between Unit 6.2B and the Theatrette;
- Review of laundry sound/vibration isolation for laundries adjacent to neighbours bedroom;
- Noise and vibration attenuation of mechanical equipment from Lift Motor Room (Level 1) and Plant Room on Level 42.
- Vibration isolation of swimming pools, spas and associated equipment

6.0 Glossary

Ambient Sound – the totally encompassing sound in a given situation at a given time, composed of sound from all sources near and far, measured by the totally encompassing time average A-weighted sound pressure level in a given situation at a given time.

Background A-Weighted Sound Pressure Level ($L_{A90,T}$) – the A-weighted sound pressure level that is equal to or exceeded for 90% of the time interval considered.

Background Noise Level (Average) – the A-weighted background sound pressure level that is the average of all measured background levels in the time interval considered.

Background Noise Level (90 Percentile) – the A-weighted background sound pressure level that is equal to or exceeded for 90% of the time interval considered.

Percent Exceedence A-Weighted Sound Pressure Level ($L_{A\%,T}$) – the A-weighted sound pressure level that is equalled or exceeded for a percentage of the time interval (T) considered. Examples are:

$L_{A01,\,T}$ – the A-weighted sound pressure level that is equalled or exceeded for one per cent of the measurement time interval (T), used to quantify maximum sound levels;

$L_{A10,\,T}$ – the A-weighted sound pressure level that is equalled or exceeded for ten per cent of the measurement time interval (T), used to quantify average maximum sound levels;

$L_{A90,\,T}$ – the A-weighted sound pressure level that is equalled or exceeded for ninety per cent of the measurement time interval (T), used to quantify background sound levels.

Time Average A-Weighted Sound Pressure Level ($L_{Aeq,T}$) – the value of the A-weighted sound pressure level of a continuous steady sound, that within a measurement interval(T), has the same mean square sound pressure as the sound under consideration whose level varies with time. Examples are $L_{Aeq,15min}$ – the A-weighted sound pressure level of a continuous, steady sound that has the same mean square sound pressure as a time varying sound for a 15 minute period.

7.0 References

Australian Standard AS1055, Acoustics – Description and Measurement of Environmental Noise, Part 1: General Procedures, Part 2 Application to Specific Situations, and Part 3: Acquisition of Data Pertinent to Land Use.

Australian Standard AS 2107, Acoustics – Recommended Design Sound Levels and Reverberation Times for Building Interiors

Australian Standard AS 3671 – 1989, Acoustics – Road Traffic Noise Intrusion – Building Siting and Construction

Berglund B., Lindvall T., & Schwela D. (Eds), Guidelines for Community Noise, World Health Organisation, Geneva, 1999

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MCD (Aust) Pty Ltd
Chris Safonoff

Wind Effect Statement - DRAFT

89 Charlotte Street, Brisbane CBD

Document No. 745679_TRP_000980_AA
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Wind Effect Statement - DRAFT

89 Charlotte Street, Brisbane CBD

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PREPARED FOR:
MCD (Aust) Pty Ltd
Level 11
167 Eagle Street
Brisbane QLD 4000

Contact: Chris Safonoff

☎ [redacted]

Fax: [redacted]

PREPARED BY:
Vipac Engineers & Scientists Ltd
6/524 Milton Road (PO Box 436)
Toowong, QLD. 4066
Australia

Fax : [redacted]

PREPARED BY:

....

Dr Matthew Glanville — Date:
Senior Engineer

REVIEWED BY:

....

Stephen Pugh — Date:
Senior Engineer

RELEASED BY:

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Darren Van Twest — Date:
QA Representative

REVISION HISTORY

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1	Vipac - Project/Client File
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KEYWORDS: 89 Charlotte Street, Queensland, Wind Effect Statement

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EXECUTIVE SUMMARY

Vipac Engineers & Scientists Ltd. (VIPAC) has been commissioned by MCD (Aust) Pty. Ltd., to assess the impact on the local wind environment of the proposed 89 Charlotte Street Apartment Development, Brisbane CBD.

The proposed development will comprise a 130 metre high-rise tower divided into carpark, lobby, commercial, residential and plant levels. The tower will be roughly rectangular in plan with residential facades aligned in an approximate northeast/southwest, northwest/southeast alignment.

Wind Exposure of the Site...

In general, the site will experience moderate to strong local winds at upper levels from most wind directions of importance in Brisbane. Considerable shielding will be provided at lower levels by upstream Brisbane CBD high-rise developments from most of Brisbane's prevailing wind directions.

Wind Impact and Recommendations...

Landscaping and other windbreak treatments included in this proposal will assist in the preservation of wind amenity both at ground level surrounding the site and upper levels of the development. Additional recommendations have been provided to assist in maintaining comfortable conditions at these locations throughout the year.

It is predicted that with the above, wind conditions along all public areas around the development including street footpaths will remain below the 16 m/sec walking comfort criterion level or at present levels where the 16 m/sec criterion is currently being exceeded.

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1. DESCRIPTION OF THE PROPOSED DEVELOPMENT

Vipac Engineers & Scientists Ltd. (VIPAC) has been commissioned by MCD (Aust) Pty. Ltd., to assess the impact on the local wind environment of the proposed 89 Charlotte Street Apartment Development, Brisbane CBD.

The development site is located toward the centre of the Brisbane CBD at the intersection of Charlotte Street and Albert Street.

Views of the development can be seen in the architectural drawings submitted with the Development Application for the project. The proposed development will comprise a 130 metre high-rise tower divided into carpark, lobby, commercial, residential and plant levels. The tower will be roughly rectangular in plan with residential facades aligned in an approximate northeast/southwest, northwest/southeast alignment.

