AGENDA FOR ORDINARY MEETING
TO BE HELD IN COUNCIL CHAMBERS, BUNDABERG
ON TUESDAY 25 JUNE 2019, COMMENCING AT 10.00 AM

Item

25 June 2019

Item Number:	File Number:	Part:
F1	.	FINANCE

Portfolio:

Organisational Services

Subject:

Financial Summary as at 31 May 2019

Report Author:

Anthony Keleher, Chief Financial Officer

Authorised by:

Amanda Pafumi, General Manager Organisational Services

Link to Corporate Plan:

Our People, Our Business - 3.1 A sustainable financial position - 3.1.2 Apply responsible fiscal principles for sustainable financial management.

Background:

In accordance with Section 204 of the *Local Government Regulation 2012* a financial report must be presented to Council on a monthly basis. The attached financial report contains the financial summary and associated commentary as at 31 May 2019.

Associated Person/Organization:

Nil

Consultation:

Financial Services Team

Chief Legal Officer's Comments:

Pursuant to section 204 of the *Local Government Regulation 2012* the Local Government must prepare and the Chief Executive Officer must present, the financial report. The financial report must state the progress that has been made in relation the local government's budget for the period of the financial year up to a day as near as practicable to the end of the month before the meeting is held.

Policy Implications:

There appear to be no policy implications.

Financial and Resource Implications:

There appear to be no financial or resource implications.

Risk Management Implications:

There appears to be no risk management implications.

Communications Strategy:

Communications Team consulted.

☒ Yes

☐ No

Attachments:

⇩1 Financial Summary as at 31 May 2019

Recommendation:

That the Financial Summary as at 31 May 2019 be noted by the Council

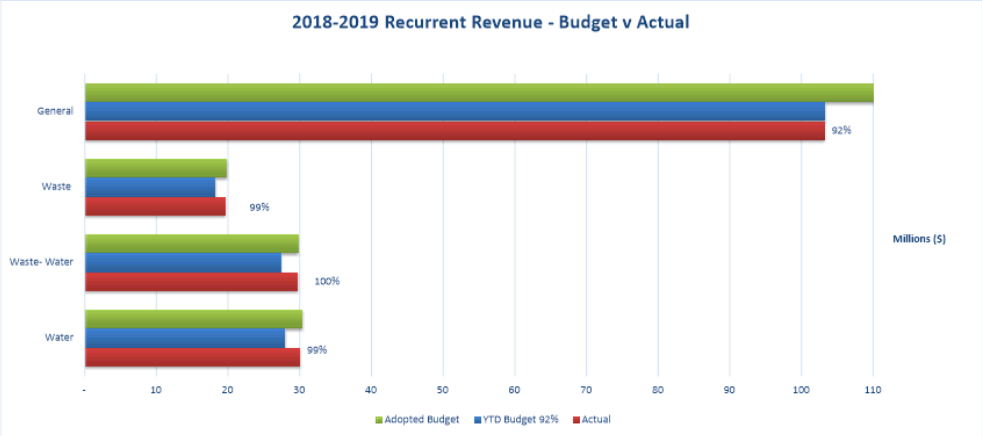
Financial Summary
as at 31 May 2019

	Council			General			Waste			Wastewater			Water		
Progress check - 92%	Actual YTD	Adopted Budget	% Act/ Bud	Actual YTD	Adopted Budget	% Act/ Bud	Actual YTD	Adopted Budget	% Act / Bud	Actual YTD	Adopted Budget	% Act/ Bud	Actual YTD	Adopted Budget	% Act/ Bud
Recurrent Activities															
Revenue															
Rates and Utility Charges	154,811,719	156,069,910	99%	83,918,453	85,357,610	98%	14,719,068	14,561,200	101%	28,642,324	28,493,400	101%	27,531,874	27,657,700	100%
Less: Discounts and Pensioner Remissions	(8,561,913)	(8,476,650)	101%	(8,008,784)	(7,911,200)	101%	(188,091)	(193,190)	97%	(210,522)	(210,670)	100%	(154,516)	(161,590)	96%
	146,249,806	**147,593,260**	**99%**	**75,909,669**	**77,446,410**	**98%**	**14,530,977**	**14,368,010**	**101%**	**28,431,802**	**28,282,730**	**101%**	**27,377,358**	**27,496,110**	**100%**
Fees and Charges	23,668,955	26,465,529	89%	16,727,489	19,092,278	88%	4,642,849	4,888,251	95%	835,913	980,000	85%	1,462,704	1,505,000	97%
Interest Revenue	3,945,574	3,875,791	102%	1,823,949	1,455,041	125%	418,337	465,000	90%	485,246	535,750	91%	1,218,042	1,420,000	86%
Grants, Subsidies and Donations	8,665,867	14,300,870	61%	8,634,729	14,163,247	61%	25,775	137,623	19%	-	-		5,363	-	
Sale of Developed Land Inventory	134,540	134,540	100%	134,540	134,540	100%	-	-		-	-		-	-	
Total Recurrent Revenue	**182,664,742**	**192,369,990**	**95%**	**103,230,376**	**112,291,516**	**92%**	**19,617,938**	**19,858,884**	**99%**	**29,752,961**	**29,798,480**	**100%**	**30,063,467**	**30,421,110**	**99%**
less ***Expenses***															
Employee Costs	62,918,164	72,174,655	87%	49,031,263	56,822,247	86%	5,436,929	5,631,541	97%	4,311,646	4,837,221	89%	4,138,326	4,883,646	85%
Materials and Services	52,997,561	66,839,966	79%	32,552,871	41,238,288	79%	7,966,737	9,013,183	88%	5,713,714	7,531,574	76%	6,764,239	9,056,921	75%
Finance Costs	3,970,050	4,621,016	86%	1,291,207	1,583,281	82%	850,199	948,350	90%	1,558,744	1,793,000	87%	269,900	296,385	91%
Depreciation	43,342,096	47,282,286	92%	31,360,737	34,211,712	92%	1,558,868	1,700,583	92%	5,249,778	5,727,031	92%	5,172,713	5,642,960	92%
Total Recurrent Expenditure	**163,227,871**	**190,917,923**	**85%**	**114,236,078**	**133,855,528**	**85%**	**15,812,733**	**17,293,657**	**91%**	**16,833,882**	**19,888,826**	**85%**	**16,345,178**	**19,879,912**	**82%**
Operating Surplus	**19,436,871**	**1,452,067**		**(11,005,702)**	**(21,564,012)**		**3,805,205**	**2,565,227**		**12,919,079**	**9,909,654**		**13,718,289**	**10,541,198**	
less ***Transfers to***															
NCP Transfers	(2)	-		(10,719,350)	(11,693,836)		(1,870,423)	(2,040,461)		5,129,280	5,595,579		7,460,491	8,138,718	
Total Transfers	**(3,776,101)**	-		**(10,960,662)**	**(11,693,836)**		**(1,870,423)**	**(2,040,461)**		**3,593,233**	**5,595,579**		**5,461,751**	**8,138,718**	
Movement in Unallocated Surplus	**23,212,972**	**1,452,067**		**(45,040)**	**(9,870,176)**		**5,675,628**	**4,605,688**		**9,325,846**	**4,314,075**		**8,256,538**	**2,402,480**	
Unallocated Surplus/(Deficit) brought forward	33,202,536	33,202,536		(1,584,592)	(1,584,592)		11,205,555	11,205,555		4,870,464	4,870,464		18,711,109	18,711,109	
Unallocated Surplus/(Deficit)	**56,415,508**	**34,654,603**		**(1,629,632)**	**(11,454,768)**		**16,881,183**	**15,811,243**		**14,196,310**	**9,184,539**		**26,967,647**	**21,113,589**	
Capital Activities															
Council's Capital Expenditure (Excludes Donated Assets)															
Council Expenditure on Non-Current Assets	**53,599,188**	**95,808,667**	**56%**	**43,771,981**	**77,848,942**	**56%**	**1,253,064**	**2,843,836**	**44%**	**5,043,771**	**9,359,684**	**54%**	**3,530,372**	**5,756,205**	**61%**
Loan Redemption	6,137,685	6,653,043	92%	3,526,128	3,800,043	93%	567,410	620,000	92%	1,769,435	1,933,000	92%	274,712	300,000	92%
Total Capital Expenditure	**59,736,873**	**102,461,710**	**58%**	**47,298,109**	**81,648,985**	**58%**	**1,820,474**	**3,463,836**	**53%**	**6,813,206**	**11,292,684**	**60%**	**3,805,084**	**6,056,205**	**63%**
Cash															
Opening balance	**124,464,224**	**124,464,224**													
Movement - increase/(decrease)	**20,793,274**	**(16,114,221)**													
Closing balance	**145,257,498**	**108,350,003**													

Further to the Financial Summary Report as at 31 May 2019, the following key features are highlighted.

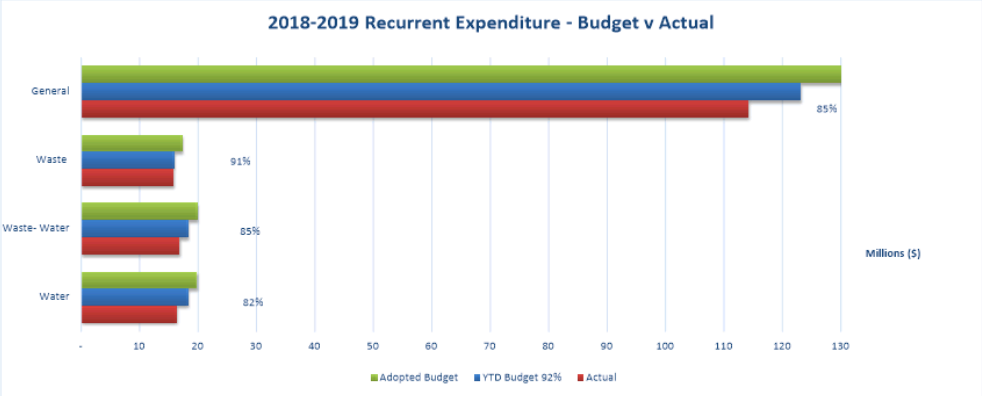
Recurrent Revenue

- Rates and Utility Charges have been levied for the six months to June. Year-to-date income for the general fund is slightly lower than 100% of budget. This will increase in the next month as Council receives payments in advance.
- Fees and charges are tracking in line with the budget. There are some minor seasonal variations within the funds.
- Interest Revenue is more than the annual budget. This is due to the significant cash balance Council currently holds to pay for the delivery of the remaining capital works program. It's expected that the total interest received this financial year will be around $550,000 more than budgeted.
- Grants, Subsidies and Donations are less than the year-to-date budget. This is expected and reflects the payment cycle of several grants. Council has made a provision in the budget for an advance of the 2019/2020 Financial Assistance Grant which is expected to be paid in late June.



Recurrent Expenditure

- Employee Costs are slightly less than the year-to-date budget. In the Waste Fund the wages are tracking above budget with additional resources being employed to meet operational requirements. Overall Employee costs will be less than budget due to a number of vacant positions not being filled immediately.
- Materials and Services are less than the year-to-date budget. This is partly as a result of significant Non-Capital Projects, such as the Staff Relocation Project not yet being delivered. It's expected that materials and services will be less than the budget this financial year with underspends spread across many business units and departments. Some Non-Capital Projects are unlikely to be delivered this financial year and will need to be considered as part of the reprovisioning to be undertaken early next financial year.
- Finance Costs are slightly less than the year-to-date budget. These finance costs will be incurred prior to the end of the financial year and approximate the budget.



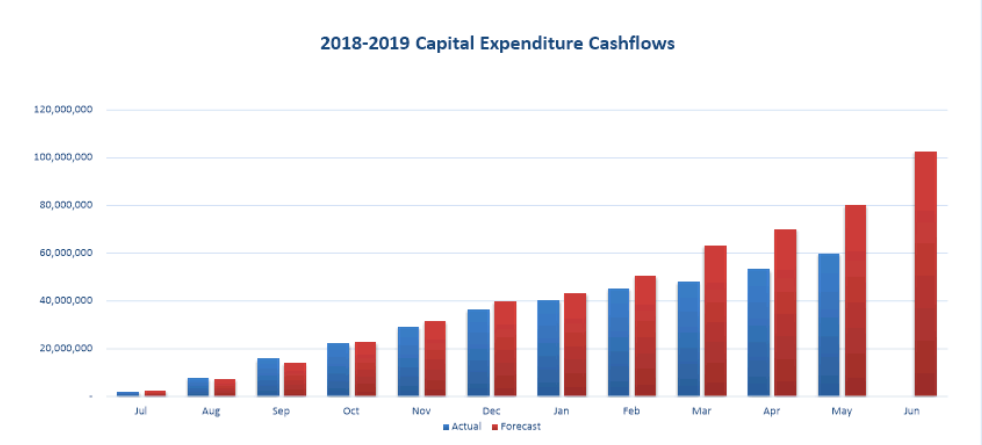
Expected Operating Result

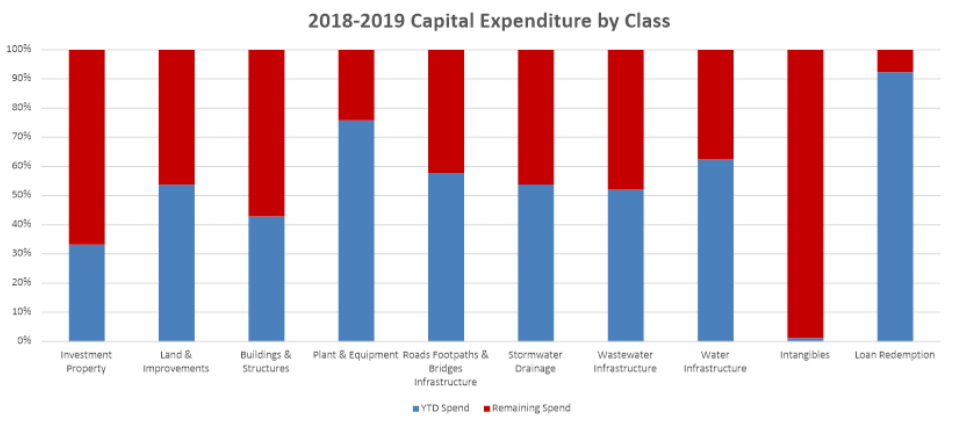
It's expected that Council will achieve an operating surplus significant higher than the budget as a consequence of the reasons outlined above. The additional funds will enable Council to fund some of the reprovisions that may occur over financial years to complete non-capital projects as well as fund the investment in the proposed future capital works program.

Capital Expenditure and Capital Grants

- Capital expenditure is tracking below expectations this financial year with significant projects still to be delivered. It's expected there will be reprovisions of required projects into next financial year. Significant projects currently underway and/or completed include the Elliott Heads Foreshore Redevelopment, Smart Water Meter Trial, Netball Carpark Extension, Norville Pool Bucket Play Area, Fitzgerald and Thabeban Street Roundabout, Regional Aviation Precinct Development, McCarthy Road Drainage, Hughes Road Roundabout and Staff Relocation work at East Depot. Projects that have recently begun include Tirroan Road Realignment and the Road Resurfacing Programs.

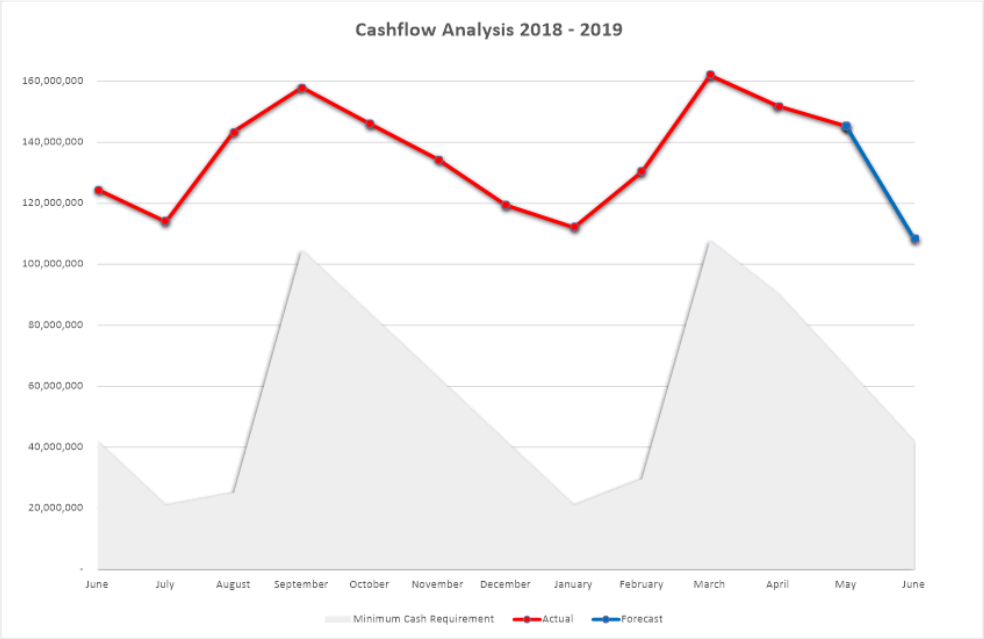
- Capital grants are on track with all milestones having been met and any variations to funding agreements approved. There are several capital grants claims to be submitted prior to the end of the financial year as well as advances for future capital works projects.





