

GOONDIWINDI REGIONAL COUNCIL

Urban Levee Bank Policy

Adopted Date: 23 February 2011
Policy Number: GRC 0025
Policy Type: Strategic
Responsible Officer: Director of Engineering & Planning
Department: Engineering & Planning

Version	Decision Number or CEO Approval	Decision Date	Status / History
1	GRC 0025	23 February 2011	Review April 2012
2			
3			
4			

1. DEFINITIONS

1.1. Levee Bank

An embankment or structure by which:-

- (a) water is prevented or reduced from flowing into or from land; or
- (b) the flooding of land is prevented or reduced.

1.2. Crest

The top of a levee.

1.3. Easement

An easement is a legal right (encumbrance) over the title of the parcel of land which allows the use and/or control of that part of the land by a third party for the provision of utilities such as sewerage or power, or for one entity to gain access across the land to another parcel. An easement over the land is a registered title with the Titles Office of the Department of Environment and Resource Management.

2. BACKGROUND

Levees are major assets to the communities they protect. They also provide a sense of security. Levees can remain unused for long periods, but are then required to perform to a pre-determined level, often at short notice.

To maintain a minimum level of protection from flooding, it is necessary to provide a basic level of maintenance so that the level, cross section and general standard of the levee is preserved over time.

In order to achieve the desired level of maintenance, levees should be treated as any other valuable asset.

3. POLICY STATEMENT

1. Easements

- Levee bank easements are to be created over all of Council's levees.
- The minimum extent of the levee is to be the levee structure plus a minimum of 1.5 metres either side of the levee structure.
- Easement rights in favour of Council are for the construction and maintenance of the levee and will not include public access via private property.

2. Works to be Approved

- Any works to be undertaken by or for the property owner within the levee easement must be approved by Council prior to commencement.

QFCI

Date: 03/05/11 JM

Exhibit Number: 238

GOONDIWINDI REGIONAL COUNCIL

Urban Levee Bank Policy

- Unapproved works will be removed and the levee access made good at the property owners expense.
- If Council requires the removal or alteration of any approved works, Council will undertake the works and reinstate the property at its cost.

3. Access

- Access to the levee for maintenance will be via the crest of the levee or within the easement either side of the levee.
- In times of flood or in the case of emergency works, access to the levee may be by right of entry through the affected property.

4. Fencing

- Longitudinal fencing along a levee easement boundary is permitted.
- Where property boundaries or roads cross levees, appropriately constructed cross fences are permitted. Any cross fences must incorporate a gate, boom or other opening on the levee crest which will allow access for maintenance and emergencies.
- The minimum width of any gate or opening must be 3.0 metres and the gate or opening must be provided in a position that facilitates access by machinery.

5. Vegetation

- No trees are to be planted within the levee easement.
- Root invasive trees will be discouraged from being planted within 20 metres of the levee bank easement.
- Existing trees will be inspected by Council and removed if deemed necessary.
- Council may install root barriers or exercise other tree root management options along the easement boundary if the root system of an existing tree is of concern.
- Any other vegetation such as shrubs, gardens etc must not obstruct free access along the levee bank crest.

6. Inspections

- Inspections will be undertaken on a six monthly basis by a Council appointed person or employee.
- Inspections will be undertaken before, during and after major flood events.

7. Pipeline Crossings

▪ Open Cut Trench Pipelines

→ Where the trench is excavated through the levee bank to provide the required cover below natural surface, the bank section of the excavation should be battered and stepped to provide better bonding with the replacement bank.

→ Cut-off wall trenches shall be excavated in the sides and bed of the trench to a minimum depth of 450 millimetres into undisturbed ground.

→ Pipes shall be laid and supported on cradles as required to enable the cut-off wall and end structures to be poured. If concrete pipes are used the pipes shall be scabbled where they pass through the walls. For PVC or Poly pipes, a puddle flange or other water stop arrangement shall be fixed and poured into the cut-off wall. For steel pipes a welded flange shall be poured into the cut-off wall.

→ The cut-off wall shall extend 450 millimetres above the stripped surface and shall be reinforced with centrally placed mesh and hooped bars around the pipe.

→ The trench and replacement bank shall be reconstructed with selected clay material, placed in layers not exceeding 150 millimetres, and compacted to 95% MDD.