The proposed high-rise tower will comprise:

- ◊ Three Basement Levels for undercover parking
- ◊ A Level 1 Entry Foyer off Charlotte Street providing pedestrian access to the development. Commercial premises will be included at Level 1.
- ◊ Four Podium Levels (Level 1 to Level 4) allocated to resident carparking and residential units. The podium will be rectangular in plan.
- ◊ A podium terrace at Level 5 including recreation areas.
- ◊ 38 storeys of residential apartments comprising a mix of 1, 2 and 3 bedroom apartments
- ◊ Rooftop plant.

The site is located towards the centre of the Brisbane CBD area on a peninsula of land bounded by the Brisbane River. Of particular importance in terms of wind impact are developments located within immediate proximity of the site including the Gilhooleys Restaurant and Professional Suites (3 and 17 storeys on the opposite side of Charlotte Street to the north), Royal Albert Building (10-storeys further to the north), Wilson Parking Station (6 storeys to the north), Sebel Hotel (25-storeys on the opposite side of Albert Street to the east), State Services House (adjacent to the southeast on the corner of Mary and Albert Street), 80 Albert Street (20-storeys further to the southeast), Education House (30-storeys to the south) and 110 George Street (30 storeys to the west). Open parklands of the City Botanic Gardens lie approximately 300 metres to the south of the site.

This report takes into account the effects of prevailing wind speed and wind direction for the Brisbane region. That is, the appropriate wind speed and wind direction (wind rose) characteristics for return periods of interest (common annual winds) have been used to assess the local wind environment around the proposed development.

2. BRISBANE'S WIND CLIMATE

2.1 General

The data of interest in this study are annual extreme mean hourly wind speeds and the largest gusts experienced throughout the year, and how these vary with azimuth and the primary Brisbane wind seasons.

In general, the important wind directions for Brisbane are the north and northeast, (for early summer), the northeast to southeast (for late summer) and southwest and west (for winter).

2.2 Seasonal Winds

Brisbane is affected by two primary wind seasons, namely summer and winter/early spring.

Summer ... Stronger winds in early summer (October-December) occur mainly from the north to east quadrants, especially in the latter part of the day.

In late summer (January-April), winds tend to occur from the northeast to southeast quadrants, with higher winds occurring throughout the day.

Winter/Early Spring ... These are dominated by winds from the west and southwest quadrants and are reasonably strong throughout the day.

Close to the ground at specific locations, these broad wind speed patterns are modified by the terrain, topography and effects of nearby buildings, giving rise to the "local" wind environment.

2.3 Local Wind Exposure of the Site

In general, the site will experience moderate to strong local winds at upper levels from most wind directions of importance in Brisbane. Considerable shielding will be provided at lower levels by upstream Brisbane CBD high-rise developments from most of Brisbane's prevailing wind directions.

A detailed description of the interaction of the proposed development with the Brisbane wind climate follows. Discussions are provided for wind impact at both ground level and upper levels of the development. Generally ground level impacts will contribute to the public amenity surrounding the site whilst upper level wind impacts will have greatest interaction with residents of the development using podium and balcony spaces.

3. PEDESTRIAN LEVEL WIND ACCEPTABILITY CRITERIA

The choice of suitable criteria for evaluating the acceptability of particular ground level conditions has been the subject of only relatively recent research. The acceptability criteria that have been developed from this research have been summarised below in Table 1 and form the basis for most City Councils' Urban Design Criteria with respect to wind impact acceptability.

Table 1
PEDESTRIAN LEVEL WIND ACCEPTABILITY CRITERIA

Limiting Gust Wind Speed (m/s)	Type of Criteria	Activity Concerned
24	Safety	Knockdown in Isolated Areas
23	"	Knockdown in Public Access Ways
16	**Comfort**	**Comfortable Walking**
13	"	Standing, Waiting, Window Shopping
10	"	Dining in Outdoor Restaurants

These criteria should not be viewed as hard numbers as their value has generally been derived from a subjective assessment of wind acceptability. This of course varies with the height, strength, age, etc. of the pedestrian concerned.

A further factor for consideration is the extent of windy conditions, and some relaxation of the criteria given above is usually acceptable for small areas under investigation provided the general site satisfies the relevant criteria.

The following wind impact assessment is based on our best engineering judgement and from the experience gained from a multitude of previous wind tunnel tests and field observations. No wind tunnel tests were carried out to derive a quantitative evaluation of local site winds against the above criteria.

4. WIND ASSESSMENT

4.1 East and Southeast Winds - Fig.1

4.1.1 Local Wind Characteristics ...

East and southeast winds occur in Brisbane during the summer months of January to April and are reasonably steady throughout the day.

As illustrated in Figure 1,...

i). easterly wind will receive substantial blockage at mid to lower levels by upstream developments including the Sebel Hotel.

ii). East and southeast winds will impact with most levels of the proposed tower after flowing between upstream developments. Turbulent wake flow shed from the roofs and building corners of upstream developments, particularly The Sebel Hotel, will combine with unimpeded wind flow to impact with the eastern tower facades at mid to upper levels.

iii).southeast winds impacting at mid to upper levels will induce vertical 'downwash' flow toward ground level.

iv).Southeast winds will channel along Albert Street between low-mid levels of the proposed development and existing developments on the opposite side of Albert Street.

Figure 1 East and southeast windflow patterns through the site

4.1.2 Impact at Ground Level

For the greater part of the time during summer, east and southeast winds will, if anything, provide a desirable cooling effect to the development.

In terms of the existing wind environment and given the shielding available to the site at lower levels from east and southeast winds, it is likely that wind conditions surrounding the site at ground level are currently below the 16 m/sec walking criterion.

With the future development there will be some upper level windflow dragged downward by the northeast tower facades that will in turn impact at lower levels and towards Albert Street. We note the following:

- Most downwash flow will be intercepted and deflected by the podium terrace before reaching ground level on Albert Street.
- Current architectural drawings indicate that a cantilevered awning will extend above the Level 1 frontage to Albert Street. This will provide protection to passing pedestrians using the Albert Street footpath and tenants entering/leaving the commercial premises from the direct impact of downwash winds reaching street level.
- Downwash moving down the southeast facade will flow onto the roofs of adjacent low-rise buildings and will have limited impact on pedestrian areas.