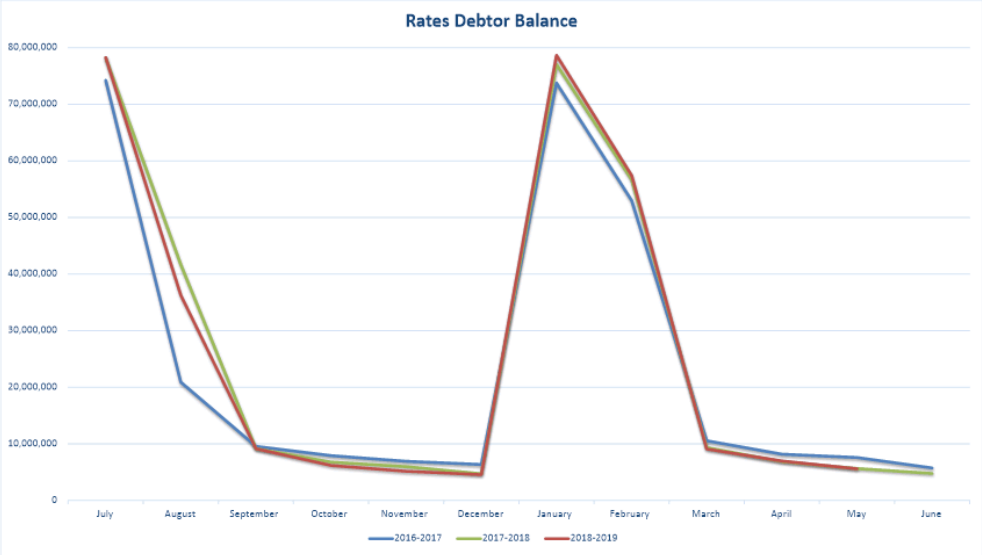
Cash

- The cash balance as at 31 May 2019 was $145.2 million, a decrease of $6.7 million from the last report at 1 May 2019, reflecting the outgoings relating to operations and capital works.
- No short-term liquidity issues are foreseeable. The forecast in the graphical analysis below represents the budget cashflow. It's expected that the actual cash balance at the end of the financial year will be greater than the budget forecast as a result of the delivery of the capital works program.



Rates Debtor

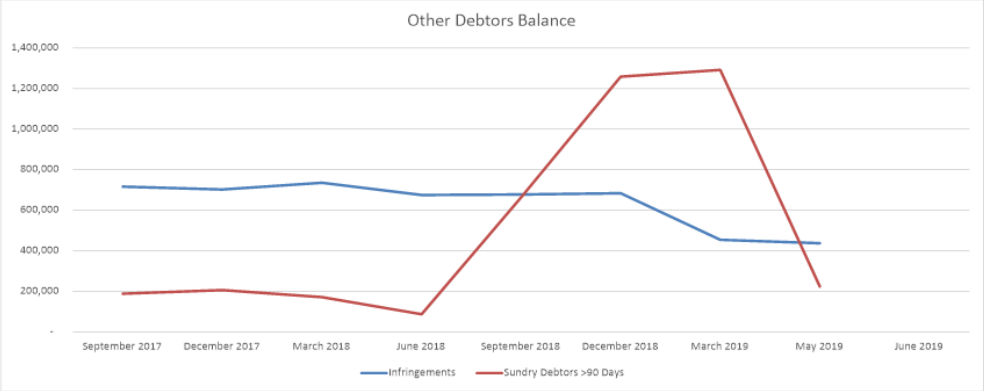
- Rates outstanding total $5.6 million which is equivalent with the rate debt outstanding this time last year. Statement of claims have been issued by Council's debt recovery agent to ratepayers for debts which remain unpaid.



Other Debtors

- Infringements outstanding total $0.44 million. The decrease in the balance is a result of Council's resolution from March 2019 to write off unrecoverable historical notices. Infringements are recovered via SPER. Council's internal auditor is currently undertaking a follow-up audit on Infringement management and controls.

- Sundry Debtors outstanding for more than 90 days total $0.22 million across 80 accounts. The spike between June 2018 and March 2019 were grant claims associated with the Burnett Heads CBD project. These claims have now been paid. Overdue accounts are a result of varying circumstances including: liquidation; lease disputes; protracted approval processes within government agencies; capacity of debtors to pay. Some of the accounts have been approved to be on a payment arrangement, others have been referred to Council's debt recovery agent whilst some debts related to property will be transferred to the rates account. Further where there are debtors who fail to pay on time, they can be denied credit and required to pay cash i.e Waste Disposal Fees.



Item

25 June 2019

Item Number:	File Number:	Part:
G1	.	GOVERNANCE

Portfolio:

Organisational Services

Subject:

Council Policies

Report Author:

Amanda Sapolu, Chief Legal Officer

Authorised by:

Amanda Pafumi, General Manager Organisational Services

Link to Corporate Plan:

Our People, Our Business - 3.2 Responsible governance with a customer-driven focus - 3.2.3 Administer statutory compliant governance operations incorporating insurance; risk management; property management and Council policies and procedures.

Background:

In 2018, Council adopted a number of policies following an extensive review.

Policies with an annual review date have recently been reviewed by the policy owners and the revised policies are provided to Council for adoption.

Policy name	Description of amendments
Buy Local Policy	• Definitions added for FTE and Procurement Board. • Minor changes to grammar. • Policy review changed from annual to biennial.
Council Vehicle Usage Policy	• Section 9.2.1 payment of after tax component updated in line with CPI increase from 1 July 2019 • Minor changes to grammar.
Public Interest Disclosure Policy	• Updates to various sections following a review of the Queensland Ombudsman Public Interest Disclosure Standards.

Associated Person/Organization:

Not applicable.

Consultation:

Policy owners.

Chief Legal Officer's Comments:

The policies are in accordance with legislation and best practice guidelines.

Policy Implications:

The policies will be adopted and further implemented within Council.

Financial and Resource Implications:

There appear to be no financial or resource implications.

Risk Management Implications:

There appears to be no risk management implications.

Communications Strategy:

Communications Team consulted.

☒ Yes

☐ No

Attachments:

⇩1 CP-3-046 Buy Local Policy V2
⇩2 CP-3-017 Council Vehicle Usage Policy V2
⇩3 CP-3-035 Public Interest Disclosure Policy V2

Recommendation:

That Council:

1. **rescind the following policies:**
   - **CP-3-046 Buy Local Policy, version 1;**
   - **CP-3-017 Council Vehicle Usage Policy, version 1; and**
   - **CP-3-035 Public Interest Disclosure Policy, version 1.**
2. **adopt the following policies:**
   - **CP-3-046 Buy Local Policy, version 2;**
   - **CP-3-017 Council Vehicle Usage Policy, version 2; and**
   - **CP-3-035 Public Interest Disclosure Policy, version 2.**

Buy Local Policy

HEAD OF POWER

- *Local Government Act 2009,* section 104
- *Local Government Regulation 2012,* Chapter 6 – Contracting

INTENT

The purpose of this policy is to provide a local content framework that provides an enhanced opportunity for businesses in the Bundaberg Regional Council local government area when quoting and/or tendering to supply Council.

SCOPE

This policy applies to all staff.

DEFINITIONS

FTE means full-time equivalent and is a unit that indicates the hours worked of an employee.

Procurement Board means a leadership group chaired by Council's Manager Strategic Procurement and Supply to oversee Council's procurement and contracting activities.

POLICY STATEMENT

1. Council is committed to generating positive economic and social outcomes for the community as well as ensuring best value in its procurement activities. This policy has the key objective of enhancing the participation of competitive local businesses in bidding for Council's business.

2. The policy embeds local content principles within Council procurement procedures and practices which:
   i. Benefits the promotion of value for money with probity and accountability;
   ii. Advances Council's economic, social and environmental policies; and
   iii. Increases transparency in procurement local content evaluation.

3. The policy does not mandate that Council must use local suppliers; rather it is about providing a mechanism for Council to be able to transparently consider a range of potential suppliers, when making procurement decisions.

4. The Buy Local Policy is focused on achieving a value for money outcome.

5. A 10% local content preferential weighting is to be applied to the evaluation criteria for goods, services and ICT procurement activities.

   This weighting is to be based on a business location categorisation.

Score	Category	Description
10%	A	Is a developing or established business in the Bundaberg Regional Council local government area directly employing local FTEs
8%	B	Has a branch office in the Bundaberg Regional Council local government area directly employing a minimum of 10 FTEs (not contractors)
6%	C	Has a branch office in the Bundaberg Regional Council local government area, established for a minimum of 6 months, directly employing less than 10 FTEs (not contractors)
4%	D	Has a business in the adjacent local government areas (Gladstone, North Burnett, Fraser Coast)
2%	E	Is a Queensland business
1%	F	Is an interstate business
0%	G	Is an overseas business

A Category "A" business, is a business that:

- Has its head office in and conducts business within the local government area (includes sole traders) prior to a contract being awarded for which their offer has been submitted;
- May also conduct business outside of the local government area.

Any branch office (Category B or C business) must:

- Be a branch office of the business submitting the offer, not of a subsidiary or parent company;
- Constitute a physical address, not a post office box or other mailing address.

Remaining proximities (adjacent local government, Queensland, interstate and overseas locations) are determined by the location of the business's head office.

6. For construction procurement activities, the nature and scope is often complex and regularly involves the appointment of a principle contractor and sub-contractors. To enable consideration of the wider community and social benefits beyond the first contract level, a bespoke buy local content scoring criterion (minimum 10% weighting of evaluation score), must be outlined in the premarket submission and approved by the Procurement Board.

7. For contracts under $200,000 (exclusive GST), Council reserves the right to invite only local businesses in the local government area to quote or tender.

8. For contracts greater than $200,000 (exclusive of GST), Council officers must seek a Council resolution to invite only local businesses in the local government area to quote or tender.

ASSOCIATED DOCUMENTS

- Bundaberg Regional Council – Procurement and Contract Manual
- Procurement Policy
- Employee Code of Conduct

DOCUMENTS CONTROLS

Council will review this policy biennially or in response to changes in law or best practice.

POLICY OWNER

The Manager Strategic Procurement, Strategic and Procurement Supply Services is the responsible person for this policy.

Council Vehicle Usage Policy

HEAD OF POWER

- *Local Government Act 2009*, section 9 (1)

INTENT

The purpose of this policy is to address the provision, usage and circumstances/conditions under which Council vehicles are managed and operated.

SCOPE

This policy applies to all Councillors, employees and other drivers of any vehicles under Council's control/ownership for which usage is granted.

DEFINITIONS

Private use means an employee has private use of a fully maintained vehicle in accordance with the provisions of this policy, except during periods of unpaid leave or paid leave greater than six weeks, unless appropriate approval has been obtained.

Commuter use means an employee has the private use of the vehicle limited to travel between home and work within the Council local government area; and travel that is incidental to travel in the course of performing employment related duties.

Fringe Benefit Tax (FBT) means a tax payable to an employee in place of salary or wages.

POLICY STATEMENT

Council vehicles are a resource for the purposes of achieving effective and efficient operations of Council. Council's policy is not to provide vehicles to employees for private use. Where Council seeks to provide an employee benefit, this should be undertaken utilising Novated Vehicle Lease provisions, contained in the Salary Packaging Policy.

1. Vehicle selection

1.1 Vehicle selection is based upon the Council work requirements and cost benefit to Council and shall be made by Fleet & Trade Services in consultation with the relevant manager/supervisor. No vehicle colour or other preference will be given to employees.

1.2 Minimum whole of life costing will be used in the selection of any vehicle within a particular vehicle class during the procurement process. FBT implications will be considered in determining the whole of life costing.

2. Vehicle ownership

2.1 All vehicles remain the property of Council and as such, Council will pay all registration, insurance and third party property insurance.

2.2 All Council vehicles, other than those utilising private use benefit, shall display Council identification/badging, unless otherwise determined by an Executive Leadership Team member.

2.3 The benefit given to employees for use of Council vehicles comes with a responsibility to maintain the vehicle in a clean, tidy and well-maintained condition, including regular washing/cleaning and ensuring that all scheduled servicing and necessary maintenance is undertaken.

2.4 The vehicle shall not be modified in any way by the employee. Vehicles may be fitted with an automatic vehicle location device in accordance with the Fleet Services Global Positions Systems Policy.

3. Replacement schedule

Vehicles will be replaced at a time considered appropriate by the Fleet Management Advisory Committee in consultation with the employees' Executive Leadership Team member. Light vehicles will be replaced at approximately 160,000 kilometres travelled, a minimum of five years or as determined by the Fleet Management Advisory Committee.

4. Usage restrictions

4.1 Unless provided for by other provisions in this policy, Council vehicles are only to be utilised by a Council employee.

4.2 Council vehicles shall not be used:

- for competition or rally;
- for commercial purposes;
- for farming practices;
- on the beach (excepting where required for work purposes);
- on sand or unformed tracks (excepting where required for work purposes);
- for any other purposes excluded by Council's motor vehicle insurance policy; or
- otherwise approved by the relevant General Manager.

4.3 The employee must not wilfully or recklessly misuse or mistreat the motor vehicle.

4.4 Smoking is not permitted in or on any Council vehicles or equipment.

4.5 All drivers must comply with requirements of Council's Alcohol and Drug Policy.

5. Authorised users/driver's licence requirements

5.1 All drivers who are required to drive Council vehicles must hold an appropriate and current Australian Driver's Licence (including any conditional licences where the conditions of such licence are observed during use).

5.2 Staff who require a licence to carry out their work and who have their licence cancelled either fully or partially, shall immediately notify their manager/supervisor in writing.

5.3 Council vehicles may be driven by any person who satisfies the authorised user as below:

- read and understood this policy; and
- booked and obtained the vehicle through Council's PoolCar system; or
- completed and approved a Use of Council Vehicle Agreement Form.

5.4 All employees utilising a Council vehicle must ensure that a Council approved log book is kept and completed (unless the vehicle is not subject to FBT) or the vehicle is booked through Council's PoolCar system.

6. Penalty notices and convictions

6.1 An employee convicted of drink driving or consumption or use of an illegal drug in association with a crash and/or incident, will be liable for all costs associated with the repair of such vehicle/vehicles.

6.2 If a driver is charged and found guilty of a driving offence which results in cancellation or suspension of their licence, all Council vehicle usage, including private use, will be suspended immediately and the vehicle returned to Council.

6.3 Traffic infringement fines incurred are the responsibility of the driver at the time of the infringement. The allocated driver (responsible for the vehicle) must be able to identify whether it was an alternative driver.

7. Termination/variance of agreements

7.1 The Chief Executive Officer reserves the right to rescind a decision to provide a vehicle, vary the type of vehicle to be provided and vary the contribution rates.

7.2 Employees may terminate private use or commuter use privileges by providing seven days' notice in writing. Employees are not obliged to enter into private use or commuter use arrangements.

8. Private use

Councillor's private use is addressed in the Expenses Reimbursement for Councillors Policy.

8.1 The provision of a vehicle for private use is offered on a cost recovery basis and is to be considered an employee privilege.

8.2 The Chief Executive Officer may approve private use of the vehicle during periods of unpaid leave or paid leave greater than six weeks.

8.3 The vehicle must be available for Council operational purposes during all normal duties of the employee unless the employee is absent on official business or as agreed with the Executive Leadership Team.

8.4 Should the vehicle be unavailable for use due to accident/mechanical failure, Council is not obliged to provide a replacement vehicle.

8.5 Private use vehicles are to be usually garaged within the Bundaberg Regional Council local government area.

8.6 During private use, the employee may authorise use of the vehicle by another (nominated and approved) licensed driver.

8.7 Council will provide a fuel card for the vehicle's private use and fund FBT expenses where applicable. The fuel card is to be used for the allocated vehicle only and its use is restricted to within 600 kilometres (straight line) from the Bundaberg City Post Office. Fuel beyond this radius, when the vehicle is being utilised privately, is to be at the expense of the allocated driver.

9. Cost to Employee for Private Use

9.1 The cost to the employee for private use of the vehicle will be as calculated in accordance with the table hereunder, unless another amount is specified in the contract of employment.

9.2 The cost consists of two components:

- After tax – this reduces the FBT payable by Council and the employee's Reportable FBT;
- Salary sacrifice – this is the employee's contribution towards the deemed private use operating costs of the vehicle.

9.2.1 Payment of 'After Tax' component will be through fortnightly payroll deductions:

Level of Use	After Tax (FBT Reduction)	Salary Sacrifice
Private Use	$61.66 per week commencing 1 July 2019	Nil
Commuter Use	Nil	Nil

9.2.2 Annual increases (1 July each year) in the weekly after tax payment will be by March CPI (Brisbane). In addition, Council reserves the right to review the cost from time to time and give the employee three months' notice in writing of a change in the cost specified in the agreement.

9.2.3 An employee may apply to suspend deductions:
- during periods of leave when private use is not available;
- when the employee is directed to make the vehicle available, or the vehicle is unavailable through no fault of the employee (e.g. accident repair), for a period of more than two days and no substitute vehicle is available for private use.

9.3 All tolls incurred whilst utilising the vehicle for private use are payable by the employee assigned the vehicle.

10. Commuter Use

10.1 Commuter Use vehicles are to be submitted into Council's Vehicle Pool system during working hours, unless exempted by the relevant General Manager.

10.2 Commuter Use vehicles are to be garaged within the Bundaberg Regional Council Local Government area.

10.3 The vehicle is to be driven by a Council Employee only (i.e. not family members).

10.4 The vehicle must be available for Council use during all normal duties of the employee.

10.5 All Commuter Use vehicles shall contain Council identification/badging, other unless determined.

10.6 The vehicle shall be returned to Council for reallocation to another employee during periods of planned/unplanned leave greater than two (2) working days.

10.7 Approval may be granted to employees with commuter use for minor deviations of travel between home and work with the documented approval from the employee's Manager or General Manager.

11. Fringe Benefit Tax

11.1 FBT in relation to vehicles will be calculated in accordance with the *Fringe Benefits Tax Assessment Act 1986* (FBTA Act) in order to provide the lowest taxable value. As such, the Financial Accounting Section will liaise with staff that are allocated non-exempt vehicles to ensure taxation compliance and Council's liability is not unnecessarily inflated.

11.2 Employees may choose to make voluntary after tax contributions towards the operating cost of an allocated vehicle for personal reasons including reducing reportable FBT. Proof of contribution (tax invoices, receipts for fuel etc) must be forwarded to the Financial Accounting Section before 1 April each year to effect reportable Fringe Benefits.