→ ***Drawing provided as Attachment A***

▪ Drilled Pipelines

→ Directionally drilled pipelines under a levee should avoid drilling through the levee or the underlying key of the levee. Appropriate measures will also be required to prevent water penetration through the annular space left around the pipe.

→ Trenching shall not be undertaken within a distance of twice the height of the levee or 3 metres of

GOONDIWINDI REGIONAL COUNCIL

Urban Levee Bank Policy

either toe, whichever is the greater.

- The pipe shall have 1.2 metres cover below natural surface, at the start of the drilling. If the levee is keyed into the foundation material, the top of the pipe shall be at least 1 metre below the bed level of the key.
- The diameter of the drilled hole shall be the minimum that will allow the service pipe to be pulled through.
- Should an annular space be left around the pipe, the space shall be filled by pressure grouting using a 9:1 sand cement grout mix.
- For levees of up to 1 metre in height, the ends of the pipe outside of the drill hole shall be supported 150 millimetres above the bed of the trench. The first 2 metres of trench, on either side of the levee, shall be filled to within 150 millimetres of natural surface with a compacted 10:1 sand cement mixture.
- Final backfilling of the plug is to be completed using topsoil.
- For levees greater than 1 metre in height, a 300 millimetre thick concrete cut-off wall shall be constructed at the ends of the drill hole to within 150 millimetres of natural surface.
- Pipes shall be laid and supported on cradles as required to enable the cut-off wall and end structures to be poured. If concrete pipes are used the pipes shall be scabbled where they pass through the walls. For PVC or Poly pipes, a puddle flange or other water stop arrangement shall be fixed and poured into the cut-off wall. For steel pipes a welded flange shall be poured into the cut-off wall.
- The cut-off wall shall be reinforced with centrally placed mesh and hooped bars around the pipe.

→ ***Drawings provided as Attachment B & C***

▪ **Special Requirements for Power Cables**

- Cables must be enclosed in a heavy duty rigid PVC conduit to AS2053. The conduit must have a minimum of 1 metre cover within 10 metres of each toe of the levee.
- In a trenched situation, concrete slabs are to be laid 150 millimetres above the conduit.
- Plastic warning tape must be laid 300 millimetres over the conduit along the entire length of the underground cable.
- Warning signs are to be erected on either side of the levee indicating the presence of a cable.

▪ **Aerial Crossings**

- Clearance above the crest of the levee must be a minimum of 5 metres.
- Supporting poles must be set back 10 metres outside either toe of the levee.
- Warning signs are to be displayed at each aerial crossing advising of the danger as well as the contact authority for further information.

8. Funding Arrangements

- All upgrading, improvement and levee repair works will be funded by Council including any necessary restoration works.
- Remedial works necessary to achieve compliance with the policy in terms of access will be funded by the relevant property owner.

4. POLICY PURPOSE

The purpose of this policy is to ensure that levee banks constructed for flood prevention purposes in the urban areas of towns are adequately maintained and remain accessible.

5. POLICY OBJECTIVES

The objectives of this policy are to:-

- Provide Council and property owners with clear guidelines on their rights, obligations and restrictions on the use of land which levee banks and easements are situated.

GOONDIWINDI REGIONAL COUNCIL

Urban Levee Bank Policy

- Ensure access to levee banks for maintenance and emergency works.
- Ensure the levees remain structurally adequate.

6. SCOPE

This policy applies to levee banks constructed for the protection of urban land in and around townships within the Goondiwindi Regional Council area.

A map of the affected levee banks is included as Attachments D & E.