With the proposed development on the site there will be a *marginal* increase in the degree of wind channelling along Albert Street given the additional building frontage adding to the 'canyon' effect on wind flow along the street.

It is recommended shrubs, planter boxes etc. could be added outside building entry points to assist in breaking up winds. For example, *"windicators"* such as potted plants located outside the commercial entry points would help ameliorate higher strength channelling winds and, more importantly, give tenants warning of uncomfortable wind conditions when entering and leaving the building.

Thus, with the above, ground level winds at all surrounding public pedestrian locations are expected to remain below the 16 m/sec walking comfort criterion for east and southeast winds, or at present levels where the 16 m/sec criterion is currently being exceeded.

4.1.3 Impact at Upper Levels

Upper levels of the development will be exposed to a mix of turbulent wake flow and unimpeded wind flow from the southeast. This will induce occasional strong wind conditions on the upper level facades of the tower, including balcony spaces on the eastern facades. We recommend careful attention should be given to the wind loading design of the glazing and any operable doors and windows on these facade areas.

Total elimination of strong wind conditions on upper level exposed balconies of high-rise residential developments is often difficult given their exposure to higher velocity, near gradient wind speeds. Balcony areas protruding from the tower façade will be exposed to higher velocity free-steam wind flow.

Current architectural plans indicate many balconies will be either recessed into the façade, or will include balcony division walls, providing direct shielding to these elevated spaces. Low velocity flow 'stagnation' zones formed within the recessed balcony spaces will enhance the wind amenity of the protected pockets formed (Figure 1).

For balcony areas more exposed to free-stream flow, there are some options available to future residents to further improve wind conditions on the balconies. For example, residents may wish to consider the inclusion of porous wind-break elements in addition to balcony balustrades and division walls. Wind-break elements such as potted plants could be used by residents to disperse stronger winds yet not block out milder winds bringing beneficial cooling to the units.

Finally, it is noted vertical downwash flow from the eastern facades will have some direct impact upon areas of the Level 5 podium terrace and recreational areas. To provide protection to residents from these downwash winds it is recommended some form of porous horizontal canopy or pergola cover is included around the base of the residential tower at podium level to disperse downwash winds. For example, pergolas covered with climbers. Similar pergolas might also be considered above the pool areas and the Garden Terraces lining the southeast and southwest perimeter of the podium.

Current drawings indicate extensive landscaping is proposed for the podium level including perimeter planter box shrubs. These will provide some wind amelioration to the podium levels and will assist with the dispersion of downwash winds before reaching ground level on Albert Street.

4.2 North and Northeast Winds - Fig 2

4.2.1 Local Wind Characteristics...

These comprise the other commonly occurring winds for summer in Brisbane but are strongest during the early summer months, October to December and mainly in the afternoon.

North and northeast winds will...

i). receive significant shielding at lower levels from existing Brisbane CBD developments to the north but will receive less shielding at upper levels. Nevertheless, wind strengths should be generally lower than winds from the east and southeast.

ii). impact firstly with the roofs and building corners of upstream buildings inducing some limited turbulent wake flow around their edges. This turbulent wake flow will in turn impact upon upper level northeast and northwest facades, in turn inducing downwash flow toward ground level.

Figure 2 North and northeast windflow patterns through the site

4.2.2 Impact at Ground Level

In terms of the existing wind environment and given the substantial shielding available to the site at lower levels from the north and northeast, it is likely that wind conditions surrounding the site are currently below the 16 m/sec walking criterion for north and northeast winds.

With the future development there will be some upper level windflow dragged downward by the high-rise tower facades that will in turn impact at lower levels. Most downwash flow will be intercepted and deflected by the podium terrace before reaching ground level. Furthermore, current architectural drawings indicate that a cantilevered awning will extend above the Level 1 frontage to Charlotte Street. This will provide protection to passing pedestrians using the Charlotte Street footpath and tenants entering/leaving the commercial premises from the direct impact of downwash winds reaching street level.

Thus, with the above, ground level winds at all surrounding public pedestrian locations are expected to remain below the 16 m/sec walking comfort criterion for north and northeast winds.

4.2.3 Impact at Upper Levels

Upper levels of the development will be exposed to both turbulent and unimpeded wind flow from the north and northeast. This will induce occasional strong wind conditions on the upper level facades of the tower, including balcony spaces. We again recommend careful attention should be given to the wind loading design of glazing and any operable doors and windows on these facade areas, especially for upper levels. The proposed balcony layout and wind amelioration techniques already discussed in Section 4.1.3 similarly apply to the north and northeast wind cases.

4.3 Southwest and West Winds - Fig 3

4.3.1 Local Wind Characteristics...

Southwest and west winds occur during late winter. They occur typically throughout the day and produce winds almost as strong as the highest summer gust events.

Fortunately, the site will receive substantial shielding from southwest and west winds at lower levels by extensive CBD high-rise development upstream of the site.

Westerly winds...

i). will impact firstly with upstream buildings inducing some limited accelerated turbulent wake flow around their edges. Wake flow will in turn impact on the upper southwest and northwest facades, inducing downwash flow towards ground level.

ii). with a southerly bias will channel along Charlotte Street between lower podium levels of the proposed development and existing developments on the opposite side of Charlotte Street; e.g. The Sebel Hotel.

Figure 3 West and Southwest windflow patterns through the site

4.3.2 Impact at Ground Level

In terms of the existing wind environment and given the amount of shielding available to the site at ground level from westerly winds, it is likely that ground level wind conditions surrounding the site are currently below the 16 m/sec walking criterion for westerly winds.