11.3 Employees that are allocated non-exempt vehicles will be required to maintain a logbook for each taxation year. Employees will be required to provide a detailed 12 weeks logbook every five (5) years or when circumstances warrant it, in accordance with section 10A of the FBTA Act. For vehicles allocated to Council's PoolCar system, this system will fulfil the requirements of maintaining a logbook.

11.4 Employees that are allocated an exempt vehicle will be required to complete an exemption declaration in a format approved by the Australian Taxation Office for any vehicle driven by them during the FBT year.

11.5 Council's Financial Accounting Section will liaise with staff in relation to taxation requirements described above. Council may take disciplinary action against employees who fail to comply with the taxation requirements associated with provision of a vehicle. Potential action includes, but is not limited to, recoup taxable value of fringe benefit or surrender of vehicle rights.

ASSOCIATED DOCUMENTS

- Alcohol and Drug Policy
- Car Pool Vehicle Usage Operational Policy
- Code of Conduct for Councillors Policy
- Employee Code of Conduct
- Fleet Services - Global Position Systems (GPS) Policy
- Payment of Toll Fees Procedure
- Expenses Reimbursement for Councillors Policy.
- Salary Packaging Policy
- Use of Council Vehicle Agreement Form
- Vehicle Crash/Damage Report Form

DOCUMENTS CONTROLS

Council will review this policy annually or in response to changes in law or best practice.

POLICY OWNER

The Branch Manager Fleet and Trade Services, is the responsible person for this policy.

Public Interest Disclosure Policy

HEAD OF POWER

- *Public Interest Disclosure Act 2010*, sections 28 and 60

INTENT

The purpose of this policy is to facilitate the disclosure, in the public interest, of information about wrongdoing in the public sector in accordance with the *Public Disclosure Act 2010* (PID Act).

SCOPE

This policy applies to all employees, Councillors and members of the public that make a disclosure.

This policy should be read in conjunction with the Public Interest Disclosure Procedure.

DEFINITIONS

Discloser means a person that makes a disclosure in accordance with the PID Act.

Executive Leadership Team means any position directly reporting to the Chief Executive Officer.

PID Coordinator means the Chief Legal Officer.

PID Support Officer means an appropriate person as delegated by the PID Coordinator to provide support to the discloser.

Public Interest Disclosure (PID) means a disclosure made under the PID Act.

Public officer means an employee of Council.

Reprisal means reprisal as defined under section 40 of the PID Act.

Subject officer means a public officer who is the subject of allegations or wrongdoing made in a PID.

POLICY STATEMENT

1. Statement of organisational commitment

The Chief Executive Officer and the Executive Leadership Team encourage the reporting of wrongdoing and are committed to maintaining integrity and promoting the public interest through facilitating the effective notification, assessment and management of PIDs in accordance with the PID Act.

2. Roles and responsibilities

To achieve its obligations under the PID Act, the Chief Executive Officer has designated the role of PID Coordinator to the Chief Legal Officer. For other nominated roles, refer to the PID Procedure.

3. How PIDs can be made

A PID can be made verbally by calling Council's call centre on 1300 883 699, over the counter at a service centre or in writing addressed to the PID Coordinator by post or email to PID@bundaberg.qld.gov.au.

4. Commitment to take action

Council will treat all PIDs appropriately, take concerns seriously and ensure the privacy and confidentiality of a discloser is maintained throughout the process.

Council will accept PIDs made anonymously however this will often make the disclosure more difficult to investigate. Council strongly encourages disclosers to identify themselves when making a PID. Strict confidentiality is maintained at all times in relation to the investigation and reporting of PIDs.

Staff are not protected from the consequences of their own wrongdoing by using the PID mechanism.

5. Commitment to act on false or misleading information

It is an offence under the PID Act to intentionally give false or misleading information. A person found guilty of providing false or misleading information may be subject to criminal prosecution. A public officer found guilty of providing false or misleading information may be disciplined or dismissed.

6. Commitment to support

6.1 Discloser support

Support will be provided to the discloser including assistance to allow a PID to be made.

The nominated PID Support Officer will maintain appropriate levels of communication and support throughout the investigation of the PID. Council's Employee Assistance Program may be accessed by employees who may need additional support.

The discloser must maintain confidentiality and integrity of the process by not discussing it with those unconnected with the matter. All correspondence from Council should be regarded as strictly confidential.

6.2 Subject officer support

Council will assure the subject officer that the PID will be dealt with impartially, fairly and in accordance with the principles of natural justice. Council will ensure confidentiality and the presumption of innocence.

Subject officers may access Council's Employee Assistance Program for additional support.

7. Risk of reprisal and risk assessment

As soon as possible after receiving a PID, the PID Coordinator will determine the level of detection and support appropriate for a discloser by conducting a risk assessment of reprisal using the PID Risk Assessment Guide. Review may be undertaken on a regular basis throughout the process until the management of the PID is finalised.

Council will ensure protection measures are in place that are proportionate to the risk of reprisal.

8. Training and communication

Council provides initial training on PIDs as part of its induction process and detailed training is provided by a relevant external agency every two years to appropriate officers.

9. PID procedure

Detailed information on how to make a PID, how the PID will be investigated and determined can be found in Council's PID Procedure.

ASSOCIATED DOCUMENTS

- Employee Assistance Program
- PID Procedure
- PID Risk Assessment Guide
- Queensland Ombudsman Public Interest Disclosure Standard Numbers 1, 2 and 3

DOCUMENTS CONTROLS

Council will review this policy biennially or in response to changes in law or best practice. As part of its review, Council will review the effectiveness of the PID framework and its ability to manage, minimise and eradicate wrongdoing.

POLICY OWNER

The Chief Legal Officer, Governance and Legal Services is the responsible person for this policy.

Item

25 June 2019

Item Number:	File Number:	Part:
G2	.	GOVERNANCE

Portfolio:

Organisational Services

Subject:

Show Holiday Nomination for 2020

Report Author:

Jon Rutledge, People, Safety & Culture Manager

Authorised by:

Amanda Pafumi, General Manager Organisational Services

Link to Corporate Plan:

Our People, Our Business - 3.2 Responsible governance with a customer-driven focus - 3.2.5 Provide and review systems, programs and processes to ensure effective and efficient service delivery to meet community expectations.

Background:

Each year Council must make application to the Office of Industrial Relations nominating days for a show public holiday in accordance with the requirements of the *Holidays Act 1983*.

In past years Council has nominated two show day holidays:

- The Gin Gin Show holiday be allocated to the Monday before Peoples' Day of the Brisbane Exhibition held in August each year;
- The rest of the region observe the Bundaberg Show day, being a Thursday in late May/early June.

Should Council resolve to have two show day holidays as in previous years, it is recommended Council submit a nomination for the Bundaberg Region, based on postcode basis, ie:

- 4660 and 4670 – Thursday 28 May 2020; and
- 4671 – Monday prior to People's Day for the Brisbane Exhibition – Monday 10 August 2020.

If the nomination is accepted by the Office of Industrial Relations, Council employees based in Council Service Centres, offices, depots etc located at Bundaberg, Bargara, Childers and Gin Gin will observe the Show Holiday as Thursday 28 May 2020.

After initial email advice received from the Show Society indicating its preference for continuation of the Thursday Public Holiday, Gavin Steele called the Show Society to discuss the possibility of moving the Show Holiday to the Friday for the 2020

event. The Show circuit is managed by the Queensland Chamber of Agriculture (QCAS) and the Bundaberg Show Society had discussed the option of a Show Holiday on the Friday of the event but have ruled it out for 2020 but will undertake further discussions with QCAS to look at options for 2021.

Associated Person/Organization:

Nil

Consultation:

Portfolio Spokesperson: Cr Helen Blackburn, Governance & Communications.

Divisional Councillor: Cr Wayne Honor, Division 3.

Gin Gin Show Society

Bundaberg Show Society

Chief Legal Officer's Comments:

There appear to be no legal implications.

Policy Implications:

There appear to be no policy implications.

Financial and Resource Implications:

There appear to be no financial or resource implications.

Risk Management Implications:

There appears to be no risk management implications.

Communications Strategy:

Communications Team consulted.

☒ Yes

☐ No

Attachments:

Nil

Recommendation:

That application be made to the Office of Industrial Relations for gazettal of Show Holidays for the Bundaberg Region, based on postcode basis, ie:

- **4660 and 4670 – Thursday 28 May 2020; and**
- **4671 – Monday 10 August 2020 (Monday prior to People's Day for the Brisbane Exhibition).**

Further, that Council Offices and Depots located in postcodes 4660, 4670 and 4671 be closed on Thursday 28 May 2020; and all Council employees in those locations have this day as their allocated Show Day Holiday.

Item **25 June 2019**

Item Number:	File Number:	Part:
K1	Nil	PLANNING

Portfolio:

Planning & Development Services

Subject:

Amendment to the Bundaberg Regional Council Planning Scheme Policy for Development Works

Report Author:

Arron Walker, Strategic Planning Engineer

Authorised by:

Stephen Johnston, Chief Executive Officer

Link to Corporate Plan:

Our Environment - 2.1 Infrastructure that meets our current and future needs - 2.1.1 Develop, implement and administer strategies and plans underpinned by the principles of sustainable development.

Background:

Council at its meeting held 26 February 2019 decided to amend its Planning Scheme Policy for Development Works (Development Works Policy) and to publicly consult on the proposed amendment. The proposed amendment was placed on public consultation from 13 March to 18 April 2019. Public consultation consisted of the following:

- A public notice about the proposed amendment was published in the NewsMail on 13 March 2019. This public notice details about the proposed amendment to the Development Works Policy, where to obtain information and how to make a submission;
- The proposed amended policy, including standard drawings and related information was made available on Council's public website. This included a link to the Development Works Policy amendment content from the *"Have your say"* page;
- Details about the proposed amendment was sent via email on 11 March 2019 to all consultant engineers that are actively engaged in development works in the Bundaberg Regional Council area. The email was sent to 51 recipients;
- A public information session was held on 20 March 2019. A group of 13 people attended this session including three representatives from RMA Engineers;
- The proposed Development Works Policy amendment was also made available at Council's customer service centres; and

- Council staff offered on-site information sessions to local engineering firms in Bundaberg, which resulted in two additional information sessions:
  - Empire Engineering (ie, seven staff) on 27 March 2019, and
  - GHD (ie, five staff) on 4 April 2019.

Submissions

Council received two formal submissions related to the proposed Development Works Policy amendment. These consisted of one submission from RMA Engineers and one internal Council submission. In addition, both Empire Engineering and GHD provided verbal feedback at their respective information sessions, indicating general support for the proposed amendments. A summary of the key points raised and all proposed changes to the proposed Development Works Policy amendment are summarised in Table 1 below.

Table 1 – Submission Summary and Proposed Changes

ID	Matter Raised	Policy Amended	Response/Changes to Policy
Matters Raised in **RMA submission**			
1	The submission supported the inclusion of the new water services design and construction code and standard drawings of the Wide Bay Burnett Regional Organisation of Councils (WBBROC).	N/A	The support for Council's proposed change is welcomed.
2	The submission supported developing future flood models using Tuflow model software.	N/A	The support for Council's proposed change is welcomed.
3	The submission proposed changing ARI references to AEP.	Yes	The Development Works Policy has been updated to use both nomenclatures together (eg, 10 year ARI (10% AEP)). This is how this issue is dealt with in the current version of QUDM (ie, version 2017).
4	In existing catchments, there should be some discussion/commentary regarding the appropriateness of adopting Major Drainage System design ARI - 100years + Climate Change, where infrastructure may not be equipped to appropriately manage the increased flow rates.	Yes	The following wording was added *"The Developer/Applicant is to notify Council where the pre-development drainage analysis has identified deficiencies in the existing drainage system. Given the varying age of parts the drainage network, older design standards and changes in modelling techniques (i.e., ARR87 to ARR16) may have resulted in parts of the system no longer being able to cater for the design storm flows. Council will consider these issues as per Section 13.1 of QUDM."*

ID	Matter Raised	Policy Amended	Response/Changes to Policy
5	Commentary/guidance should also be provided with respect to the changes in moving from 1987 to 2016 IFD and the effect of increased flow rates and effect on existing infrastructure.	Yes	Same response as item 4 above.
6	Hydrological loss values SC 6.3.5.8.2 represent a saturated catchment and are considered suitable for the design of a fully developed catchment, with a stormwater network, with design flow capacity (no mitigation). However, adopting these prescribed loss values does not appropriately consider the consequences of increased discharge rates from a proposed development where the catchment preceding a rain event is relatively dry and the development discharges to an inadequate downstream stormwater network.	No	At this stage, Council has not completed enough research into the new ARR 2016 infiltration rates and regional losses to make a change here. ARR 2016 suggests that soil tests be undertaken to determine infiltration rates. In addition, infiltration rates will vary during wet or dry periods. As a result, Council has maintained its current position in the Development Works Policy. Council plans to undertake soil tests across the region over the next 2 years (during wet/dry times) to get a better understanding of infiltration rates that could be adopted in the future.
7	Use of rainfall pattern ensembles are not discussed nor, following assessment, are the expected flow rates to be adopted. There has been some discussion around the median and mean values.	Yes	ARR 2016 suggests that “testing has demonstrated that on most catchments large number of events in the ensemble patterns are clustered around the mean and median”. Council’s drainage staff have been using the median temporal pattern for the last 2 years now and feel that it has provided good results. Consequently, the Development Works Policy has been updated to provide guidance in this area (see section SC6.3.5.8.2).
8	The submission generally supported the changes to the operational works procedures.	N/A	The support for Council’s proposed change is welcomed
9	SC6.3.13 (1) should also include reference to the developer’s contractor.	Yes	Section SC6.3.13.2 has been updated to better define the roll of the developer’s contractors.
10	SC6.3.13 (3) Define Developers Representative.	Yes	Section SC6.3.13.2 has been updated and the Developer’s Representative has been renamed Developer’s Superintendent. The roll responsibility of the Developer’s Superintendent is now clearly outlined in the revised section.

ID	Matter Raised	Policy Amended	Response/Changes to Policy
11	It is recommended that the construction management plan be prepared by the contractor, and submitted to Council for review, prior to the prestart occurring. The construction management plan directly impacts on the site management, construction timeframes and contract costs. I consider that the contractor is best placed to prepare the Construction Management Plan that achieves construction efficiency and compliance with the approved design, as they are ultimately responsible for the site.	Yes	The Development Works Policy has been updated to allow either the Principal Constructor or the Supervising Engineer to prepare the Construction Management Plan. Some components of the Construction Management Plan like the Quality Plan for contributed assets mush still be undertaken by the Supervising Engineer. It is hoped that this arrangement will allow for the numerous contractual arrangements employed in the Bundaberg region while not compromising the quality of the contributed assets that Council will receive.
12	Consider a prequalification register for contractors to work within the Bundaberg Regional Council area.	No	At this stage, Council has no plans to introduce prequalification of contractors working within the development industry in the Bundaberg Regional Council Area.
13	As the authority, Council need to review quality documents and enforce compliance with these requirements across the industry. We recommend that council prepares an audit check of the submitted on-maintenance package to be in accordance with the PSP.	No	This item has not been included in the Development Works Policy as it is an existing part of Council's internal auditing of Operational Works Applications.
14	The construction industry should be consulted prior to implementation of the proposed changes.	N/A	No additional consultation is required as the proposed Development Works Policy is not significantly different to the version released for public consultation.
15	The submission supported the incorporation of the new lawful point of discharge test in QUDM 2016.	N/A	The support for Council's proposed change is welcomed
Matters Raised in **Council submission**			
16	Updated various references to QUDM where section numbers have changed from 2007 to 2016.	Yes	References updated.

ID	Matter Raised	Policy Amended	Response/Changes to Policy
17	The WBBROC standard is current ambiguous on when partial services are allowed within the Bundaberg Regional Council area.	Yes	Section SC3.4.4 Partial Water Services has been added to clarify when these types of services are required. In addition, extra detail has been added to section SC6.3.13.3.3 about the Tag and Bag procedure related to these services.
18	WBBROC standard drawing WBB-SEW-1302-1 is missing.	Yes	WBBROC standard drawing WBB-SEW-1302-1 added to drawings.
19	Section SC6.3.11 does not refer to the current requirements under the Telecommunications Act 1997.	Yes	Section SC6.3.11 has been updated to include the requirements for fibre-ready pit and pipe under Part 20A of the Telecommunications Act 1997.
20	Section SC6.3.8.3 should be reworded to simplify and clarify requirements where electrical reticulation is not required (e.g., for sustainable rural lots).	Yes	Section SC6.3.8.3 has been reworded to rationalize and clarify electricity supply requirements for rural lots. This includes the following recommended property note for sustainable rural lots and rural lots created from a boundary realignment: "*At the time of its creation, Council did not require this lot to be connected to the reticulated electricity network. The owner and potential purchasers should investigate whether the lot has since been connected to the network or if alternative power arrangements have been made. Connecting to the reticulated electricity network provided by Ergon Energy or another provider is only one way of providing electricity to this lot."*
21	The water sensitive urban design requirements are not in line the State Planning Policy (SPP).	Yes	Section SC6.3.5.2.1 has been updated to reflect the current SPP.
22	Council may have new flood studies under development that would be useful to developers (i.e., by saving them time and money).	Yes	Section SC6.3.5.4 has been updated to advise developers to check with Council for the availability of draft flood studies in their area of interest.
23	The policy contains some grammatical errors and missing references.	Yes	Various grammatical errors and missing references have been corrected.

Post Consultation Amendments

The proposed Development Works Policy has been updated to incorporate the changes identified in Table 1 above. A copy of the amended proposed Development Works Policy is included at Attachment 1. It is considered that the changes made have not resulted in the proposed Development Works Policy amendment being significantly different to the version released for public consultation.