7. REVIEW DATE

April 2012

ATTACHMENTS

Attachment A: Concrete & Steel Pipe Crossing – Open Cut Trench

Attachment B: Pipe Crossing – Directional Drilling

Attachment C: PVC & Poly Pipe Crossing – Open Cut Trench

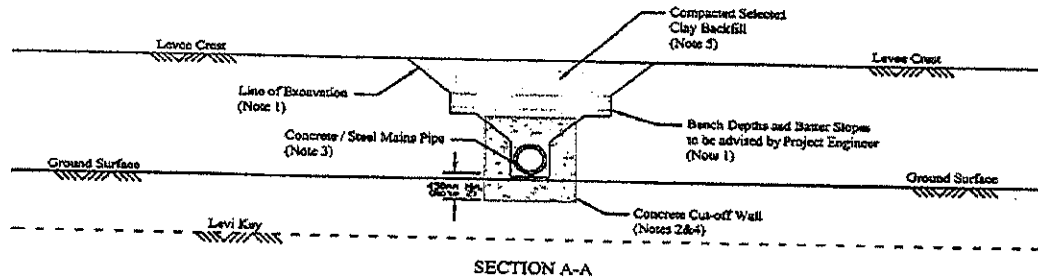
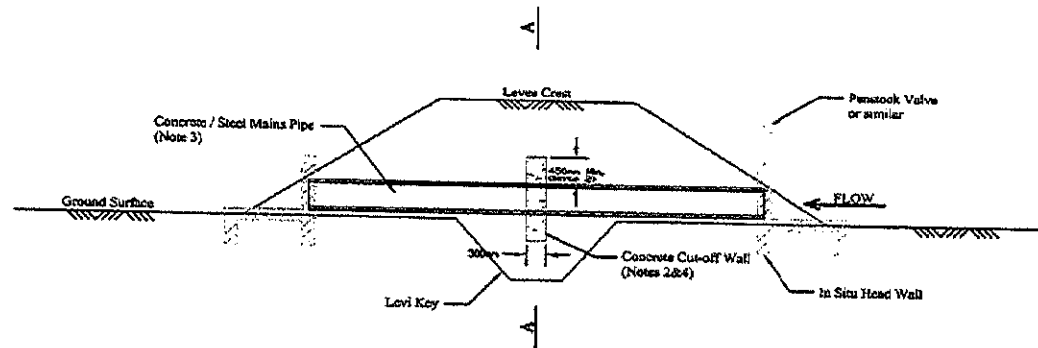
Attachment D: Plans of Levee Banks - Goondiwindi

Attachment E: Plans of Levee Banks - Yelarbon

GOONDIWINDI REGIONAL COUNCIL Urban Levee Bank Policy

Attachment A

CONCRETE & STEEL PIPE CROSSING - OPEN CUT TRENCH



NOTES:

- 1) The bank wall section of excavation shall be battered and stepped to provide better bonding with the replacement bank. The degree of batter steepness is dependant on individual site conditions and bank stability, this will differ between locations and shall be advised by Project Engineer.
- 2) Cut-off wall trenches shall be excavated in the sides and bed of the trench to a minimum depth of 450 millimetres into undisturbed ground.
- 3) Pipes shall be laid and supported on cradles as required to enable the cut-off wall and head-wall structures to be poured. If concrete pipes are used the pipes shall be scabbled to provide a better bond where they pass through the walls. For steel pipes a welded flange shall be poured into the cut-off wall.
- 4) Cut-off walls shall extend 450 millimetres above the stripped surface and shall be reinforced with centrally placed mesh and hooped bars around the pipe.
- 5) The trench and replacement bank shall be reconstructed with selected clay material, placed in layers not exceeding 150 millimetres, and compacted to 95% MDD.