With the future development there will be upper level windflow dragged vertically downward by the tower's west facades that will in turn impact at lower levels. Most downwash flow moving down the northwest facade will be intercepted and deflected by the podium terrace before reaching ground level. Downwash moving down the southwest facade will flow onto the roof of adjacent carpark building and will have limited impact on pedestrian areas.

With the future development on the site there will be a *marginal* increase in the degree of wind channelling along Charlotte Street given the additional building frontage adding to the 'canyon' effect on wind flow along the street. We note the following:

- The Lobby entrance fronting onto Charlotte Street will be recessed behind the podium facade line. This setback will provide protection from channelling winds to residents entering and leaving the lobby.

- As an additional measure *"windicators"* elements such as planter boxes should be located outside the commercial entry points to ameliorate higher strength channelling winds and, more importantly, give residents and tenants warning of uncomfortable wind conditions when entering and leaving the building.

Thus, ground level winds at all surrounding public pedestrian locations are expected to remain below the 16 m/sec walking comfort criterion for west and southwest winds, or at present levels where the 16 m/sec criterion is currently being exceeded.

4.3.3 Impact at Upper Levels

Upper levels of the development will be exposed to accelerated wake flow from the western quadrant. This will induce occasional strong wind conditions during winter on the northwest and southwest facades of the tower.

We again recommend careful attention should be given to the wind loading design of glazing and any operable doors and windows on these facade areas, especially for upper levels. The proposed balcony layout and wind amelioration techniques already discussed in Section 4.1.3 similarly apply to the west and southwest wind cases.

5. RECOMMENDATIONS

The following points summarise the impact of the proposed development on the local wind environment:

In general, the site will experience moderate to strong local winds at upper levels from most wind directions of importance in Brisbane.

Considerable shielding will be provided at lower levels by upstream Brisbane CBD high-rise developments from most of Brisbane's prevailing wind directions.

Landscaping and other windbreak treatments included in this proposal will assist in the preservation of wind amenity both at ground level surrounding the site and upper levels of the development. Additional recommendations have been provided to assist in maintaining comfortable conditions at these locations throughout the year.

It is predicted that with the above, wind conditions along all public areas around the development including street footpaths will remain below the 16 m/sec walking comfort criterion level or at present levels where the 16 m/sec criterion is currently being exceeded.

The above assessment was made without the assistance of wind tunnel testing and has been based on many years of wind engineering experience gained from a multitude of wind tunnel tests and field observations.

6. ARCHITECTURAL DRAWINGS

The environmental impact assessment carried out in this report was based on available architectural drawings supplied by Cox Rayner Pty Ltd.

Drwg No	Description
012110/SK01/05	Basement Levels 3 & 4
012110/SK02/05	Basement Level 2
012110/SK03/04	Basement Level 1
012110/SK03/04	Level 1 Plan (Street Level)
012110/SK06/05	Level 2
012110/SK07/05	Level 3
012110/SK08/04	Level 4
012110/SK09/04	Levels 5 - Podium
012110/SK10/04	Level 6-28
012110/SK11/05	Levels 29-30
012110/SK11/01	Level 31
012110/SK012/05	Levels 32 - 36
012110/SK13/04	Levels 37 - 40
012110/SK14/04	Level 41 – Duplex
012110/SK15/04	Level 42
012110/SK16/02	Lift Motor Room Level
012110/SK17/02	Roof Plan
012110/SK00/05	Section A-A
012110/SK00/01	Elevation Albert Street
	Elevation Charlotte Street
	South-Eastern Elevation
	South-Western Elevation

DWG NO. DA - 33

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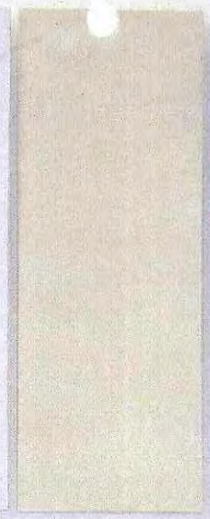
PLANS and DOCUMENTS
Referred to in the
DEVELOPMENT PERMIT
Dated ...29 OCT 2002...


Paint Colour to Body of Tower


Paint Colour to Body of Tower

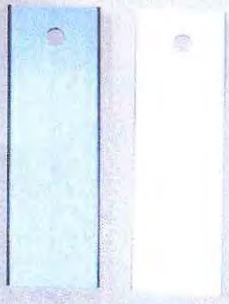

Accent Paint Colour To Podium Façade

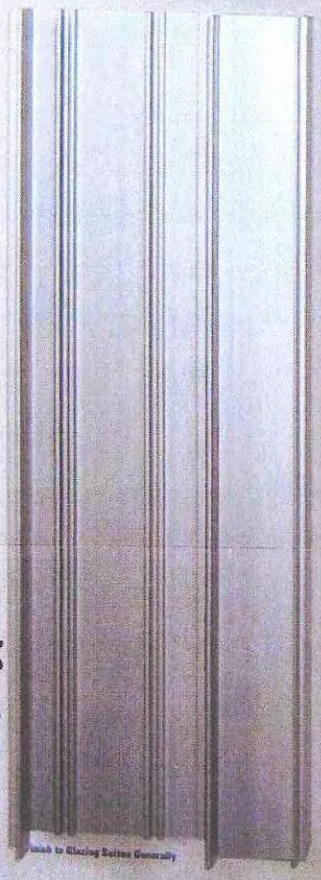

Accent Paint Colour To Podium Façade


Accent Paint Colour To Podium Façade


Accent Paint Colour to internal Tower Blade


Accent Paint Colour to internal Tower Blade


Feature Aluminium Anodising



DWG No. DA-34

EXTERNAL MATERIALS BOARD

PLANS and DOCUMENTS
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EXTERNAL SAMPLE BOARD

FESTIVAL TOWERS

108 ALBERT STREET

Devine LIMITED

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COX RAYNER PTY. LTD.
Architects and Planners

BCC.086.0419

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1.0 INTRODUCTION

A development must be provided adequately with utility services that can operate safely and efficiently, perform to the required standard of service appropriate for the development, and meet the future servicing requirements for its intended use/s. This chapter sets out the requirements for the provision of street lighting, electricity, gas, and telecommunications infrastructure.