Associated Person/Organization:

Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP), and the Minister for State Development, Manufacturing, Infrastructure and Planning (The Hon Cameron Dick MP).

Consultation:

A notice of Council's decision to adopt the amended Planning Scheme Policy is required to be published in the State Government Gazette, local newspaper and on Council's website. In addition, after the Planning Scheme Policy for Development Works becomes effective, Council will invite the local development industry to attend an information session on the policy, including changes that occurred in response to public consultation.

Chief Legal Officer's Comments:

The *Planning Act 2016* identifies circumstances where a landowner may be entitled to compensation for reduced value of interest in land arising from a change to the Council's planning scheme, including a change to a planning scheme policy. Although it is unlikely that the proposed planning scheme policy changes would give rise to any claim for compensation, any applicant can request assessment of their proposal under the superseded planning scheme for a period of up to 1 year after the new planning scheme policy commences.

Policy Implications:

This proposed amendment to the Bundaberg Regional Council Planning Scheme Policy for Development Works and associated Standard Drawings is not a significant change in Council policy. The planning scheme policy by its nature should contain the latest version of any applicable industry standards for development works. Consequently, this amendment proposes to adopt the most recent industry standards for water, wastewater and flood modelling. In addition, to improve efficiency of engineering assessment, this amendment proposes to clarify Council's current processes for operational works.

Financial and Resource Implications:

Council's 2018/19 budget includes appropriate allocation of resources to undertake the proposed planning scheme policy amendment.

Risk Management Implications:

There appears to be no risk management implications.

Communications Strategy:

A Communication Strategy is:

☐ Not required

☒ Required

Attachments:

⇩1 Amended Planning Scheme Policy for Development Works
⇩2 Amended Standard Drawings

Recommendation:

That pursuant to the *Planning Act 2016* and the Minister's Guidelines and Rules – Council:-

(a) adopt the proposed amendment to the Planning Scheme Policy for Development Works and associated Standard Drawings, incorporating changes as detailed in Table 1, noting that the changes have not resulted in the amendment being significantly different to the version released for public consultation; and

(b) incorporate the amended version of the proposed Planning Scheme Policy for Development Works and associated Standard Drawings into the Bundaberg Regional Council's Planning Scheme, effective 1 July 2019.

SC6.3 Planning scheme policy for development works

SC6.3.1 Purpose

(1) The purpose of this planning scheme policy for development works is to:

(a) provide a uniform standard for works within the Bundaberg Regional Council local government area;

(b) facilitate the design of new works by the use of standard provisions; however, there is still an allowance for flexibility through the application of the relevant standards, policy documents and industry standards.

(2) This policy cannot provide a solution for every proposal or for every situation encountered. Consequently, this policy does not prevent or discourage alternate solutions for individual development sites. Where this policy does not provide a solution the Developer/Applicant or their Consultant must demonstrate that the proposed solution is in accordance with industry standards.

(3) Consultation with Council's development engineers is encouraged, especially early in the concept or design stages, as this will assist in the early identification and resolution of matters and issues that may cause delays in the approval and/or construction of subsequent works.

SC6.3.2 Application

(1) This policy applies to development identified as requiring assessment against the **Planning scheme policy for development works**.

(2) The policy provides supporting requirements to assist in achieving acceptable outcomes within the Bundaberg Regional Council Planning Scheme (planning scheme) and is read in conjunction with the planning scheme.

SC6.3.3 Roads, driveways, pathways, and cycleways

The purpose of this section is to support development assessment for the design and construction of roads, pathways and cycleways under the planning scheme.

SC6.3.3.1 Design standards and reference documents

The planning and design of developments within the Bundaberg Regional Council local government area must be undertaken in accordance with the current edition of the following key reference documents, unless specifically outlined in this policy or other Council references stated otherwise:

(a) *Austroads - Guide to Road Design* – at the time of writing this document the series was as listed below:

(i) AGRD01-10 Part 1: Introduction to Road Design
(ii) AGRD02-06 Part 2: Design Considerations
(iii) AGRD03-10 Part 3: Geometric Design
(iv) AGRD04-09 Part 4: Intersections and Crossings - General
(v) AGRD04A-10 Part 4A: Unsignalised and Signalised Intersections
(vi) AGRD04B-11 Part 4B: Roundabouts
(vii) AGRD04C-09 Part 4C: Interchanges
(viii) AGRD05-10 Part 5: Drainage Design
(ix) AGRD06-10 Part 6: Roadside Design, Safety and Barriers
(x) AGRD06A-09 Part 6A: Pedestrian and Cyclist Paths
(xi) AGRD06B-09 Part 6B: Roadside Environment
(xii) AGRD07-08 Part 7: Geotechnical Investigation and Design
(xiii) AGRD08-09 Part 8: Process and Documentation

(b) *Austroads - Guide to Pavement Technology* – at the time of writing this document the series, relating to development, was as listed:

- (i) AGPT02-12 Part 2: Pavement Structural Design
- (ii) AGPT03-09 Part 3: Pavement Surfacing
- (iii) AGPT04E-09 Part 4E: Recycled Materials
- (iv) AGPT04G-09 Part 4G: Geotextiles and Geogrids
- (v) AGPT04I-09 Part 4I: Earthworks Materials
- (vi) AGPT06-09 Part 6: Unsealed Pavements (the primary document is the ARRB Unsealed Road Manual)
- (vii) AGPT10-09 Part 10: Subsurface Drainage

(c) *Austroads - Guide to Traffic Management* – at the time of writing this document the series, relating to development, was as listed:

- (i) AGTM012-09 Part 1: Introduction to Traffic Management
- (ii) AGTM02-08 Part 2: Traffic Theory
- (iii) AGTM03-13 Part 3: Traffic Studies and Analysis
- (iv) AGTM04-09 Part 4: Network Management
- (v) AGTM05-08 Part 5: Road Management
- (vi) AGTM06-13 Part 6: Intersections, Interchanges and Crossings
- (vii) AGTM07-09 Part 7: Traffic Management in Activity Centres
- (viii) AGTM08-08 Part 8: Local Area Traffic Management
- (ix) AGTM09-09 Part 9: Traffic Operations
- (x) AGTM10-09 Part 10: Traffic Control and Communication Devices
- (xi) AGTM11-08 Part 11: Parking
- (xii) AGTM12-09 Part 12: Traffic Impacts of Developments
- (xiii) AGTM13-09 Part 13: Road Environment Safety

(d) Other Austroads Standards presented as follows:

- (i) AG-G34/06 Design Vehicles and Turning Path Templates
- (ii) AP-G88-11 Cycling Aspects of Austroads Guides
- (iii) AP-T36-06 Pavement Design for Light Traffic – A Supplement to Austroads Pavement Design Guide
- (iv) AS1289.[0-7] Methods of testing soils for engineering purposes

(e) Unsealed Roads Manual – Guidelines to Good Practice – ARRB ed Giummarra

(f) The following Australian Standards:

- (i) AS1158 [1-6] Lighting for roads and public spaces
- (ii) AS1289 [0-7] Methods of testing soils for engineering purposes
- (iii) AS1428 Design for Access and Mobility
- (iv) AS 2890.1 Parking Facilities – Off-street car parking
- (v) AS 2890.2 Parking Facilities – Off-street commercial vehicle facilities
- (vi) AS 2890.3 Parking Facilities – Bicycle parking facilities
- (vii) AS 2890.5 Parking Facilities – On-street parking
- (viii) AS 2890.6 Parking Facilities – Off-street parking for people with disabilities
- (ix) AS3798 Guidelines on Earthworks For Commercial and Residential Developments
- (x) AS4373 Pruning of Amenity Trees
- (xi) AS4678 Earth-retaining Structures
- (xii) AS4970 Protection of Trees on Development Sites

(g) The following Department of Transport and Main Roads Standards:

- (i) Manual for Uniform Traffic Control Devices (MUTCD) Queensland

(ii) MRS05/MRTS05 Unbound Pavements
(iii) MRS11/MRTS11 Sprayed Bituminous Surfacing
(iv) MRS12/MRTS12 Sprayed Bituminous Emulsion
(v) MRS17/MRTS17 Bitumen
(vi) MRS18/MRTS18 Polymer Modified Binder
(vii) MRS19/MRTS19 Cutter Flux Oils
(viii) MRS20/MRTS20 Cutback Bitumen
(ix) MRS22/MRTS22 Supply of Cover Aggregate
(x) MRS30/MRTS30 Dense Graded and Open Graded Asphalt
(xi) MRS35 /MRTS35 Recycled Materials for pavements (it is at Council's discretion to use this standard in lieu of Austroads)
(xii) The Guide to Pavement Markings

(h) The following Institute of Public Works Engineering Australia Queensland Division (IPWEAQ) guidelines:
(i) *Complete Streets – Guidelines for Urban Street Design (2010)–*
(ii) *Lower Order Road* – Design Guidelines (2016)

(i) Bundaberg Regional Council – Standard Drawings – See **Appendix SC6.3A (Standard drawings list)**.

SC6.3.3.2 Road hierarchy

The formalisation of a road hierarchy enables the safe and efficient development of the road system that caters for the movement of people and goods whilst maintaining the amenity of urban and rural areas.

SC6.3.3.2.1 Classifications

(1) The road hierarchy structure is divided into two main categories:
(a) Urban roads –the purpose, function and character for each urban road classification is shown in **Table SC6.3.3.2.1.1 (Urban road classifications)** and their respective cross sections are shown in standard drawing R2001 to R2008; and
(b) Rural roads – the purpose, function and character for each urban road classification is shown in **Table SC6.3.3.2.1.2 (Rural road classifications)** and their respective cross sections are shown in standard drawing R3001 to R3004.

(2) The road hierarchy for all existing roads are shown on Council's interactive mapping website (i.e., http://www.bundaberg.qld.gov.au/services/interactive-mapping). In addition, the road hierarchy for all future and existing trunk roads are shown in Schedule 3 (Local government infrastructure plan mapping and supporting material).

(3) Extractive industry haul routes are a special case and the Developer/Applicant must nominate the design equivalent standard axles (ESA) for each road. Extractive industry haul routes must be designed to provide a road cross section in accordance with the following:
(a) for urban areas, an Industrial Collector standard is required, and
(b) for rural areas, a Principal Rural Collector standard is required.

Table SC6.3.3.2.1.1 Urban road classifications

Classification	Purpose	Function & Character
Arterial	Arterial routes provide interregional connections between major activity and service centres and	It is intended that arterial routes will: • Be designed for efficient and safe movement of high volumes of people and goods. • Serve as primary through and freight routes

Classification	Purpose	Function & Character
	major urban areas within the city.	• Be designed to help present attractive landscaped entrances and routes through major urban centres within the Bundaberg Regional Council area • Incorporate design measures to minimise environmental impacts on surrounding land uses • Serve as bus and line haul public transport routes • Provide for off-road bicycle and pedestrian facilities • Typically have four or more lanes when fully developed • Ideally have no direct property access • Be designed for the estimated traffic loads derived from approved traffic studies with a minimum design traffic loading of 3.7×10^6 equivalent standard axles
Sub-arterial	Sub-arterial routes connect arterial routes through and around major urban areas.	It is intended that Sub-arterial routes will: • Be designed for efficient and safe movement of moderate volumes of people and goods • Provide connection between arterial roads and local areas and linkage between arterial roads for through traffic • Be designed to present attractive landscaped routes through major urban centres within the Bundaberg Regional Council area • Incorporate design measures to minimise environmental impacts on surrounding land uses • Serve as bus routes and provide access to public transport • Provide for on-road bicycle lanes and off-road pedestrian paths on both sides of the road • Typically have 4 or more lanes when fully developed • Ideally have no direct property access • Be designed for the estimated traffic loads derived from approved traffic studies with a minimum design traffic loading of 2×10^6 equivalent standard axles
Trunk Collector (Suburban)	Trunk Collector roads carry primarily inter-suburb traffic.	• It is intended that Suburban Trunk Collectors will: • Be designed to carry freight associated with the local or suburban area • Minimise environmental impacts on surrounding activities • Serve as bus routes and provide access to public transport • Provide for on-road bicycle lanes and off-road pedestrian paths on both sides of the road • Ideally have no direct property access • Be designed for the estimated traffic loads derived from approved traffic studies with a minimum design traffic loading of 1×10^6 equivalent standard axles
Collector (Neighbourhood)	Neighbourhood Collectors provide connection between residential access streets and primary traffic carrying roads.	It is intended that Neighbourhood Collectors will: • Provide direct access to properties • Provide on-road parking on both sides of the road • Minimise environmental impacts on surrounding activities • Be designed to provide safe use by cyclists and pedestrians and an off-road pedestrian path on one side of the road • Be designed for traffic loading of 3×10^5 equivalent standard axles
Local Access	Local Access streets provide direct access	It is intended that Local Access streets will: • Provide direct access to properties

Classification	Purpose	Function & Character
(Access Street / Access Place)	to adjoining residential properties.	• Provide on-road parking • Provide a safe and pedestrian / cyclist preferred environment • Be designed for traffic loading of 6 x 10^4 equivalent standard axles
CBD / Commercial Access	Commercial Access streets provide access to properties and businesses within the commercial centres of the city and surrounding towns.	It is intended that Commercial Access streets will: • Be designed to carry freight and other commercial goods associated with the Central Business District (CBD) and other commercial areas • Minimise environmental impacts on surrounding activities • Serve as bus routes and provide access to public transport • Provide on-road parking • Provide for on-road bicycle lanes and off-road pedestrian pathways on both sides of the road • Ideally have no direct property access • Be designed for the estimated traffic loads derived from approved traffic studies with a minimum design traffic loading of 5 x 10^6 equivalent standard axles
Industrial Collector	Industrial Collector streets provide connection between Industrial Access streets and connect directly to suburban Trunk Collectors and Sub Arterial routes.	It is intended that Industrial Collector streets will: • Be designed to carry heavy vehicles associated with the industrial development area • Minimise environmental impacts on surrounding activities • Provide direct access for heavy vehicles to properties • Provide on-road parking on both sides of the road • Provide for off-road cycle & pedestrian paths on both sides of the road • Be designed for the estimated traffic loads derived from approved traffic studies with a minimum design traffic loading of 5 x 10^6 equivalent standard axles
Industrial Access	Industrial Access streets provide direct access to individual properties.	It is intended that Industrial Access streets will: • Provide direct access for heavy vehicles to properties • Be designed to provide a safe environment for cyclists and pedestrians. • Be designed for the estimated traffic loads derived from approved traffic studies with a minimum design traffic loading of 5 x 10^6 equivalent standard axles

Table SC6.3.3.2.1.2 Rural road classifications

Classification	Purpose	Function & Character
Principal Rural Road	Principal Rural roads provide connection between rural villages/townships, other higher order regional roads and urban centres.	It is intended that Principal Rural roads will: • Be designed to carry freight and other heavy vehicles associated with rural and primary production activities • Minimise environmental impacts to adjoining properties • Provide direct access to properties • Be of sufficient width to accommodate on-road cycling • Be designed for a minimum traffic loading of 1 x 10^6 equivalent standard axles
Rural/Rural Residential Collector	Rural Collector roads provide connection between rural access roads and other higher order roads and	It is intended that Rural/Rural Residential Collector roads will:

Classification	Purpose	Function & Character
	provide direct access to adjoining rural and/or rural residential properties.	• Be designed to carry heavy vehicles and other traffic associated with rural and rural residential land use zoning • Minimise environmental impacts to adjoining properties • Provide direct access to properties • Be of sufficient width to accommodate on-road cycling • Be designed for a minimum traffic loading of 5 x 10^5 equivalent standard axles
Rural/Rural Residential Access	Rural Access roads provide direct access to adjoining rural and/or rural residential properties.	It is intended that Rural Access roads will: • Provide access to adjoining properties • Be designed for a minimum traffic loading of 3 x 10^5 equivalent standard axles
Village/ Township Collector	Village/Township Collector are primary traffic carrying streets within rural villages and townships and provide direct access to adjoining properties.	It is intended that Village/Township Collector streets will: • Be designed to carry heavy vehicles and other traffic associated with rural and rural residential land use zoning • Minimise environmental impacts to adjoining properties • Provide direct access to properties • Be of sufficient width to accommodate on-road cycling • Be designed for a minimum traffic loading of 3 x 10^5 equivalent standard axles
Village/ Township Access	Village/Township Access streets provide direct access to adjoining properties in rural villages and townships.	It is intended that Rural Access roads will: • Provide direct access to properties • Minimise environmental impacts on surrounding activities • Provide a safe and pedestrian / cyclist preferred environment • Be designed for traffic loading of 3 x 10^5 equivalent standard axles

SC6.3.3.3 Geometric design

Council has adopted the Complete Streets (IPWEAQ 2010) as the primary guide for its road layout (refer to standard drawings for the road cross sections). However, Complete Streets does not preclude cul-de-sacs and T-intersections in the mix of road and intersection layouts. Accordingly, it will be necessary, in some cases, to control vehicle speeds in residential streets through tight horizontal alignments - by providing curved alignment and limiting the 'road leg length'. The Design Criteria tables in this manual provide minimum values where speed controls are required. Therefore, Queensland Streets (IPWEAQ 1995) may be used to obtain values outside the minima.

SC6.3.3.4 Design elements and criteria

SC6.3.3.4.1 Layout design principles

(1) The layout of minor roads should incorporate the following principles.

(a) Layouts should ensure strict geometric control of traffic speeds and volumes in residential areas. Council adopts Complete Street (IPWEAQ 2010), however, at the time of writing refer to Queensland Streets (IPWEAQ 1995) for the provision of speed controls outside those given in Council's standard drawings (Appendix SC6.3A);

(b) No more than three minor roads should be traversed from the most remote lot to the nearest accessible district access road;

(c) Travel time for a vehicle in a low speed residential environment (< 50 km/h) should be no greater than 90 seconds;

(d) A pavement surface treatment may only be provided on the 50km/h minor road at the 60km/h major road interface. No other minor road intersections should be provided with pavement surface treatments;

(2) Specific to industrial areas:

(a) Road loop layouts in industrial areas should ensure that the design vehicle can be accommodated around bends (without crossing the centreline);

(b) Pavement surface treatments are not required in industrial estates.