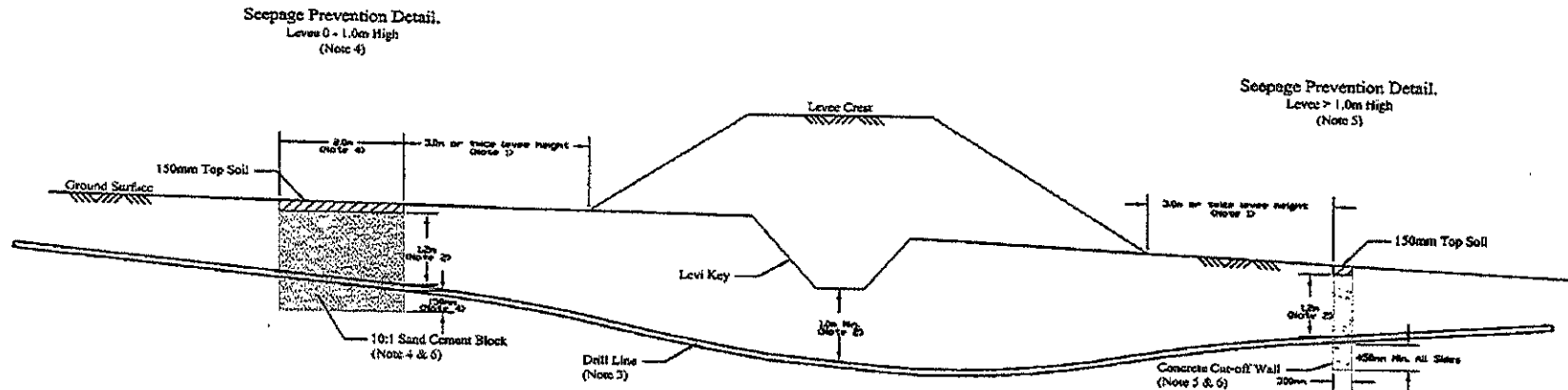
				GOONDIWINDI REGIONAL COUNCIL		SCALE AT AS		LEVEE PIPE CROSSINGS PLAN & DETAIL		Drawing Number: Attachment A																			
						<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>HORIZ</td> <td>N/A</td> <td>VERT</td> <td>N/A</td> </tr> <tr> <td>DESIGNED</td> <td>DB</td> <td>28/01/2011</td> <td></td> </tr> <tr> <td>DRAWN</td> <td>SATD</td> <td>30/01/2011</td> <td></td> </tr> <tr> <td>CHECKED</td> <td></td> <td></td> <td></td> </tr> <tr> <td>APPROVED</td> <td></td> <td></td> <td></td> </tr> </table>				HORIZ	N/A	VERT	N/A	DESIGNED	DB	28/01/2011		DRAWN	SATD	30/01/2011		CHECKED				APPROVED			
HORIZ	N/A	VERT	N/A																										
DESIGNED	DB	28/01/2011																											
DRAWN	SATD	30/01/2011																											
CHECKED																													
APPROVED																													
				100 MARSHALL ST GOONDIWINDI, QLD 4390		PHONE: 07 46711 122 FAX: 07 4671 3013		Revision: A		FOR APPROVAL																			
REV	BY	DESCRIPTION	APPROVED	DATE																									
A	SATD	PRELIMINARY	DB	01/02/2011																									

FILE PATH: H:\A. DRINGBOMER\WORKSPACE\Goon\gpl\plan\detail\Levee Pipe Crossings

GOONDIWINDI REGIONAL COUNCIL Urban Levee Bank Policy

Attachment B

PIPE CROSSING - DIRECTIONAL DRILLING



NOTES:

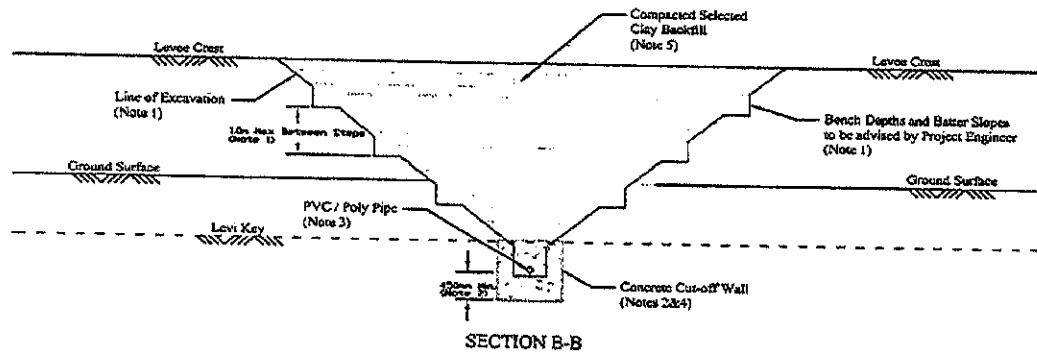
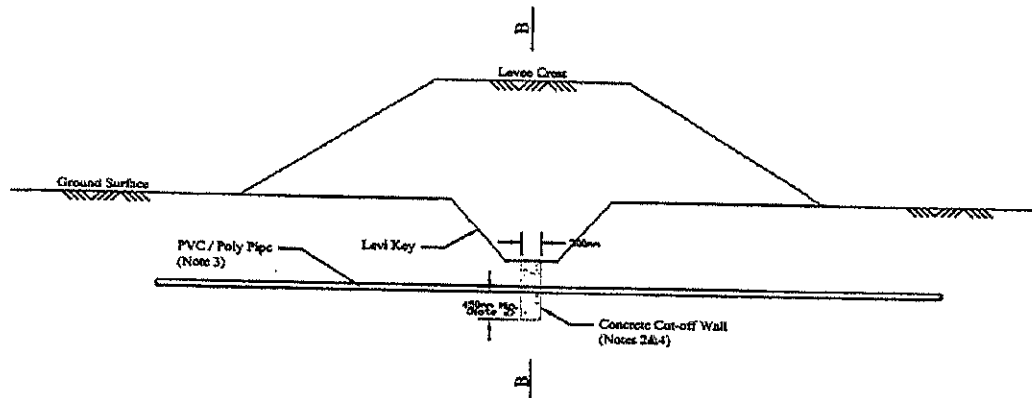
- 1) Trenching for prevention of water penetration through the annular space around the pipe shall not be undertaken within a distance of twice the height of the levee or three metres of either toe, whichever is the greater.
- 2) The pipe shall have 1.2 metres cover below natural surface, at the start of drilling. If the levee is keyed into the foundation material, the top of the pipe shall be at least one meter below the bed level of the key.
- 3) The diameter of the drilled hole should be the minimum that will allow the service pipe to be pulled through. If an annular space is left around the pipe, the space shall be filled by pressure grouting using a 9:1 sand cement grout mix.
- 4) For levees of up to one metre in height, the ends of the pipe outside of the drill hole shall be supported 150 millimetres above the bed of the trench. The first two metres of trench, on either side of the levee, shall be filled to within 150 millimetres of natural surface with a compacted 10:1 sand cement mixture. Final backfilling of the plug is to be completed using topsoil.
- 5) For levees greater than one metre in height, a 300 millimetre thick concrete cut-off wall shall be constructed at either end of the drill hole to within 150 millimetres of natural surface. Final backfilling is to be completed using topsoil.
- 6) A puddle flange or other water stop arrangement shall be fixed to the PVC / Poly pipe and poured into the cut-off wall or sand cement plug structure.