2.0 GENERAL REQUIREMENTS

Unless stated otherwise, the Developer is responsible for the design of public utility services including liaison with the relevant public utility authorities, supply and installation of all service conduits, including the provision of all services and/or conduits along the full length of any rear allotment access or access easement. The Developer must also meet the cost of any alterations to the public utility mains, existing mains, services or installations required in connection with the development. This includes the relocation of any fire hydrant, water meter and/or valves from within the limits of the development's vehicular crossings, if applicable.

If road widening is required along the frontage of the development, the Developer must arrange relocation of the services with the relevant authority onto the correct alignment within the verge. In some instances, the services may need to be lowered to provide sufficient cover when the footpath is regraded to the design profile. Services may also need to be raised if significant fill is used to raise the level of the verge.

The service corridors and alignments must conform to the relevant Standard Drawings UMS 121, UMS 122, UMS 123, UMS 124 or UMS 151. Also refer Chapter 1 of Part B of this document.

3.0 STREET LIGHTING

3.1 SCOPE

Street lighting must be provided at the following locations.

- New public streets (including laneways) created as part of the subdivision.
- All road frontage(s) to the development including any road construction required outside the limits of the development.

3.2 APPROVAL PROCESS

3.2.1 Electrical Engineering Consultant

The Developer must appoint a suitably qualified Electrical Engineering Consultant to liaise with Council for the approval of street lighting. The Consultant must be rated to perform work under Energex's SWP 47.3 (Design of Rate 2 Public Lighting Systems).

Council has also instituted a system of rating applicable to Consultants that are suitably qualified to submit electrical/street lighting plans. Within the Council rating system, the Consultant must be a Registered Professional Engineer in Queensland (RPEQ) and hold a professional indemnity insurance to the value of not less than $1 000 000. It is encouraged that 'A' or 'B' Council rated designers are used in order to maintain a high standard of submission that meets the numerous requirements of this chapter. Further reduced fees would apply to submissions made by these suitably rated Consultants. Refer to document titled *Guidelines for Self Certification of Street Lighting Designs for Subdivisions and Developments*, which can be obtained from the City Lighting Unit.

3.2.2 Submissions

Prior to the commencement of any street lighting design, the Electrical Engineering Consultant must lodge an appropriately completed 'Street Light Design Parameters' form (refer Appendix A) with the City Lighting Unit. This can be done by post or alternatively by facsimile if the preliminary road layout of the streets can show sufficient detail at A4 size. Council will in turn complete the form with appropriate road categories and any other specific requirements and return by facsimile. The Consultant can then proceed with the design and then lodge the 'Street Lighting Design – Submission Form' (refer Appendix B) and applicable fees.

3.2.3 Life Cycle Analysis

Where the proposed street lighting equipment deviates from Council standards outlined in this chapter and the *Centres Detail Design Manual*, the Developer is responsible for any additional life cycle costs that may be incurred by Council. Any deviation from Council standards must be limited to centre activities. Centres provide a wide range of activities to be clustered together, including shops, offices, community, cultural, high density residential and some lower industrial uses.

The Electrical Engineering Consultant must submit life cycle cost comparisons to Council for assessment. The comparison of costs between standard lighting and proposed non-standard lighting must evaluate the life cycle costs of a design based on standard lighting and the proposed design utilising non-standard lighting. Design based on non-standard lights generally requires more lights. The Net Present Values (NPV) of capital and operating costs must be calculated over a 50 year life cycle based on the following parameters:

- Equipment replacement at the end of useful life: Manufacturer's guarantee period or other period deemed appropriate by Council. (Note: Energex and Brisbane City Council are responsible for replacement costs under Rate 2 and Rate 3 tariffs respectively.)
- Equipment repair due to damage: Where Brisbane City Council is liable for repair costs under Rate 3 tariff, Council will supply data on the frequency of replacement and associated unit rates. Energex is responsible for repair costs under Rate 2.
- Discount rate: The latest 10 year Commonwealth Treasury bond rate as published by the Reserve Bank of Australia. Sensitivity analyses are also required for the 10 year bond rate ± 2%.
- Inflation: Long term inflation target set by the Reserve Bank of Australia.
- Ongoing energy (and maintenance if applicable) costs: As detailed in the tariff schedule gazetted by the Queensland Government.

3.3 STANDARDS

Unless specified otherwise in this chapter or as directed by Council, the provision and detailed design of street lighting installations must conform to the following standards.

- Australian Standard AS/NZS 1158 Road Lighting.
- Energex Policies and Standard Work Practices.

The nominal lighting categories that are applicable in Brisbane City are set out in Table B7.1. However the varying 'selection criteria' as referred to in Tables 2.1 to 2.5 in AS/NZS 1158.3.1:2005 or Table 2.1 in AS/NZS 1158.1.1:2005 may dictate a more stringent lighting category for a particular development. The lighting categories referred to in AS 1158 are broadly described as follows:

- Category V lighting. Lighting which is applicable to roads on which the visual requirements of motorists are dominant, for example on traffic routes.
- Category P lighting. Lighting which is applicable to roads on which the visual requirements of pedestrians are dominant, for example on local roads, pathways, and bikeways. This category also include lighting which is applicable to outdoor public areas such as outdoor shopping precincts, car parks, and stairs.