(3) Designers are encouraged to consult with Council and other relevant authorities prior to and/or during the preparation of design.

SC6.3.3.4.2 Local area traffic management

(1) A Local Area Traffic Management (LATM) involves the use of treatments like speed bumps and chicanes within a local residential area to improve residential amenity and reduce vehicle speed. Council believes such treatments should not be used in new residential developments as these treatments can affect parking, cycling and pedestrian activities. Developers should manage speed through applying good geometric design and speed control devices should only be proposed on existing roads where no other solution is viable.

(2) LATM schemes have a major impact on residents and public involvement in their preparation is essential. Where speed control devices on existing roads are proposed, it should be in accordance with a scheme approved by Council. The Developer is to undertake consultation, with guidance from Planning and Development, with the Divisional Councillor, residents, property and business owners and community groups prior to submitting the functional layout for approval.

(3) For network legibility, consistent forms of speed control treatment should be used along neighbourhood access roads.

(4) Night time visibility of speed control devices should be enhanced by appropriate means including street lighting, raised retro-reflective pavement markers, white reflective road markings including white painted kerb faces.

SC6.3.3.4.3 Design vehicle

Design vehicles for Council roads must be in accordance with AP – G34/06 Austroads – *Design Vehicle Turning paths and Templates* with the exceptions as follows:

(a) Trunk Collector/ Collector to Trunk Collector/ Collector /Industrial – Design Single Articulate Vehicle (19m);

(b) Trunk Collector/ Collector to Access Street – Design Single Unit Bus (12.5m) unless specifically approved otherwise by Council's nominated officer;

(c) Trunk Collector/Industrial –B-Double (25m), where applicable, refer also Transport Operations (Road Use Management) Act 1995 – Route Assessment Guidelines for Multi-Combination Vehicles in Queensland and National Transport Commission – Guidelines for Assessing the Suitability of Heavy Vehicles for Local Roads.

SC6.3.3.4.4 Design criteria

Council's standard drawings provide a summary of the design elements that are applicable to Council's road network (refer Guide to Road Design Part 3: Geometric Design (Austroads 2010) for additional guidance). It should be noted that some parts of the existing road network might not comply with all the specified design parameters and road widths may be adjusted in retrofit areas. Designers are encouraged to consult with Council during the preparation of designs if they plan to vary from standard drawings' specifications.

SC6.3.3.4.5 Kerb and channel details

The following design criteria are applicable to kerb and channel:

(a) Survey - for new kerb and channel should extend a minimum of 50 m along the road beyond the frontage(s) of the subdivision or such greater distance as is required to join to the existing kerb and channel;

(b) Extend - a minimum of 5 m onto the adjacent land. Note, the road pavements may not always need to be centrally located within the road reserve;

(c) Grade - not be less than 0.3 percent;

(d) Where roofwater drains to the street - at least one point of connection in the concrete kerb and channel per lot must be provided. This point of connection shall comprise a heavy duty galvanised steel kerb adapter located a minimum of one (1) metre from any property boundary. For verges where concrete footpath is to be provided, the Developer must install roofwater pipes (RHS downpipes or equivalent) to the property boundary.

SC6.3.3.4.6 Cul-de-sac, turning areas & allotment width

(1) The minimum diameter for a cul-de-sac in all areas must be 20 metres. No other termination treatment is accepted by Council.

(2) Allotments fronting a cul-de-sac must be of sufficient width at the property boundary to ensure that a driveway at the kerb invert (refer Standard Drawing R1010) can be accommodated with a minimum of 150mm clearance either side of the adjoining allotment driveways. The minimum lot size and dimensions are provided in **Table 9.3.4.3.2 (Minimum lot size and dimensions)**, **Table 9.3.4.3.3 (Access strip requirements for rear lots)**, and **Table 9.3.4.3.4 (Minimum width for irregular shaped lots)** of the reconfiguring a lot code.

SC6.3.3.4.7 Medians

Council may, solely at its discretion, allow the use of painted medians rather than raised medians. Medians must be a minimum width of 6.0 metres unless used for traffic islands (refer Section SC6.3.3.5.4) and pedestrian shelters.

SC6.3.3.4.8 Verges

SC6.3.3.4.8.1 General

Verge is defined as that part of the road reserve between the carriageway and the boundary of adjacent lots. Verge widths are measured from property boundaries to invert of the kerb and channel. Verge widths in older established areas may vary.

SC6.3.3.4.8.2 Crossfall

Verge crossfalls will generally be no greater than 2.5%. Verge crossfalls in the older areas usually vary from the standard. Accordingly, it will be necessary to obtain approval, from the relevant Council development engineer, of the proposed crossfalls for each project.

SC6.3.3.4.8.3 Longitudinal grade

Longitudinal grades on any verge should aim to be in accordance with AS 1428 – *Design for Access and Mobility*. Using the aforementioned code accommodates people using mobile devices or in wheelchairs. The designer must seek guidance from a Council development engineer where it is not possible to meet the grade requirements of AS 1428.

SC6.3.3.4.8.4 Landscaping requirements

The verge will be landscaped with grass or turf. Any other verge landscaping (including the use of Water Sensitive Urban Design) must be specifically approved by the relevant Council development engineer. An example of a Water Sensitive Urban Design for an Access Street is shown in standard drawing R1002.

SC6.3.3.4.9 Driveways and access to developments

Council adopts the Austroads Guide to Traffic Management Part 12: Traffic Impacts of Development (Section 3.3) and the Austroads Guide to Traffic Management Part 5: Road Management (Section 2) for access to developments. For large size developments that require internal roads also refer to **Section SC6.3.3.5 (Intersections)**.

SC6.3.3.4.9.1 Driveways

(1) All residential developments must provide a concrete residential driveway slab in accordance with R1010 and R1014 or R1015.

(2) All rural/ rural residential developments must provide a sealed rural driveway in accordance with R1012 or R1013 (i.e., Type A, B or C).

(3) All commercial and industrial developments must provide a concrete driveway slab in accordance with R1011, a minimum width of 6.0 metres is nominated, however this width must be sufficient to accommodate at least the entering design vehicle and exiting car at the same time.

(4) The standard of internal driveway and car park construction (including pavement surfacing) must provide for the proposed traffic vehicle loads and traffic movements. The pavement surfacing must, as a minimum, be equivalent to the road surface fronting the development.

SC6.3.3.4.9.2 Access handles

(1) In all residential developments where access is through an easement or access handle, a driveway must be provided which is:

(a) Provided with a concrete residential driveway slab in accordance with R1010;

(b) Constructed and sealed with a minimum width of 3.5 metres with asphalt, concrete, bitumen or approved pavers for its full length (see **Table 9.3.4.3.3 (Access strip requirements for rear lots)** of the reconfiguring a lot code). Pavement shall be abutted by concrete edge strips (herein referred to as pavement construction);

(c) Provided with a 1.8 metre high screen privacy fence to each boundary of the Access Strip, including provision of a 300mm wide concrete mower strip;

(d) Provided with conduits and / or services for water supply, underground power, stormwater and telecommunications within the Access Strip prior to pavement construction.

(2) In all rural/rural residential village/township developments where access is through an easement or access handle a driveway must be provided which is:

(a) Provided with a sealed residential driveway in accordance with R1012;

(b) Constructed and sealed with a minimum width of 3.5 metres for rural residential zone and 4 metres for rural zone. The driveway must be sealed with asphalt, concrete, bitumen or approved pavers for the full length of the access, or such lesser distance as would be required to ensure that a future residence on the adjoining lots would not experience nuisance (e.g., dust, noise) from passing traffic (see **Table 9.3.4.3.3 (Access strip requirements for rear lots)** of the reconfiguring a lot code);

(c) Provided with conduits and / or services where applicable for water supply, power (if not overhead), stormwater and telecommunications within the Access Strip.

SC6.3.3.4.10 Pavement tapers (including road widening for MCU/ROL)

(1) For a lot reconfiguration where the roadway transitions to a different width pavement at the boundaries of the subject land, the Developer must provide a minimum 1 in 10 taper between new and existing pavements. The tapers commence:

(a) Where the surrounding pavement is less wide – the taper commences at the boundaries of the subject land,

(b) Where the surrounding pavement is wider than conditioned – taper commences within the subject land;

(2) Pavement tapers must also be provided for road widening associated with an MCU (MCU tapers). The MCU tapers must commence at the boundaries of the subject land and must be of sufficient width to accommodate the turning manoeuvres (in and out) of the Design Vehicle from the through lane. Note the minimum turning speed for a design vehicle will be 40 kph and the design vehicle must not cross the centreline of the through pavement.

SC6.3.3.4.11 Staging – temporary sealed turn-around

A temporary sealed turn-around is to be provided for at the end of each internal roadway at the development stage boundaries. The temporary turn-around must provide with a minimum 20 metre turning circle measured from the edge of pavement. The turn-around may be a bitumen prime then single coat seal and must be fully located within the road reserve.

SC6.3.3.4.12 Alignment – horizontal and vertical

(1) For trunk collector and rural roads the speed value of a curve as suggested by its geometry may not be able to be achieved if stopping sight lines is restricted by lateral obstructions. Where the angle of deflection is small, significantly larger radii should be used to achieve an adequate curve length and avoid the unappealing appearance of kinks. It is the radii achieved for the through lanes, not for the design centreline, which is important.

(2) In a reverse curve situation, a length of tangent should be used between the curves to improve driveability and aesthetics and the curves should be of a similar radius. Broken back or compound curves, where the radius of the second curve is less than that of the first, should not be used. These, or higher, standards should be applied to deviations of through lanes which result from the introduction of turn lanes.

(3) Intersection location is often dictated by vertical sightline considerations. The consideration of intersection-specific sight distance requirements can influence the vertical alignment adopted for the major road carriageway.

SC6.3.3.5 Intersections

SC6.3.3.5.1 Types

(1) *Complete Streets (IPWEAQ 2010)* posits the use of 4-way intersections insofar as they improve permeability and legibility of neighbourhoods, however, *Complete Streets* does reaffirm the need to check the capacity of each 4-way intersection. Council has not developed heuristics for the appropriate number of allotments or road length that would be attributable to 4-way intersection to control road speeds and, hence, Council requires intersection adequacy checks (for all new developments) to demonstrate the efficacy of the *Complete Streets* doctrine. This information is to be included in the Transport Impact Study associated with a development approval.

(2) The priority for intersections in Greenfield developments should be considered as: 4-way intersections, followed by T-intersection then roundabout or signalised (dependent upon the necessity to accommodate pedestrian movements and on-road bicycle movements)

(3) Roundabouts should be used only where priority is equalised for all approaches. Consequently, this form of intersection should only be used with roads which are no more than one level apart in the road hierarchy and have reasonably balanced traffic flows to ensure that traffic on major road approaches is not unreasonably impeded by the minor approach traffic. On major junctions, roundabouts should only be used at the lowest end of the traffic volume range (subject to pedestrian and bicycle constraints) where single lane operation can suffice. There may be scope for a staged treatment with single lane approaches before widening to multi lane standard is required, at which time traffic signals may be installed.

(4) Consideration is to be given to Council's road hierarchy and lower order roads are not to directly access higher order roads.

SC6.3.3.5.2 Location and intersection geometry

Council requires the horizontal geometry of T-intersections and 4-way intersections to present at 90 degrees (projection) to the major road, unless specifically approved otherwise in the development approval. The projection or horizontal geometry must continue for a minimum of 10 metres into the minor road.

SC6.3.3.5.3 Spacing/stagger

The stagger distance for T-intersections shall generally be in accordance with the Guide to Road Design Part 4A: Unsignalised and Signalised Intersections (Austroads 2010). Council has adopted the following minimum stager lengths:

(a) Right-left staggered T-intersection – stagger distance to be a minimum of 40 metres on Access Street/Access Street and 60 metres on all others,

(b) Left-right staggered T-intersection stagger distance to be a minimum of 60 metres on Access Street/Access Street and 150 metres on all others.

SC6.3.3.5.4 Traffic islands

(1) The function of islands is to effectively restrict vehicles to certain paths, providing safe refuges for pedestrians and locations for the erection of traffic control devices. They should be raised and constructed with semi mountable kerb. Pedestrian paths through islands should be flush with the road surface.

(2) Raised island kerbs should be set back from traffic lanes and have larger offsets on approaches. The islands should be fully outlined by solid painted lines. Appurtenances and any landscaping on islands have to have adequate clearances to moving traffic and not obstruct visibility. Planting is normally restricted to clean trunk trees and low ground covers.

SC6.3.3.6 On-street parking

SC6.3.3.6.1 Parking provisions

On street parking will only need to be line marked in commercial areas or in accordance with development approvals. Refer to Council's standard drawings for on road parking provisions.

SC6.3.3.6.2 Parking at cul-de-sac and turning areas

Car parking within the cul-de-sac and turning areas is prohibited. In these cases special parking provisions such as indented bays or central island parking should be incorporated into the design that satisfies the requirements in Council's standard drawings.

SC6.3.3.7 Sight distance, sightlines and truncations

(1) A principal aim in road design is to ensure that the driver is able to perceive any potential road hazards in sufficient time to take action and avoid mishap. Therefore, sight lines must be preserved within the road reserve.

(2) "Safe Intersection Sight Distance", refer Austroads requirements, should always be met in both the horizontal and vertical planes. Special attention should also be given to Roundabout sight triangle requirements.

(3) Truncations and road dedications to property boundaries must be provided as required to maintain intersection and corner sightlines, minimum verge and roadway widths at any point in the road networks. Particular notice must be given to: traffic calming devices, intersections, bends, cul-de-sac heads and roundabouts. All truncation areas must be included in road reserve and dedicated free of cost to Council.

(4) Notwithstanding the truncations to maintain sight lines, as a minimum, a Developer must provide truncations to all intersections to a minimum of six (6.0) metre three (3) chord configuration.

SC6.3.3.8 Services

SC6.3.3.8.1 Alignments

(1) Services must be in accordance with the standard drawings unless specifically approved by a Council development engineer.

(2) Costs associated with relocation of services as a result of a development (e.g., due to clearance issue) will be met by the Developer.

(3) Council will allow multiple services in a single trench if approval of a proposal is submitted from the relevant service providers.

SC6.3.3.8.2 Service pits and manholes

(1) Service pits and manholes within the roadway or verge should be installed accurately, blending smoothly with the finished longitudinal and transverse grades of the verge. Where the Developer is retrofitting or developing a site it will be necessary to check with a Council development engineer if it is necessary to adjust an existing pit to accommodate the new works. Any modification to Council's network will be at the Developer's expense.

(2) Any modification to Council's services within neighbouring private allotments will require the provision of an easement at the Developer's expense.

(3) Service pits should not be placed in areas that would compromise the construction of kerb ramps to the relevant standards, refer standard drawing list.

SC6.3.3.8.3 Service conduits

(1) Service conduits required by the relevant service authorities including water services should be installed prior to final trim of the subgrade.

(2) Kerb markers (brass indicator discs) should be placed in the kerb and channel at service conduit crossings. In the case of interlocking paver, threshold treatments or mass concrete roads, developers should make provision for incorporating spare conduits (with markers) at the time of construction to alleviate the need for unsightly repair work in the future.

(3) Note Council will not inspect the subgrade until the conduits have been placed and backfilled.

SC6.3.3.8.4 Conflict with council service

SC6.3.3.8.4.1 AC water mains

(1) The Developer must replace the full length of an AC water main, with DICL class K9 mains, where the subgrade level of the approved pavement (usually associated with road widening) is within 200 mm of the top of the water main for 100 mm diameter mains or 300 mm for all other diameter water mains.

(2) Water supply works performed on live water supply infrastructure will be required to be undertaken by Council at the Developer's expense. Council will provide a quotation at the written request of the Developer. The request must be accompanied by plans marked 'For Construction'.

SC6.3.3.8.4.2 PVC water mains

PVC water mains must have a minimum 600 mm clearance from the pavement subgrade.

SC6.3.3.8.4.3 Wastewater mains

Wastewater mains must have a minimum 600 mm clearance from the pavement subgrade.

SC6.3.3.9 Pedestrian pathways and cyclist facilities

(1) Specific conditions relating to the provision of footpaths, shared pathways and cyclist facilities are provided in **Table SC6.3.3.9.1 (Pathway and cycleway requirements)**.

Table SC6.3.3.9.1 Pathway and cycleway requirements

Classification	Road Type or Land Use Zone	Footpath (FP) [1] [2] Shared Pathway (SP) [1] On Road Cycleway (ORC)	Desirable Width (M)[4]
Non-trunk requirements			
Urban footpath network	Collector roads	FP one side[1]	1.5
	All roads in High Density Residential Zone	FP one side[1]	1.5
	All roads in Medium Density Residential Zone	FP one side[1]	1.5
	Industrial Access roads	FP one side[1]	1.5
	CDB/Commercial Access Roads	FP both sides	2
Trunk requirements (refer to the Local Government Infrastructure Plan and Plans for trunk infrastructure mapping LGIP-TNP-01 to LGIP-TNP-33)			
Urban multi-modal pathway network (as per LGIP) [3]	Principal Pathway	SP both sides	3
	Distributor Pathway	SP one side[1]	2.5
	Collector Pathway	SP one side[1]	2.0
	On Road Principal Cycleway	ORC both sides	2.0
	On Road Distributor Cycleway	ORC both sides	1.5
	On Road Regional Recreational Cycleway	ORC both sides	1.5
	Off Road Regional Recreational Cycleway	Single SP (eg. on old rail alignment or through nature reserve)	3.0

Notes—
(1) FP/SP one side will generally be on northern or western side of road.
(2) Council may waive the necessity to provide a non-trunk footpath where there would be no chance that a contiguous pathway could be provided in the immediate area/block.
(3) Where pathways and cycleways are located on State Controlled Roads, proposals must be approved by Department of Transport and Main Roads and comply with their standards.
(4) Where preferred pathway widths are not achievable, Council may consider alternative pathway proposals (e.g., pathways with reduced widths on both sides of the roads, on-road cycle lanes).