				GOONDIWINDI REGIONAL COUNCIL		SCALE AT A3 HORIZ N/A VERT N/A		LEVEE PIPE CROSSINGS PLAN & DETAIL		Drawing Number: Attachment B	
				100 MARSHALL ST GOONDIWINDI, QLD 4390		PHONE: 07 45711 122 FAX: 07 4571 3013				DESIGNED DB 28/01/2011	
								DRAWN SATD 31/01/2011		Revision: A	
								CHECKED		FOR APPROVAL	
								APPROVED			
A	SATD	PRELIMINARY	DB	01/02/2011							
REV	BY	DESCRIPTION	APPROVED	DATE							

GOONDIWINDI REGIONAL COUNCIL Urban Levee Bank Policy

Attachment C

PVC & POLY PIPE CROSSING - OPEN CUT TRENCH



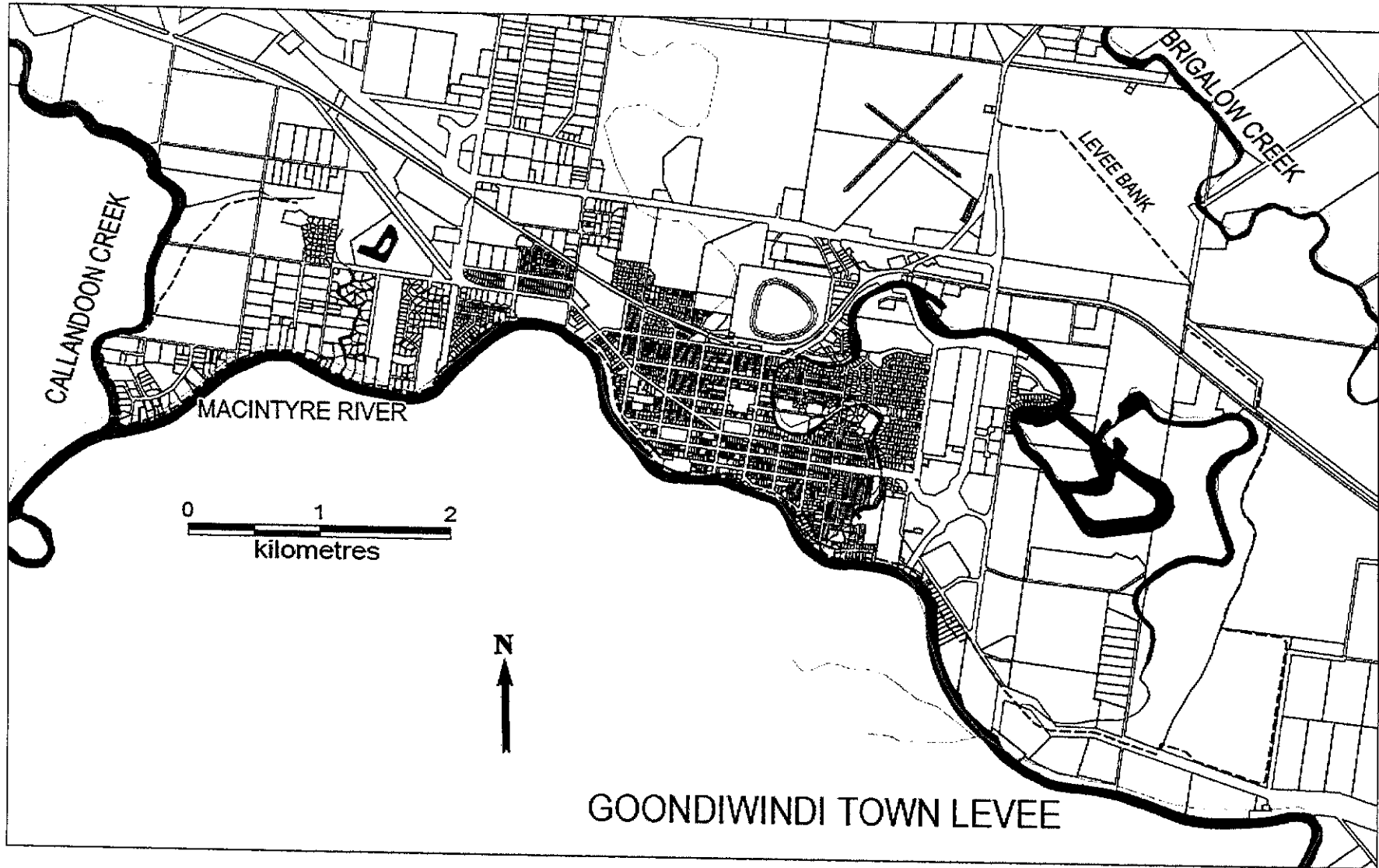
NOTES:

- 1) The bank wall section of excavation shall be battered and stepped to provide better bonding with the replacement bank. The degree of batter steepness is dependant on individual site conditions and bank stability, this will differ between locations and shall be advised by Project Engineer.
- 2) Cut-off wall trenches shall be excavated in the sides and bed of the trench to a minimum depth of 450 millimetres into undisturbed ground.
- 3) Pipes shall be laid and supported on cradles as required to enable the cut-off wall to be poured. For PVC and Poly pipes, a puddle flange or other water stop arrangement shall be fixed and poured into the cut-off wall.
- 4) Cut-off walls shall extend 450 millimetres above the stripped surface and shall be reinforced with centrally placed mesh and hooped bars around the pipe.
- 5) The trench and replacement bank shall be reconstructed with selected clay material, placed in layers not exceeding 150 millimetres, and compacted to 95% MDD.

				GOONDIWINDI REGIONAL COUNCIL		SCALE AT A3		LEVEE PIPE CROSSINGS PLAN & DETAIL		Drawing Number: Attachment C																			
						<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>HORIZ</td> <td>N/A</td> <td>VERT</td> <td>N/A</td> </tr> <tr> <td>DESIGNED</td> <td>DB</td> <td>28/01/2011</td> <td></td> </tr> <tr> <td>DRAWN</td> <td>SATD</td> <td>31/01/2011</td> <td></td> </tr> <tr> <td>CHECKED</td> <td></td> <td></td> <td></td> </tr> <tr> <td>APPROVED</td> <td></td> <td></td> <td></td> </tr> </table>				HORIZ	N/A	VERT	N/A	DESIGNED	DB	28/01/2011		DRAWN	SATD	31/01/2011		CHECKED				APPROVED			
HORIZ	N/A	VERT	N/A																										
DESIGNED	DB	28/01/2011																											
DRAWN	SATD	31/01/2011																											
CHECKED																													
APPROVED																													
				100 MARSHALL ST GOONDIWINDI QLD 4330		PHONE: 07 4671 1222 FAX: 07 4671 3013		Revision: A		FOR APPROVAL																			
REV	BY	DESCRIPTION	APPROVED	DATE					PVC AND POLY PIPE CROSSINGS - OPEN CUT TRENCH																				
A	SATD	PRELIMINARY	DB	01/02/2011																									

**GOONDIWINDI REGIONAL COUNCIL
Urban Levee Bank Policy**

Attachment D



**GOONDIWINDI REGIONAL COUNCIL
Urban Levee Bank Policy**

Attachment E