TABLE B7.1 LIGHTING CATEGORIES

Road hierarchy [1]		AS 1158 lighting category
Description	**Min. Reserve Width [2]**	
Local access (cul-de-sac)	14.0 m	P5
Local access	14.0 m	P5
Neighbourhood access (non bus route)	16.0 m	P5/P4
Neighbourhood access (bus route)	19.5 m	P4
District access	19.5 - 24.0 m	V5
Suburban route	33.0 - 38.0 m	V5
Industrial access	22.5 m	P5 [3]
Arterial route	40.0 - 45.0 m	V3
Lane or pathway	N/A	P5
Cycleway	N/A	P3/P4

NOTES:
1. Refer to Chapter 1 of Part B of this document for details.
2. These dimensions are applicable to new road construction.
3. Lighting on a traffic route through or adjacent to industrial areas must comply with the relevant Category V.

Council may vary the required street lighting category for any street or road in consideration of special circumstances or require additional lighting in the following situations:

- Intersections.
- Roundabouts.
- Sharp bends.
- Speed control devices (including LATMs).
- Pedestrian crossings.
- Cul-de-sacs.
- Bridges and culverts.
- Night time accident locations.
- Frequently used night time bus stops.
- Areas that may generate pedestrian traffic or vehicle night traffic.

3.4 DESIGN PRINCIPLES

3.4.1 Objective

The lighting design must be cost effective in regard to minimising the annual operating costs to Council and where possible, the installation capital costs.

3.4.2 Costs

The Developer is responsible for all capital costs associated with the design and installation of the street lighting scheme as well as any 'loss of asset charges' required by Energex for removal/relocation of existing street lighting equipment. Where it may be advantageous for the Developer to install lighting work outside the specified limits at the time of development, Council may contribute towards some of the capital costs, but this arrangement must be specifically agreed between the Council and the Developer prior to any work being undertaken.

Once the lighting has been installed in accordance with the approved plan and accepted by Energex, Council will pay Energex the necessary annual operating costs under the Public Lighting Tariff. In accordance with the standard Rate 2 lighting requirements, Energex assumes ownership and maintenance of the installation.

3.4.3 Underground Electricity Services

Underground electricity services must be provided to all new street lighting unless the new lights are attached to existing electricity distribution poles.

3.4.4 Partial Road Construction

Where the development requires partial road construction (typically when the development adjoins an undeveloped site), the lighting must be designed for the ultimate road width. However, the lights on the development side only, assuming a staggered or opposite arrangement, need to be installed.

3.4.5 Aesthestics

The lighting design for the development must integrate aesthetically with the adjoining developments/estates/stages. Also, the design must incorporate as far as practicable, the future planning of the area. Any enquiry pertaining to the future planning of street lighting in an area must be directed to the City Lighting Unit.

3.4.6 Frangible Type Poles

Street light poles must not be installed in locations where they are vulnerable to damage from vehicles, for example in narrow medians. Where this is unavoidable, suitable protection must be provided to minimise the risk of injury and/or the pole must be of a frangible/slip base type.

3.4.7 Pedestrian Facilities

Pedestrian underpasses will require special consideration. The Electrical Engineering Consultant should contact the City Lighting Unit for site specific requirements before the commencement of design. Lighting at pedestrian zebra crossings must comply with AS 1158.4. Where the crossing is located in a P category road, the requirement for three spans of Category V lighting, on each approach, is not required.

3.4.8 Subdivisions in Rural/Environmental Protection Areas

The lighting design and all associated conduit installation must be installed on the basis of an average of 1 light per every 5 allotments. Typically the road frontage of each lot in these areas exceeds 50 m.

3.4.9 Curved Horizontal Alignment

The spacing between lights on the curved sections must not exceed that for a straight section with similar road reserve width. A straight line drawn between successive luminaires must lie within the road reserve.

3.4.10 Boardwalks

For lighting on boardwalks along the Brisbane River, refer to Council's publication *Public Riverside Facilities Design and Maintenance Manual* for specific requirements.

3.4.11 Footpath Awning

Where a development includes an awning over the footpath, refer to the Awning Lighting Code of *Brisbane City Plan* for specific requirements.

3.5 EQUIPMENT

3.5.1 Standard Stock Items

In accordance with the current equipment available from Energex, Mercury Vapour (M) luminaires are generally used on residential streets and High Pressure Sodium (S) luminaires along traffic routes. Unless specified otherwise in this document, the luminaire support pole must be the Base Plate Mounted (BPM) steel type. Some of the typical pole/outreach/luminaire combinations that are acceptable to Council are given in Table B9.2.

TABLE B9.2 POLE/OUTREACH/LUMINAIRE COMBINATIONS

Luminaire	Pole length (out of ground)	Horizontal outreach size	Mounting height
M50	4.5 m	1.5 m*	6.5 m
M50 Nostalgia	4.5 m (Estate)	Curved	5.1 m
M80	5.5 m	1.5 m*	7.5 m
M80 Nostalgia	4.5 m (Estate)	Curved	5.1 m
S70 Nostalgia	4.5 m (Estate)	Curved	5.1 m
S70	5.5 m	1.5 m*	7.5 m
S100	7.0 m	1.5 m*	9.0 m
S150	7.0 m	1.5 m*	9.0 m
S150	8.5 m	3.0 m*	10.5 m
S250	8.5 m	3.0 m*	10.5 m

* outreach has an inbuilt 2.0 m uplift

Where the new development extends an existing street, the new poles/lights must match the existing types to the maximum practicable extent. This is not applicable when the existing street contains the superseded GI poles with fluorescent luminaires. In this case, the spacing of lights must take into account the future replacement and re-spacing of the GI poles with modern equipment by Council.

3.5.2 Aeroscreen Luminaires

Aeroscreen luminaires are not generally used except for in laneways or in the vicinity of airports where it is a statutory requirement. For pedestrian laneways an aeroscreen luminaire on a 5 m Base Plate Mounted Hinged pole fitted with 0.5 m bracket must be used. The light should generally be located midway along the laneway at abutting property boundaries. If the laneway exceeds 60 m in length then more than one light may be required.