(2) Pathways will be designed in accordance with Austroads Guide to Road Design - Part 6A: Pedestrian and Cyclist Paths.

(3) Kerb ramps will be required where a concrete footpath

(a) Leads to a street intersection;

(b) At pedestrian crossings;

(c) At median islands.

(4) Kerb ramps must be located clear of obstacles such as stormwater gullies, street sign posts and trees.

SC6.3.3.10 Traffic control signage and street names

The Developer must supply and erect all necessary street signs, traffic control signs and posts in accordance with the Standard Drawings R1040, R1041, R1042 and R1043. Signage should comply with the *Manual of Uniform Traffic Control Devices (MUTCD)* and with *Austroads' Guide to Traffic Management Part 10: Traffic Control and Communications Devices*.

SC6.3.3.10.1 Traffic control signage

Signs will not be used on minor roads in order to minimise maintenance commitments and improve visual amenity. However the following exceptions apply:

(a) Roundabouts;

(b) Entrances to low speed residential areas, where 'Local Traffic Area 40 km/h' signs are used;

(c) Locations where isolated devices might be installed requiring signage to comply with the MUTCD.

SC6.3.3.10.2 Street names

(1) The Developer must liaise with the Bundaberg Regional Council for determination of the names for new development roadways in accordance with the procedure outlined in **Appendix SC6.3B (Street and park naming procedure)**. Generally, it is expected that a Developer will submit three (3) names for each roadway for approval. Council will then provide the developer with a list of approved names.

(2) The Developer is advised that the road name determination process takes a minimum of three (3) weeks.

SC6.3.3.11 Traffic impact assessments

All developments involving high trip generating land uses will require a traffic impact assessment (TIA) report. Council may also request an impact assessment for other developments if the proposed development is considered to have an impact on the safety and operational efficiency of Council's road network.

SC6.3.3.11.1 Report and modelling requirements

(1) The report should be prepared in accordance with the Guide to Traffic Management Part 12: Traffic Impacts of Development (Austroads 2009) and/or Guide for Assessment of Road Impacts of Development (Queensland Government 2006).

(2) All reports must be accompanied by the electronic SIDRA models

(3) Council maintains both Saturn and EMME transportation models. At Council's discretion, larger developments may be required to utilise these models as part of the Transport Study.

(4) Developers are encouraged to consult with Council's Development Engineer and other relevant authorities prior to or during the preparation of TIA especially in respect to how the developer intends to resolve traffic issues.

SC6.3.3.11.2 Traffic volumes

(1) Traffic volume on the individual minor roads should be determined based on the following generation rates:

(a) In residential areas intended to accommodate single detached housing, use 10 vehicles per day (vpd which is trip ends or cumulative trips out and back) from each dwelling unit,

(b) For multi-unit dwellings at 6 vpd,

(c) For rural residential and village/townships, assume 7.5 vpd from each allotment,

(d) Peak traffic generally is 1 vehicle per lot or 10 percent of AADT (appropriate lane factor applies),

(e) For other developments, use design data from approved traffic studies/guidelines.

(2) For other development types refer to Roads Transport Authority or Institute of Transportation Engineers publications

SC6.3.3.11.3 Peak split

Intersection design must be based on an 80 in and 20 out split for all peak traffic, unless specifically approved otherwise.

SC6.3.3.11.4 Unsignalised intersection gap acceptance and follow-up headway

Intersection design must be based on a 5 second gap acceptance and 3 second follow-up headway, unless specifically approved otherwise.

SC6.3.3.12 Haul route management plan

Major development or extractive industry haul routes must comply with the following:

(a) A designated haulage route will be required for the import and export of any significant quantities of earthworks or construction materials from the site (>5,000t) including gravel and concrete for example, to minimise the impact on Council roads and nuisance to residents;

(b) An assessment of the road pavement for the haul route must be made by a Registered Professional Engineer of Queensland (RPEQ) to determine the suitability of the pavement for the intended traffic movements. Mitigation measures will be required where pavements are identified as being substandard;

(c) A Haul Route Management Plan will be required to ensure that any spillage, pavement damage, or vehicle breakdowns can be addressed with minor impact to residents.

SC6.3.3.13 Pavement design

SC6.3.3.13.1 Design objectives and principles

The underlying principle of pavement design is to achieve a pavement that is functional, structurally sound, has good ride quality, and requires minimal maintenance over its design life (refer Austroads Guide to Pavement Technology).

SC6.3.3.13.2 Design procedure

SC6.3.3.13.2.1 Design life

The design life for flexible pavements is 20 years. This value may be increased by Council in certain circumstances for the higher order roads. The design life for rigid pavements is 40 years.

SC6.3.3.13.2.2 Traffic loadings

Traffic loading may be obtained from **Table SC6.3.3.13.3.2.1 (Road classification pavement details)** or derived using Austroads *Guide to Pavement Technology* and Pavement *Design for Light Traffic – A Supplement to Austroads Pavement Design Guide*.

SC6.3.3.13.2.3 Subgrade strength

(1) The design parameter for the subgrade is the California Bearing Ratio (CBR – refer Laboratory Determination for more details). The pavement design should be based on the CBR tests being the lowest CBR representative of the subgrade over the various lengths of road at the box depth.

(2) A design CBR should be determined for each identifiable unit defined on the basis of topographic, geological and drainage conditions at the site. In determining the design CBR, account should also be taken of the variation of the subgrade strength with depth below subgrade level. The critical layer of material should be established to ensure each layer has adequate cover.

SC6.3.3.13.2.4 Sampling frequency

(1) Subgrade should be evaluated at the following frequencies:

(a) Road length ≤ 120m: 1 test for every 60m or part thereof, but not less than 2 tests for each project (unless minor road widening associated with MCU then only one test);

(b) Road length > 120m: 1 test for every 60m-120m, but not less than 3 tests for each project;

(c) One Dynamic cone penetrometer profile AS 1289 6.3.2 at each CBR location or stratum.

(2) Notwithstanding the above frequencies, at least one sample should be evaluated for each soil type. Spacing of test sites should be selected to suit subgrade, topographic and drainage characteristics.

SC6.3.3.13.2.5 Laboratory determination of design CBR

(1) The design CBR should be based on the soaked condition in the subgrade at a compaction of 100% standard i.e., the design CBR is the 4-day soaked CBR as determined by testing in accordance with AS 1289.6.1.1 (single point test).

(2) When the subgrade CBR is particularly sensitive to changes in moisture content, adequate testing of the CBR over a range of moisture contents and densities should be provided and CBR interpolated at the design moisture content and density conditions (i.e., 4-point test using QDMR Main Roads test Q113A).

(3) Where a number of tests are taken use the 10th percentile (Mean - 1.3*SDV).

SC6.3.3.13.2.6 Soft subgrades and sand

(1) If the CBR determined for the subgrade is less than the minimum CBR nominated in Austroad – *Guide to Pavement Design*; then one of the following subgrade treatment options is required:

(a) Remove unsuitable subgrade material and replace with minimum CBR 15 gravel or select material. The depth of subgrade replacement must be determined for each specific site, however, as a guide the depth would be expected to be in the vicinity of 300 mm;

(b) Carry out lime stabilisation treatment in accordance with Main Roads methodologies (this option should only be used in subgrades with high PI);

(c) Utilise other techniques such as rock spalls on geotextile, geogrids together with correctly sized gravel/rock blanket course, etc. These proposals need to be submitted to Council for approval.

(2) After subgrade improvement, the pavement design should be based on subgrade CBR 3 for granular pavement and CBR 5 for concrete pavement. Also refer to Austroads – *Guide to Pavement Design* for further information.

(3) Note, a 150 mm select fill trimming course will be required for roads constructed on sand. The trimming course must not be included in the pavement design.

SC6.3.3.13.3 Pavement types

SC6.3.3.13.3.1 Pavement types/materials

Pavement materials must be in accordance with MRS05 & MRTS05 - *Unbound Pavements* unless the pavement is associated with a lot reconfiguration of unsealed rural road where the land is associated with agricultural purposes where the ARRB *Unsealed Roads Manual – Guidelines to Good Practice* will apply. Refer **Section SC6.3.3.13.3.3 (Concrete pavements)** for concrete pavements.

SC6.3.3.13.3.2 Pavement thickness

(1) The supervising engineer (or Superintendent) must provide a pavement design for approval by a Council development engineer for each new road or road widening. The pavement design must be carried out in accordance with Austroads *Guide to Pavement Technology* and/or Pavement *Design for Light Traffic – A Supplement to Austroads Pavement Design Guide*. Pavement Depths must be increased by 25mm to allow for tolerances (averaged maximum).

(2) Council's minimum pavement depths are set out in accordance with **Table SC6.3.3.13.3.2.1 (Road classification pavement details)**. Pavement depths must be recorded in all pavement density checks and included in the information provided to Council at 'On Maintenance'.

Table SC6.3.3.13.3.2.1 Road classification pavement details

Classification	Road Type	Pavement Deign(1) (ESAs)	Minimum Sub Base (MRTS Class)	Minimum Base (MRTS Class)	Min Pavement Thickness (including Surfacing)	Pavement Surfacing (mm AC)
Urban Residential	Trunk Collector	1 x 10^6	2.2	2.1	300	40
	Collector	3 x 10^5	2.3	2.1	225	25
	Access Rd/Place	6 x 10^4	2.3	2.1	225	25
Industrial	Collector	5 x 10^6	2.2	2.1	275	40
	Access	5 x 10^6	2.2	2.1	275	40
Commercial	CBD/Comm.	5 x 10^6	2.2	2.1	275	40
Rural/ Rural Residential	Principal Rural Road	1 x 10^6	2.2	2.1	225	Prime & 2 Coat(2)
	Collector	5 x 10^5	2.3	2.1	200	Prime & 2 Coat(2)
	Access(3)	3 x 10^5	2.3	2.2	200	Prime & 2 Coat(2)
Village/ Township	Collector	3 x 10^5	2.3	2.1	200	Prime & 2 Coat(2)
	Access	3 x 10^5	2.3	2.2	200	Prime & 2 Coat(2)

Notes—
(1) ESA may be determined by traffic study
(2) Minimum depth does not include subgrade replacement and prime must be place independently of the seal and must be allowed 48 hours to cure prior to the placement of the seal. Note for boney surfaces the minimum spray rate of 0.82 l/m^2 must be increased. The final rate must be approved by the relevant Council development engineer prior to application.
(3) Where road is to unsealed use gradings specified by ARRB *Unsealed Roads Manual – Guidelines to Good Practice*

SC6.3.3.13.3.3 Concrete pavements

(1) Full depth concrete roads are generally used only in heavily trafficked situations. These roads must be designed in accordance with the Austroads *Guide to Pavement Design* and submitted to Council for approval.

(2) A full depth concrete road can be designed for urban streets subject to the following requirements:

(a) The pavement must have a minimum 100 mm thick unbound granular sub-base consisting of Class 2.1 granular material (MRS 05);

(b) The flexural strength of the concrete must be a minimum 4.0 MPa;

(c) The Load Safety Factor (LSF) must be 1.3;

(d) Integral or structural concrete shoulders are not required;

(e) Special attention should be paid to the jointing details in regard to ride quality and the provision of additional conduits for future services;

(f) The design, detailing and construction of concrete pavements for residential streets should be in accordance with the publication *Guide to Residential Streets and Paths* (Cement & Concrete Association of Australia, C&CAA T51, February 2004).

SC6.3.3.13.4 Pavement widening (specific requirements)

(1) The pavement design for road widening must be in accordance with **Section SC6.3.3.13.3.2 (Pavement thickness)**. However, where the design pavement depth is less the existing pavement, the existing pavement depth must be adopted to provide for pavement drainage.

(2) Existing pavement must be cut back in 150 mm steps for each layer of the new pavement widening.

(3) Seals must overlap a minimum of 300 mm.

SC6.3.3.13.5 Subsoil drainage

(1) Subsoil Drainage, refer Austroad Part 10 and Figure 5.2 - Pavement Drain Type 2 Austroads Part 5: Drainage Design (2008, p.58), must be provided in the following locations:

(a) Under all kerb, kerb and channel or edge restraint (where underground drainage is available);

(b) Under all traffic islands containing landscaping;

(c) In all locations where the wet weather water table is above the subgrade or where natural springs may wet the pavement;

(d) In any location where there is insufficient side drainage (table drains) or where the pavement materials are not free draining.

(2) Subsoil drainage should only be used in rural areas where table drains will not adequately protect the pavement from wetting (i.e., springs).

SC6.3.3.14 Pavement construction

(1) The technical requirements for the construction of unbound pavements are defined in the Guide to Pavement Technology Part 8: Pavement Construction (Austroads 2009).

(2) When constructing a new road, a Developer must operate under a Quality Management System (QMS). Generally this would be associated with an ROL involving more than 3 new residential allotments and MCU having more than 4 car parks.

(3) Geotextile Filters are the preferred subsoil for all Bundaberg Regional Council roads, unless specifically approved otherwise by the relevant Council development engineer. See also Figure 5.2 Pavement Drain Type 2 (Austroads Part 5: Drainage Design 2008, p.58)

(4) Unbound granular pavement materials must be supplied in accordance with DTMR standards,

SC6.3.3.15 Road surfacing

SC6.3.3.15.1 Asphalt pavements

(1) Asphalt is the required surfacing material for all roads within the urban, CBD/commercial and industrial road hierarchy. Asphalt must be supplied and placed in accordance with MRS30 and MRTS30.

(2) For all new construction, i.e., previously unsealed surfaces, the surface must be primed with AMC00 or AMC0 (MRTS20) sprayed at a rate of 1 - 0.82 l/m^2. The prime must be allowed to cure for a period of 48 hours prior to the tack coat and application of the Asphalt surfacing.

(3) For boney unbound pavement surfaces (low fines) Council reserves the right to increase the minimum application rate and/or request an application of single coat sprayed seal. The necessity for a revised application rate and/or bitumen seal will be determined by the relevant Council development engineer prior to the inspection of the base.

(4) Note: all recycled pavements require a single coat 10 mm sprayed seal and a minimum of 40 mm asphalt.

SC6.3.3.15.2 Bitumen seals

SC6.3.3.15.2.1 Supply of bitumen

Bitumen and associated materials must be supplied in accordance with MRS11 and MRS 17 – 20.

SC6.3.3.15.2.2 Cover aggregate

Supply of precoated aggregate must be in accordance with MRS22.

SC6.3.3.15.2.3 Surfacing

Bitumen surfacing must be in accordance with MRS11 with the seal consisting on a prime and then two coat seal.

SC6.3.3.15.2.4 Typical application rates for double/double seal

The typical application rates are provided in **Table SC6.3.3.15.2.4.1 (Typical rates for prime and seal road surfacing)**.

Table SC6.3.3.15.2.4.1 Typical rates for prime and seal road surfacing

Surfacing	Spray Rate (l/m^2)	Cover Aggregate Rate (m^3 to m^2)
Prime	1 - 0.82 AMC00 or AMC0	Na
Allow 48 hours between prime and seal		
First Coat(1)	1.35 Aggregate 16 mm	1 to 88
Second Coat	0.72 Aggregate 7 mm	1 to 175

Note—
(1) The spray rate must be confirmed by the Superintendent or Supervising Engineer prior to its application.

SC6.3.3.15.3 Threshold treatments

SC6.3.3.15.3.1 Stamped asphalt

Council's preferred treatment for entrance thresholds is stamped asphalt as it combines a decorative appearance with a strong and low maintenance asphalt base. Council recommends "StreetPrint" or similar at these locations. For more information on "StreetPrint" refer to http://www.bricknpave.com.au/StreetPrint.htm.

SC6.3.3.15.3.2 Concrete surfacing to full depth pavement

(1) Exposed aggregate surface is permitted in local traffic area threshold treatments provided that the crushed aggregate finish:

(a) Achieves a minimum Polished Aggregate Friction Value (PAFV) value of 45

(b) Complies with the skid resistance requirements of the Guide to Pavement Technology Part 3: Pavement Surfacings (Austroads 2009) and the Guide to Residential Streets and Paths – 2nd Ed (Cement & Concrete Association of Australia 2004).

(2) Stamped concrete is not permitted as the surface texture can cause a potential hazard for cyclists.

SC6.3.3.15.3.3 Coloured threshold treatments

(1) Coloured surface treatment must serve a traffic management function such as thresholds at local traffic areas and to visually enhance school zones. The use of coloured surface treatment as an aesthetic enhancement to the streetscape is not permitted. For further details and particular requirements on coloured treatments, texturing, decorative, and high friction coatings on asphalt and concrete surfaces, refer to the DTMR *Guideline to pavement markings (June 2013)*.

(2) The colour of the threshold treatment must be approved by Council.

SC6.3.4 Water and wastewater

The design and construction standard for Council's water and wastewater networks are stated in the WBBROC Water Services Design and Construction Code. This code is consistent with the SEQ Design and Construct Code which in turn reflects the various, nationally accepted WSAA codes. Further reference documents and requirements are included in the remainder of this section.

SC6.3.4.1 Design standards and reference documents

The planning and design of development within the Bundaberg Regional Council local government area must be undertaken in accordance with the current edition of the following key reference documents, unless specifically outlined in this section or other Council references dictate otherwise:

(a) WBBROC Water Services Design and Construction Code (including relevant WSAA codes and Australia Standards)

(b) DERM – Planning Guidelines for Water and Sewerage, (DERM, Queensland Government 2010)

(c) Fire Hydrant and Vehicle Access Guidelines for Residential , Commercial and Industrial Lots (Queensland Fire and Emergency Services, , Queensland Government 2015)

(d) Bundaberg Regional Council – Standard Drawings – See **Appendix SC6.3A (Standard drawings list)**.

SC6.3.4.2 General design considerations

SC6.3.4.2.1 Easements

(1) Council's requirements for easements are listed in WBBROC Water Services Design and Construction Code.

(2) Council has a standard instrument of easement, for use by Developers. A copy of the document can be made available upon request.

SC6.3.4.2.2 Building over or near water or wastewater infrastructure

(1) Developers and designers are advised that Council will not allow dwellings to be constructed over water and wastewater infrastructure.

(2) Permissible clearances are given in WBBROC Water Services Design and Construction Code.

(3) Part 1.4 of the Queensland Development Code (QDC MP 1.4) provides a mechanism for initial assessment of potential impact a building or structure may have on infrastructure assets and provide some acceptable solutions. These should be consider in association with the WBBROC Water Services Design and Construction Code.

SC6.3.4.2.3 Connection to existing water or wastewater infrastructure

(1) Any works performed on live water or wastewater infrastructure will be undertaken by Council at the Developer's expense.

(2) Council will proved a quotation to undertake the works at the written request of the Developer (FM-7-467 "Notice to Service Provider Application for Water & Sewer" is available at www.bundaberg.qld.gov.au/council/forms). The request must be accompanied by plans marked 'For Construction'.

SC6.3.4.2.4 Alignment of water or wastewater mains

(1) The alignment of water or wastewater mains shall be in accordance with WBBROC Water Services Design and Construction Code with further clarification as follows:

(a) *Road Reserve* – Refer Council's standard drawing number R1050,

(b) *Allotments* – except where perpendicular to or intersecting with a property boundary, a water or wastewater main shall not be situated closer than 1.5 metres to a property boundary (fenceline).

SC6.3.4.2.5 Water or wastewater mains within parks and reserves

(1) Water or wastewater mains within parks and reserves must be contained within an easement as outlined in WBBROC Water Services Design and Construction Code.

(2) A Developer will be required to negotiate with DERM to obtain an easement over proposed water or wastewater infrastructure where the aforesaid infrastructure traverses an existing reserve. All costs associated with obtaining and registration of the easement will be at the Developer's expense.

SC6.3.4.2.6 Replacement of existing water mains

The Developer must replace existing water mains with ductile iron where:

(a) Trench - it is necessary to trench under the main;

(b) Subgrade - refer also section 11 of the Roads and Pathways chapter of the development manual.

SC6.3.4.2.7 Flushing and sterilisation of water mains

(1) The Developer must provide flushing and sterilisation points as per WBBROC Water Services Design and Construction Code. The Council's preferred sterilisation point is a hydrant.

(2) Council will undertake sterilisation of the water main prior to connection to the water infrastructure. Works will be conducted at the Developer's expense.

SC6.3.4.3 Design programs for sizing mains

The following computer programs are accepted for design of main sizing (also refer Table 3.2 of WSA 03):

(a) SewGEMS, and

(b) WaterGEMS

SC6.3.4.4 Partial Water Services

For greenfield development, Council requires the provision of partial water services in accordance with WBBROC standard drawing WBB-WAT-1109-2. The Developer/Applicant is to coordinate the tag and bagging of these services during Operational Works (see SC6.3.13.8)

SC6.3.5 Stormwater

(1) The Queensland Urban Drainage Manual (QUDM) Fourth Edition, 2016 shall be the basis for the design of stormwater drainage, except as amended by this manual.

(2) The design of the proposed drainage system and earthworks for a development commences with establishing a lawful point of discharge for the site. Once the lawful point of discharge has been established to the satisfaction of Council's development engineers then the Applicant/Developer must provide a drainage solution that does not adversely affect the upstream or downstream drainage systems. If the downstream system is not capable of carrying the increased discharge the Applicant/Developer must indicate what measures are proposed to mitigate the impact. The Applicant/Developer must also consider any trunk drainage identified in the Local Government Infrastructure Plan that is required to support future upstream or downstream developments.

SC6.3.5.1 Design standards, reference documents and acceptable programs

The planning and design of the developments within the Bundaberg Regional Council local government area must be undertaken in accordance with the current edition of the following key reference documents, unless specifically outlined in this chapter or other Council references dictate otherwise:

(a) Queensland Government – at the time of writing this document the series was as listed below:

  (i) State Planning Policy - state interest guideline Water quality,
  (ii) Urban Stormwater Quality – Planning Guidelines (2010),
  (iii) Environmental Protection (Water) Policy 2009 – Burrum, Gregory, Isis, Cherwell and Ellliott Rivers environmental values and water quality objectives – Basin 137 at https://www.ehp.qld.gov.au/water/policy/pdf/documents/burrum-river-ev-2010.pdf, and Plan WQ1371 at https://www.ehp.qld.gov.au/water/policy/pdf/plans/burrum-river-ev-plan-2010.pdf.

(b) IPWEA – Queensland Urban Drainage Manual Fourth Edition, 2016

(c) Environment Protection Agency's (EPA) – Guideline – EPA Best Practice Urban Stormwater Management – Erosion and Sediment Control http://www.derm.qld.gov.au/register/p02301aa.pdf

(d) Engineers Australia – at the time of writing this document, the series relating to development was as listed :

  (i) Australian Rainfall and Runoff (ARR) – 1987 and 2016,
  (ii) Australian Runoff Quality – A guide to water sensitive urban design.

(e) *EDAW – Ecological Engineering Practice Area* – Urban Stormwater – Queensland best practice environmental management guidelines 2009

(f) *Water by Design* – at the time of writing this document, the series relating to development was as listed:

  (i) Music Modelling Guidelines (2010),
  (ii) Construction and Establishment Guidelines – Swales, Bioretention Systems and Wetlands.
  (iii) Bundaberg Regional Council Urban Stormwater Quality Management Plan (BMT WBM 2013).

(g) The following Australian Standard:

  (i) AS1554 Structural Steel Welding
  (ii) AS1597 Precast Reinforced Concrete Box Culverts
  (iii) AS3725 Design for Installation of Buried Concrete Pipes
  (iv) AS 4058 Precast Concrete Pipes
  (v) AS4139 Fibre Reinforced Pipes
  (vi) AS4671 Steel Reinforcing Materials

(h) Austroads – Waterway Design – A Guide to the Hydraulic Design of Bridges, Culverts and Floodways

(i) *Austroads - Guide to Pavement Technology* – at the time of writing this document, part relating to development was AGPT10-09 - Part 10: Subsurface Drainage

(j) *Australian Institute for Disaster Resilience – Managing the floodplain – a guide to best practice in flood risk management in Australia – Handbook 7* - Floodplain Management in Australia: Best Practice Principles and Guidelines

(k) *John Argue* – Storm Drainage Design in Small Urban Catchments – A handbook for Australian Practice – Special Report 34 Australian Road Research Board

(l) International Erosion Control Association – Best Practice Erosion and Sediment Control

(m) *Lewis Rossman* – Stormwater management model User's Manual Version 5 – United States Environmental Protection Agency

(n) *Bundaberg Regional Council* – Standard Drawings – See Appendix SC6.3A (Standard drawings list).

SC6.3.5.2 Environmental requirements

SC6.3.5.2.1 Water quality

(1) Designs must incorporate the principles of Water Sensitive Urban Design (WSUD) into the development at all stages of the development.

(2) For urban catchments, the Bundaberg Regional Council Urban Stormwater Quality Management Plan (USQMP) has identified the Environmental Values (EVs) and Water Quality Objectives (WQOs) and key opportunities for implementing stormwater best management practices.

(3) Developments are classified as being either high or low risk.

(4) Developments are high risk if they:

(a) fall within the urban catchments identified in the USQMP, and

(b) have and a site area 2500m^2 or greater, and

(c) have 6 or more lots/dwellings, or an impervious area greater than 25% of the net developable area.

(5) All other developments are low risk unless the development is deemed to be of a size and scale that is inconsistent with the planning scheme by the assessment manager. If in doubt, the catchment risk will be determined at the pre-lodgement meeting.

(6) High risk developments trigger the necessity to identify Environmental Values (EVs) and Water Quality Objectives (WQOs) and demonstrate how they are achieved through the provision of site-based stormwater management plans (SBSMP).

(7) SBSMP must aim to:

(a) address both quality and quantity control issues at pre-development (approval) stage;

(b) integrate permanent stormwater management features into overall development landscape plan;

(c) identify legal point(s) of discharge (these need to be identified before development approval is given);

(d) address ecological protection issues that are influenced by the management of stormwater (e.g., waterway corridor vegetation and habitat management issues);

(e) identify clearly pollutants of concern and their sources for both the construction and operational phases of development

(f) be updated and submitted for post-approval (operational works) stages, which will include Sediment and Erosion Control Plans (ESCP);

(8) The format of SBSMP is to be determined along with the WQOs at a pre-development meeting, however, they can be generally in accordance with Brisbane City Council Subdivision and Development Guidelines Part C – Water Quality Management Guidelines.

(9) The water quality objectives for low risk developments are usually achieved by best practice standards. Low catchment risk developments would provide controls such as in pit silt traps (e.g., Ecosol RSF 100 or equivalent) and sediment and erosion control measures pre- and post-construction.

SC6.3.5.2.2 Erosion and sediment control

Erosion and Sediment Control must be designed in accordance with the recommendations contained within the Environment Protection Agency's (EPA) – *Guideline – EPA Best Practice Urban Stormwater Management – Erosion and Sediment Control* and International Erosion Control Association's (IECA) – *Best Practice Erosion & Sediment Control' and 'Queensland Urban Drainage Manual' (QUDM).*

SC6.3.5.3 Lawful point of discharge

SC6.3.5.3.1 General

(1) QUDM defines the lawful point of discharge as:

'A point of discharge of stormwater from an allotment that is considered to satisfy the requirements specifically outlined with the Queensland Urban Drainage Manual'

(2) Council's criteria for determining the lawful point of discharge are based on the QUDM. The criteria are as follows:

(i) Will the proposed development alter the site's stormwater discharge characteristics in a manner that may substantially damage a third party property?

a. If not, then no further steps are required to obtain tenure for a lawful point of discharge (assuming any previous circumstances and changes were lawful);

b. If there is a reasonable risk of such damage, then consider issue (ii) or (iii);

(ii) Is the location of the discharge from the development site under the lawful control of Council or other statutory authority from whom permission to discharge has been received? This will include a park, watercourse, drainage or road reserve, stormwater registered drainage easement, or land held by local government (including freehold land). Council will require information about the potential impact of the site's stormwater discharge characteristics on third party properties (particularly those downstream of the proposed discharge point) before it will consent to the discharge entering its land;

a. If so, then no further steps are required to obtain tenure for a lawful point of discharge;

b. If not, then consider issue (iii). A land owner or regulator may require that the developer obtain an authority to discharge as described in (iii) in order for the stormwater to ultimately flow to a location described in (ii);

(iii) An authority to discharge over affected properties will be necessary. In descending order of certainty, an authority may be in the form of:

a. Dedication of a drainage reserve or park;

b. A registered easement for stormwater discharge/works;

c. Written discharge approval via a formal agreement.

(3) Developer/Applicant should refer to Section 3 of QUDM when assessing the potential damage and nuisance that may be caused by the proposed development. It is the Developer/Applicant's responsibility to not cause nuisance, rather than the regulator's responsibility to assess and condition works to prevent a nuisance. Further, as outlined in QUDM any assessment of the potential adverse impacts of stormwater changes on other properties should not only consider the current usage of the land, but also the value and/or potential of the land to be developed for future uses.

SC6.3.5.3.2 Due Diligence Assessment

(1) The Developer/Applicant must submit to Council the Due Diligence Assessment undertaken as per Section 3.5 of QUDM. This will include determining the pre-development drainage situation. Clearly identifying proposed drainage works and determining the changes in volume, rate, frequency, duration, velocity, location and quality of the stormwater runoff. The assessment will also provide evidence that the post-development discharge can be managed without causing an actionable nuisance.

(2) The Developer/Applicant is to notify Council where the pre-development drainage analysis has identified deficiencies in the existing drainage system. Older design standards and changes in modelling techniques (i.e., ARR87 to ARR16) may have resulted in parts of the drainage network no longer being able to cater for the design storm flows. Council will consider these issues as per Section 13.1 of QUDM.

SC6.3.5.3.3 Easements

(1) The extent of an easement is determined by the necessity to obviate an actionable nuisance. Hence, this issue needs to be determined early in the development process.

Accordingly, it is beneficial to have a pre-submission meeting to determine the likelihood of a nuisance issue.

(2) Generally, where an easement is required over downstream properties, Council will require the Developer/Applicant to obtain an in-principle agreement from effected property owners. The in-principle agreement would note the characteristics of the flow, the proposed solution, and the necessity for registration of easement(s) (prior to submission of the operational works approval).

(3) Council has a standard instrument of easement for use by developers for Drainage (pipes) and Open Cut Drainage (open drains) for use by developers; a copy of the instrument can be made available upon request.

SC6.3.5.4 Flood studies

(1) Development within the Flood Hazard Area will require a Flood Hazard Assessment and Mitigation Report as described in Section SC6.5.3.5. To aid in the development of this report and/or the Due Diligence Assessment (see SC6.3.5.3.2), Council has the following flood studies and their respective models:

(a) Burnett River Flood Study (GHD, 2013) – 1D/2D TUFLOW model;

(b) Kolan River and Gin Gin Creek (GHD, 2014) – 1D/2D TUFLOW model;

(c) Baffle Creek Flood Study (O2, 2014) - only draft report available;

(d) Burrum, Cherwell, Isis, Gregory River Flood Study – (GHD, 2015) – 1D/2D XPSWMM Model;

(e) Saltwater Creek Flood Study (Cardno, 2010) – 1D/2D XPSWMM Model;

(f) Bundaberg Creek Flood Study (Cardno, 2013) – 1D/2D XPSWMM Model;

(g) McCoys Creek Flood Study (GHD, 2015) - 1D/2D XPSWMM Model;

(h) Bundaberg Coastal Small Streams (BMT WBM, 2014) - 1D/2D XPSWMM Model;

(i) Apple Tree Creek Flood Study (Cardno 2004) – HEC-RAS Model;

(j) Palmer and O'Connell Creeks Drainage Study (GHD, 1997) – HEC-RAS Model;

(k) Non-urban Creeks and Overland Flow Path Flood Study – 2D TUFLOW Model; and

(l) Storm Tide Flood Study (BMT WBM, 2013) – only report available.

(2) Copies of the flood studies and models are available on request.

(3) New flood studies are commissioned regularly by Council. The Developer/Applicant should check for the availability of new flood studies prior to undertaking any modelling works.

SC6.3.5.4.1 Design programs

(1) Council prefers the submission of major drainage studies undertaking by the following programs: XPSWMM, XPRAFTS, TUFLOW and HEC_RAS.

(2) The preferred hydrology for the major storm event involving larger catchment is the listed in **Section SC6.3.5.8.3 (Infiltration factors initial and continuing losses)**

SC6.3.5.4.2 Minor Hydraulic Designs

Council has the ability to check design's undertaken in: 12D, XPDRAINS and XPSTORM. Refer also to Section **SC6.3.5.10.10 (Drainage calculation presentation)** for standard of presentation.

SC6.3.5.5 Design storms

Table SC6.3.6.5.1 (Design storms for major and minor drainage systems) provides the design storms for developments within the Bundaberg Regional Council local government area.

Table SC6.3.6.5.1 Design storms for major and minor drainage systems

	Design Storm
Major Drainage System	100 year ARI (1% AEP) plus Climate Change

Minor Drainage System		
Development Category (QUDM)	BRC Planning Scheme – Zone	ARI (AEP)
Central business and commerical	Principal centre zone, Major centre zone, district centre zone, Local centre zone, Neighbourhood centre zone, Specialised centre zone	10 year ARI (10% AEP)
Industrial	Industry zone, High impact industry zone	10 year ARI (10% AEP)
Urban residential high densityigh Density	High density residential zone	10 year ARI (10% AEP)
Urban residential low density	Medium density residential zone, Low density residential zone, Emerging community zone, Limited development zone, Community facilities zone	5 year ARI (18% AEP)
Rural Residential	Rural residential zone, Sport and recreation zone	2 year ARI (39% AEP)
Open space – parks, etc.	Rural zone, Open space zone, Environmental management and conservation zone	1 year ARI (63% AEP)
Roadway Criteria		ARI (AEP)
Major Road (i.e., Arterial, Sub-arterial, Trunk Collector (Suburban), Industrial Collector, Principal Rural Road)	Table Drain/Kerb & Channel	10 year ARI (10% AEP) (1)
	Cross Drainage (Culverts)	50 year ARI (2% AEP) (2,3)
All other Roads	Kerb and Channel	Use relevant Development Category above
	Cross Drainage (if Rural Culverts(4))	10 year ARI (10% AEP) (3)

Notes—
1. The design storm for Major Road overrides the Development Category design storm
2. Designer must ensure that the 100 year ARI (1% AEP) backwater does not enter properties upstream. In addition the downstream face of the causeway embankment may need protection where overtopping is likely to occurs and d*v checks must still be below maximum levels
3. may change if the Roadways is deemed to be part of Council's emergency evacuation route
4. Rural cross drainage requirement may be reduced to 2 year ARI (39% AEP) where risk level is medium in 50 year ARI (2% AEP) flood event as defined in SCARM 73. See also Section SC6.3.5.10.7.2 for further guidance on emergency evacuation routes.