3.5.3 Decorative lighting

Decorative lighting cannot be used on Category V roads as the primary method to illuminate the roadway. Council will not accept any decorative light or supporting pole for the lighting of public roads and laneways unless it is a current standard stock item of Energex (ie available under Rate 2). At this stage the preferred residential decorative luminaire and pole is the Nostalgia or Avenue on a wide base Estate pole. If the development is an extension of an existing estate already installed with decorative lighting units, then the new development must match the existing units.

3.6 ALIGNMENT

To achieve a balanced streetscape, it is preferred that lights are installed alternately on the opposite sides of the street (staggered arrangement). Installation of lights on one side of the street only (single sided arrangement) is unacceptable unless this is on a temporary basis or the existing lighting in the street is single sided.

The location of light poles must avoid the likely vehicle conflict points, minimise the risk of damage to both poles and vehicles and injury to vehicle occupants, minimise glare complaints, and minimise conflicting driveway locations. The following factors must be considered when determining the street lighting alignment:

1. Locate street light poles in line with abutting property boundaries or on truncation points at intersections. Exception may apply to traffic routes where spacings of lights are to be maximised. In cul-de-sac locations, the alignment is measured along a radius line relative to and taken from the property frontage and then projected to the centre point of the cul-de-sac.
2. Lighting poles must be located sufficiently clear of existing features. A 1.2 m clearance is required from the edge of driveways and bikeways. Where this is not possible, agreement must be reached with the City Lighting Unit.
3. Locating poles in cul-de-sac adjacent to or in front of narrow property frontages is undesirable due to possible conflict with adjoining driveways.
4. Lighting poles in new roads must be located generally in accordance with the relevant Standard Drawings UMS 121, UMS 122, UMS 123 or UMS 124. Poles in existing roads would need to match the original road alignment, unless road widening is proposed.
5. Where the verge (footpath) width exceeds 4.75 m, the centre of the street lighting pole must be located not more than 0.8 m behind the nominal face of the kerb or 0.98 m behind the kerb invert. Note the distance between the nominal face and invert for a Type D kerb and channel or Type D kerb is 180 mm. In subdivisions designed to AMCORD specifications where the 'common trench' arrangements are applicable, lighting poles are permitted to be 0.7 m behind the nominal kerb face.

6. The preferred configuration of lighting at a small roundabout is for a light pole to be located on the approach side of each intersecting street. Poles must not be located in the central median island as this area is often landscaped thus impeding maintenance access. On larger roundabouts, Council would only consider the installation of central island lights if a single pole is used and is of the cantilever (pivot arm) type. In this instance, it is necessary to confirm with Energex that maintenance of the lights is not an issue.
7. New light poles must not be positioned closer than 7 m to any street tree. Conversely, trees must not be planted closer than 7 m to any existing light pole.
8. For mid-block LATM devices, a light must be located on the nearest intersecting property boundary to the device, where possible avoid the vehicle departure side.

4.0 ELECTRICITY

4.1 GENERAL

In the context of these guidelines, 'underground electricity' means the installation of conduits and supply of services such as electrical reticulation (up to and including 11 kV), pilot cables, street lighting, traffic signals and public lighting to transport facilities, parks, bikeways and telephone booths, etc. The key objectives of these guidelines are:

- To ensure that there is no extension of overhead electricity supply networks within Brisbane City.
- To achieve aesthetic improvement to the streetscape.
- To ensure that there is better integration of existing overhead supply areas with new underground supply developments.
- To make it more economical and practical in the future for the supply authority and/or local authority to consider a planned approach to the undergrounding of existing overhead areas.

4.2 APPROVAL PROCESS

All the design and construction work on the electricity supplier's assets must be carried out by the electricity supplier or an approved electricity supplier's consultant/contractor. The verification of the underground electricity services will be done in conjunction with the approval of the street lighting layout plans by the City Lighting Unit (also refer Section 3.2.2).

Prior to signing and sealing of the survey plan by Council, a copy of the 'Certificate for Electricity Supply' must be submitted to Council. If street lighting is required, the electricity supplier will need to sight documentary evidence of street lighting approval by Council before the 'Certificate for Electricity Supply' is issued. It is strongly recommended that the Developer approach Energex or an Electrical Engineering Consultant early in the project as the planning and construction of electricity reticulation can have long lead times.

4.3 STANDARDS

All electricity distribution and reticulation design and installation must comply with the appropriate Policies and Standard Working Practices of Energex.

4.4 COSTS

The Developer is responsible for all the design, approval and construction costs including any relocation of the electricity supplier's assets, if required as part of the development.

4.5 SUBDIVISION

This development category refers to a subdivision (freehold lots or community title scheme) where there is dedication and opening of road or where the subdivision creates more than 3 lots. Full underground electricity reticulation including the installation of underground electricity supply pillars must be provided within the new dedicated road reserve to all lots including any adjacent parkland. An underground electricity supply pillar of adequate power capacity must be provided on at least one park frontage to cater for future embellishment of the park, which may include internal park lighting and other electrical park equipment.

4.6 DEVELOPMENT/ REDEVELOPMENT IN AN ESTABLISHED AREA

This development category usually involves the intensification of land use in a site either fully or partly surrounded by developed sites. Typical examples include:

- The start of a new use of the premises (eg construction of a factory on a vacant lot).
- The re-establishment on the premises of a use that has been abandoned.
- A material change in the intensity or scale of the use of the premises (eg changing use of land from a house to a multi-unit dwelling, increasing the gross floor area, etc).
- Changing the intensity of use by virtue of increasing lot yields (eg reconfiguring an existing 1215 m^2 lot to 3 individual 405 m^2 lots with frontage to an existing road).

The electricity supplier will determine the point of origin, route, point of attachment and facilities required for the attachment and connection of the service line. Existing overhead electricity supply can continue to service the development provided that there are no new poles within the road reserve (additional property poles are acceptable) nor any extension to the overhead mains. However underground electricity service pillars located in the road reserve are required to service developments involving the creation of two or more rear lots. Existing overhead supply line that crosses lot boundaries must also be altered to meet the electricity supplier's requirements.

Where the proposed structure or building encroaches on the statutory safety clearances, for example a two storey multi-unit dwelling which is in close proximity to the overhead power lines at the property boundary, then any existing overhead reticulation (and telecommunication) must be converted to underground. The extent of the undergrounding must be between the existing power poles at or beyond the limits of encroachment.

4.7 CONDUITS

The Developer must install conduits (quantity, size and placement of the necessary conduits to be nominated by the electricity supplier) at the following locations:

- Designated electricity corridor along the footpath. This requirement generally applies to a subdivision where there is dedication and opening of road.
- Full length of any rear allotment access or access easement (preferably before any concrete driveway is installed) to cater for the proposed future LV consumers mains. This requirement generally applies to a subdivision in an established area.

Where required, the Developer must also install future use conduits if this is a design parameter set by the electricity supplier.

4.8 HIGH VOLTAGE FEEDERS

All existing transmission lines of 33 kV or above may remain overhead. However if the Developer wishes to remove high voltage feeder lines, the necessary approvals must be obtained direct from Energex/Powerlink. New or relocated high voltage systems may be overhead at the discretion of Energex/ Powerlink.

4.9 TRANSFORMERS

All new transformers required for a development within an existing underground area or an underground reticulated subdivision must be the pad mounted transformer (PMT) type even if their location is remote from the development.

The erection of new pole transformers (PT) will only be considered provided that there are no new poles, nor any extension to the overhead mains. Where a PT is proposed in an established area, the Developer must consult with the residents within the neighbourhood to ensure acceptance of the proposal by the community. The erection of new PT is generally limited to small or staged developments. Upgrading of an existing PT is allowed (and possible pole replacement) provided that it is not sited at a different location.

5.0 GAS

If underground gas is to be supplied to the new development, these service conduits must be shown on the engineering plans.

6.0 TELECOMMUNICATIONS

6.1 GENERAL

This section applies to the provision of infrastructure required to facilitate affordable access for very high-speed broadband telecommunications (fibre optic cabling) to business and residents including new housing, high rise developments and urban renewal projects.

The telecommunications conduits, jointing pits and fibre optic cables will be owned and managed by Council for the common benefit of the community and made available as far as possible to all carriers.

6.2 CONDUITS

The Developer must install two 100 mm diameter conduits (UPVC Class PN9, white, in accordance with AS 1477) to enable the connection of every property to the telecommunications networks. The conduits must connect into pits outside every property (refer Standard Drawing Nos. UMS 121, UMS 122, UMS 123 and UMS 124 for details). This can be achieved by installing a jointing pit on every second property boundary to allow services to every property in a similar manner to power, or by whatever other means necessary to bring the two conduits to every property.

The conduits may be marked with the words "Telecommunications" or "Communications", but not bear the name or logo of any carrier. Conduit bends must be of the same material and specifications and have a bend radius of no less than 3 m. The conduits should enter pits at the ends and not the sides, and should be about 25 mm above the pit floor.

The pits should be type J6, as per Section 7.3 of AS 3084. The pits must not be placed in areas subject to vehicular traffic. The pit lids should bear the words "BCC", "Brisbane City Council", "Communications" or "Telecommunications" and should not bear the name or logo of any telecommunications carrier. Additional pit(s) should be placed at the boundary or boundaries of the development to facilitate connections to the external networks. Where fibre optic cables are provided by the Developer, the conduits will concentrate via the node room mentioned in Section 6.3.

Since the conduits need to go to the every property in the same manner as electricity, the Developer may wish to consider a shared trench in the places where the electricity and telecommunications alignments are adjacent to each other. In these cases the Developer must comply with the electricity provider's technical and safety requirements for shared trenches.

The conduits and pits must be provided in favour of Council. Council intends to license space in the conduits under the Council Duct Space Licensing resolution to carriers to provide telecommunications services to the occupants.

Conduits are required at the following locations:

- Designated telecommunications or shared electricity/telecommunications corridor inside the dedicated road reserve corridor. This requirement generally applies to a subdivision where there is dedication and opening of road.
- Full length of any rear allotment access or access easement, that is before any concrete driveway is installed. This requirement generally applies to a subdivision in an established area.
- Wide development frontage[1] in a development/ redevelopment in an established area.
- Development involving the construction of specialised footpath surfacing other than plain concrete (eg exposed aggregate concrete and pavers) of 30 m or more in contiguous lengths.
- Any road crossing (where necessary) to properties on the opposite side of the road. For a development in an established area, this work usually extends to new road construction outside the development boundary. For a subdivision where there is dedication and opening of road, this work is required if telecommunications conduits are only installed on one side of the road.

6.3 FIBRE OPTIC CABLES

The provision of at least one dedicated single mode fibre optic cable (to provide dedicated service at ≥ 100 Mbps bidirectionally) to every property is mandatory in major developments and public projects. These requirements will be assessed on a case by case basis, depending on the type and size of development. Fibre optic cabling should terminate at one central point, for example in a 3.5 x 2.5 x 2.5 m node room, which should also be provided in favour of Council.

Council intends to license the fibre optic network to a suitable operator to provide common services within the community, and facilitate open access to all content and service providers, including provision from the customers themselves, on a cost effective and equitable basis.

[1] Wide development frontage is defined as:
- For blocks bounded by a single street, the length of the street frontage is 60 m or more.
- For blocks bounded by two or more streets (eg a corner block), the aggregate sum of the street frontages is 60 m or more in contiguous lengths or the discrete individual length of any one street frontage is 60 m or more.

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