SC6.3.5.6 Catchment hydrology – rainfall intensity

(1) Rainfall intensity-frequency-duration data **Error! Reference source not found.**Rainfall intensity-frequency-duration (IFD) data used must be in accordance with the following:

(a) The IFD data stated within an adopted flood study from SC6.3.5.4 are to be used for developments utilising these existing adopted flood models. These IFD data will generally be consistent with ARR 1987; or

(b) Where a new flood model is required the IFD data is to be obtained from the Bureau of Meteorology and is to utilise ARR 2016. These IFD are available here: http://www.bom.gov.au/water/designRainfalls/revised-ifd/.

Schedule 6 – Planning Scheme Policies

SC6.3.5.7 Catchment Hydrology – rational method design details

SC6.3.5.7.1 Coefficient of runoff

The fraction impervious for various development types must be in accordance with QUDM except as specifically mentioned in **Table SC6.3.6.7.1.1 (Fraction impervious – QUDM Table 4.5.1 exceptions)**

Table SC6.3.6.7.1.1 Fraction impervious – QUDM Table 4.5.1 exceptions

Development Category	Fraction impervious (*fi*)
Urban Residential –	
High Density	0.9
Medium Density	0.75
Low Density	0.5

Note—refer to the planning scheme for the definition of the development category.

SC6.3.5.7.2 Time of concentration

(1) The standard inlet times depicted in Table 4.6.1 QUDM may be used or alternatively sheet flow times are to be determined using Friend's Equation with the addition of pipe and channel flow times determined in accord with sections 4.6.7 and 4.6.8 of QUDM.

(2) For sheet flow lengths outside the limitations of the Friend's Equation and for rural catchments, the time of concentration shall be calculated using the Bransby Williams or modified Friend's Equation (refer QUDM 4.6.11).

SC6.3.5.8 Catchment hydrology – runoff method – design details

SC6.3.5.8.1 Temporal patterns – ARR 1987

The temporal patterns stated within an adopted flood study from SC6.3.5.4 are to be used for developments utilising these existing flood models. These temporal patterns will generally be consistent with ARR 1987.

SC6.3.5.8.2 Ensemble temporal patterns - ARR 2016

Where a new flood model is required the 10 ensemble temporal patterns from ARR 2016 are to be analysed (see Book 2, Chapter 5, Section 5, ARR 2016). These ensemble temporal patterns have been chosen to represent the variability in observed patterns. The median temporal pattern (i.e., 6th highest flow rate out of 10 ensemble temporal patterns) is to be used for design.

SC6.3.5.8.3 Infiltration factors initial and continuing losses

(1) Hydrological data modelling should be based on the following:

(a) Routing Method – Laurenson (do not calculate B unless specifically approved),

(b) Infiltration Method – Uniform Loss –generally will be as follows:

(i) *Urban and Rural Impermeable* – initial 0 mm/h, absolute continuing 0 mm/h;

(ii) *Urban permeable* – initial 0 mm/h, absolute continuing 2.5 mm/h;

(iii) *Rural permeable* – initial 0 mm/h, absolute continuing 2.5 – 3.5 mm/h;

(c) Manning Roughness – impermeable 0.014, permeable 0.025 – 0.035 (this value may be adjusted to suit).

(2) The above values allow for an embedded critical rainfall event occurring within a saturated catchment – which anecdotally represents the critical event within Bundaberg.

SC6.3.5.9 General design considerations

SC6.3.5.9.1 Minimum grade on allotments

For minimum grade on allotments see section SC6.3.10.1.

SC6.3.5.9.2 Overland flow paths

(1) An overland flow path is defined as follows:

(a) Where a piped drainage system exists, the path-of-travel of the floodwaters which exceed the capacity of the underground drainage system;

(b) Where no piped drainage system (or the outlet to the system) or other form of defined watercourse exists, the path taken by surface runoff from higher parts of the catchment. This does not include a watercourse or gully with well defined banks.

(2) Overland flow paths must have velocity*depth not greater than 0.4 m^2/s in high risk areas and 0.6 m^2/s elsewhere.

(3) Any proposed development, especially those involving filling, needs to take account of existing or created overland flow paths and make due provision in the design. Overland flow paths must be clearly indicated on the drawings and supported by calculations, cross sections and plan layouts shown on the approved engineering drawings with due consideration of freeboard.

(4) Developments within any overland flow paths are generally not permitted unless the Developer/Applicant can satisfactorily demonstrate compliance with all the flood immunity freeboard and trafficability (especially d*v issues and emergency evacuation routes) requirements set out in this document.

(5) In residential subdivisions, overland flow paths must be located in roadways, parks (in a combined park and drainage reserve) or pathways.

(6) No overland flow paths will be permitted through urban allotments – unless specifically approved by Council. Where the overland flow path is approved such path must be covered by an easement with the preferred tenure i.e., easement or reserve, to be determined by Council.

(7) In site developments such as apartment buildings or townhouses where the sites are filled to provide suitable falls to the roadway, the Developer must pay particular attention to the preservation of existing overland flow paths, the obstruction of which may cause flooding or ponding of stormwater on adjoining properties.

(8) Where Overland flow paths should be located through commercial/industrial development such paths must be located along and through the car park/driveways and must be protected by an easement.

SC6.3.5.10 Outlets – point of discharge – under control of Council

(1) The Developer/Applicant should not assume that drainage channels, overland flow paths, drainage outlets, energy dissipaters or stormwater detention/polishing basins will automatically be permitted in public space (newly created Council asset or existing Council asset).

(2) Prior to the design of any stormwater discharge facility into Council controlled land, the Developer/Applicant should consult with the Council's development engineers to ensure that Stormwater outlets in any public space (existing or newly created Council asset) must be addressed at the development approval (conceptual design) stage.

SC6.3.5.10.1 Tidal Effects

Tidal levels must be in accordance with Council's storm tide model and QUDM.

SC6.3.5.10.2 Pipe Considerations

SC6.3.5.10.2.1 Standard Alignment

The standard alignment for stormwater drainage lines is given in Council Standard Drawing R1050 – Public Utilities Typical Service Conduit Alignment.

SC6.3.5.10.2.2 Standard Requirements

Pipes used may be either reinforced concrete or fibre reinforced concrete type and have the following properties:

(a) Minimum pipe sizes:

(i) Low flow pipes 300mm diameter (unless inter-allotment drainage);

(ii) Other 300mm diameter – refer QUDM - Minimum pipe sizes;

(iii) Between manholes - 375mm diameter;

(b) Minimum desirable grade refer QUDM;

(c) Minimum Class 3 within roadways,

(d) Minimum clear cover shall be 600mm to subgrade in all instances, unless approved otherwise by a Council development engineer;

(e) Box culverts shall be precast reinforce concrete and shall have cast in-situ bases with subsurface drainage outlets at 15-10m intervals.

SC6.3.5.10.2.3 Start HGL and Maximum Flows

(1) Start HGL will be, the maximum of, 150 mm below the invert of the kerb and channel (when entering an existing pit) otherwise, in accordance with QUDM – Tailwater levels.

(2) Where a Development Approval promulgates a point of discharge into an existing inlet pit, the capacity of the pipe up to 100 year ARI (1% AEP) must be limited to the development's proportional area percentage of the inlet capacity of the pit at 5 year ARI (20% AEP) (or value given in **Table SC6.3.6.5.1 (Design storms for major and minor drainage systems)**).

SC6.3.5.10.3 Access Chambers

(1) Manhole or access chamber spacing shall be in accordance with Section 7.6 of QUDM.

(2) Where a pre-cast gully pit is provided as an access chamber the chamber shall be constructed to the invert of the pipe.

(3) Combined access chamber/gully pits shall only be used up to a 600mm RCP.

(4) Chambers may be pre-cast or cast insitu concrete boxes, or pre-cast FRC or RCPs. Chambers may only be used for inter-allotment drainage below 300 mm diameter. Minimum dimensions of the pits are provided in **Table SC6.3.6.10.3.1 (Inter-allotment chamber pit dimensions)**. For inter-allotment drainage pits, junctions or changes in direction for pipes over 300 mm refer standard drawings for further details.

Table SC6.3.6.10.3.1 Inter-allotment chamber pit dimensions

Minimum Depth to Invert	Boxes – Internal Dimensions (mm)	FRC or RCP Systems
< 900 mm	600*600(1)	600 mm Diameter
> 900 mm	600*900(1)	750 mm Diameter

Note—(1) Minimum wall thickness 100 mm all cast insitu boxes

(5) FRC and RCP systems shall be constructed by embedding the lower precast shaft section into a wet cast-insitu concrete base. Cut outs of pipe penetrations shall be made using concrete saws/drills in such a manner as to minimise damage to the adjacent pipe materials.

(6) Lids to cast-insitu manholes shall be light duty in allotments, gardens etc., and heavy duty elsewhere. Close fitting cast iron galvanised steel or concrete infill type (Gatic Light Duty, Polycrete Broadstel or similar) of approximately the same internal dimensions as the manhole.

(7) Lids to FRC and RCP manholes shall be the manufacturers' proprietary concrete or concrete infill type.

(8) Infill concrete shall be 25 MPa.

(9) Lids must match finished surface ground slope and level.

SC6.3.5.10.4 Pipe junctions – instead of access chambers

Branch pipe connections are allowed without an access chamber subject to the following:

(a) Branch size 150 mm on 450 – 900 mm pipe,

(b) Branch size 300 mm on 900 – 1500 mm pipe,

(c) Rocla (or equivalent) saddle slope junction is to be used,

(d) Intercept angle is to be not less than 45 degrees in the direction of flow and always in direction of flow.

SC6.3.5.10.5 Stormwater inlet pits

(1) Field inlet pits are to be constructed in accordance with the Standard Drawings all pits must be designed to accommodate a 50 percent blockage factor on the inlet calculations, unless the field inlet has a depression on all four sides as indicated on Council Standard Drawing D1002.

(2) Council has approved the use of lip in line (with grate) drainage pits unless the pit is located in or near a bus crossing, refer Standard Drawings for further pit details.

SC6.3.5.10.6 Floodways/open channels

(1) Floodways and open channels should generally be designed in accordance with section 9 of QUDM. Unless specifically approved otherwise Council requires open channels and floodways to be designed in accordance with the following:

(2) Concrete low flow invert 1.2 metres wide falling to a type 3 MRD drive over kerb or equivalent (ignore effect on manning n),

(3) Side slopes not greater than 1 in 6 unless approved by a Council development engineer,

(4) Fall towards invert of 1 in 100 minimum in trapezoidal cross section,

(5) Minimum fall of the channel is 0.1 percent, however, isolated seepage/French drains will be required at not less than 250 metre intervals,

(6) Landscaping and tree planting to facilitate minimal visual impact of the open drain.

(7) An open channel with critical or supercritical conditions is not acceptable. The velocity should be limited to less than 90% critical velocity in the major storm event (or Froude less than 0.8). The maximum velocity allowed in an unlined channel is set out in QUDM Section 8.07 for earth and vegetated channels and should not exceed 2 m/s unless approved by the relevant Council development engineer.

(8) Have velocity*depth not greater than 0.4 m^2/s in high risk areas and 0.6 m^2/s elsewhere.

(9) Channel velocity checks should assume that downstream undersized drainage structures, such as culverts, will be upgraded to current design standards at some time in the future. The afflux caused by any roadway crossing over a watercourse should not affect the adjoining properties.

SC6.3.5.10.7 Flow depths (freeboard) and flooded width limitation

SC6.3.5.10.7.1 Urban (including industrial and commercial)

(1) The flow depth and width limitations given in QUDM are adopted. However, the lower value of 0.4 m^2/s must be adopted for all lateral drainage conditions or where loss of life situation occurs for longitudinal drainage conditions.

(2) Freeboard given in Figure 7.3.1 for QUDM is also adopted, however, where an existing situation has a freeboard greater than the value given in QUDM the existing freeboard must be maintain, unless specifically approved by the relevant Council development engineer.

SC6.3.5.10.7.2 Emergency evacuation routes

At least one identified emergency exit route must be designed to the following considerations derived in accordance with SCARM 73 (CSIRO 2000):

(a) Medium Level Hazard – Adjusted Hazard Estimate for the 100 year ARI (1% AEP) event,

(b) Low Level Hazard – Adjusted Hazard Estimate for the 50 year ARI (2% AEP) event.

SC6.3.5.10.8 Detention basins

(1) It should be noted that *ad hoc* detention basins in public land are not a preferred drainage solution and may not be used without the prior approval of Council.

(2) Detention basins shall be designed in accordance with Section 5 of QUDM and to criteria nominated by Development Approval.

(3) Other conditions pertaining to the design and construction of detention basins are given as follows:

(a) Basins must be visually and physically integrated into the parkland. Landscape plans are to be supplied as part of the operational works approval,

(b) All batter slopes less than 1(V) 6(H),

(c) Provision of concrete invert connecting all inlets to outlets – designed to accommodate the load of Council's maintenance equipment,

(d) Provision of 1.5% crossfall to detention basin floor and 0.7% if pipes or underground storage,

(e) Provision of appropriate signage and depth markers,

(f) Provision of safety grilles on outlets,

(g) All outlet structures shall be designed to allow egress by small children.

(4) Major detention systems, as determined by Council, on private land (on-site stormwater detention basin) will only be permitted in developments pertaining to material change of use such as Community Titles Scheme, commercial and industrial developments where such basin is covered by an appropriate easement and maintenance plan.

(5) The detailed design submission must be prepared and certified by an RPEQ suitably qualified in the field of drainage/hydraulic investigations. The following information must be included in the submission:

(a) Calculations for each storage – major basins must be undertaken by an approved program using the documented runoff routing method described in this development manual,

(b) Where WSUD components are proposed the water depth must be limited to under 500 mm with maximum extended detention depth of not greater than 300 mm,

(c) Calculations verifying that the flow paths/floodways, drainage systems and any overflow weirs have sufficient capacity – to cater for the design storm event,

(d) Design plans and engineering plans.

(6) Underground detention facilities are not a preferred drainage solution and may not be used without the prior approval of Council. However, in the event that an underground detention storage system is required, the design should address a number of public health, maintenance and pollution issues. The storage should be self-cleaning, well ventilated, does not cause accumulation of noxious gas, and facilitate easy maintenance and inspection. The design should incorporate the following requirements:

(a) The base has a suitable fall to the outlet (minimum grade 0.7%) and is appropriately shaped to prevent permanent ponding;

(b) Provision of a minimum 600 mm x 1000 mm maintenance access opening. The lifting weight of the grated lid should not exceed 20 kg;

(c) Installation of step irons to storage pits greater than 1.2 m depth;

(d) Where the storage is not sufficiently deep (< 1.2 m), access grates should be placed at the extremities of the tank and at intervals not exceeding 3 m. This should allow any point in the tank to be flushed or reached with a broom or similar implement, without the need to enter the tank;

(e) The minimum clearance height for accessible tanks is 1.2 m. Tanks less than 0.75 m high must be precast to avoid difficulties with removing formwork;

(f) To enable visual observation of the entire base of the storage pit, at least 30% of the roof surface area should be grated. Grates should be a minimum of 600 mm wide by 1000 mm long, and arranged in a continuous lengths along the storage pit. Both the access point and the grated areas should be secured to prevent public access.

SC6.3.5.10.9 Scour protection

SC6.3.5.10.9.1 General

All outlets shall be designed to incorporate scour protection or energy dissipaters in accordance with QUDM.

SC6.3.5.10.9.2 Energy dissipaters

Energy dissipation shall be designed in accordance with QUDM section 8.6.

SC6.3.5.10.9.3 Outlet channel

(1) Deemed to comply criteria for energy dissipation in outlet channels are as follows:

(a) Slope between 0.3% and 0.6%,

(b) Minimum length of outlet channel 10 metres long,

(c) Outlet channel velocity to conform to QUDM,

(d) Outlet channel to discharge to a quiescent water body or spread out evenly over flat well grassed ground with a slope no steeper than 3%.

(2) Detailed hydraulic calculations are required for outlet channel that do not satisfy the above criteria.

SC6.3.5.10.10 Drainage calculation presentation

(1) Calculations for rational method pipe design are to be presented in accordance with QUDM. Care must be taken to ensure that partial area effects are determined in the programs and that the dynamic values are calculated in accordance with QUDM.

(2) All calculations are to be accompanied with catchment plans and other manual calculation sufficient to facilitate checking and approval of plans for minor and major storms.

(3) The design hydraulic grade line is to be shown on the pipe longitudinal sections and where the pipes are flowing part full the grade line shall be adjusted to the upstream obvert of the part full pipe.

SC6.3.5.10.11 Drainage reserves and easements

The minimum widths of drainage reserves and easements are presented in **Table SC6.3.6.10.11.1 (Drainage reserve and easement considerations)**.

Table SC6.3.6.10.11.1 Drainage reserve and easement considerations

Description	Title	Minimum Widths
Inter-allotment drainage	Easement	Min 3.0 metres, where pipe is > 300 mm and shared with sewerage increase to 3.5 metres
Road drainage piped through private property without an overland flow path	Easement	The greater of - 3.0 metres or pipe(s) width plus 1.0 metre either side
Overland flow path – either with or without underground drainage component	Reserve or Easement	The greater of – 4.0 metre or sufficient drain width to contain 100 year ARI (1% AEP) plus freeboard in accordance with Table 9.03.1 of QUDM plus minimum 2.5 metre for linear access roads where requested

SC6.3.5.11 Inter-allotment Drainage

(1) Inter-allotment drainage must be provided to:

(a) Residential/Rural Residential/Village and Township lots where land is developed on the high side and any part of the lot does not drain to the kerb frontage, refer **(Figure SC6.3.2 (Inter-allotment Drainage (stormwater shown as green lines))**.

(b) Residential/Rural Residential/Village and Township lots where developed land is the lower land and upper land has been developed prior to lower land, refer **Figure SC6.3.3 (Inter-allotment Drainage - Lower Land Development (note new lots were 2, 4, 6)**.

Figure SC6.3.2 Inter-allotment Drainage (stormwater shown as green lines)

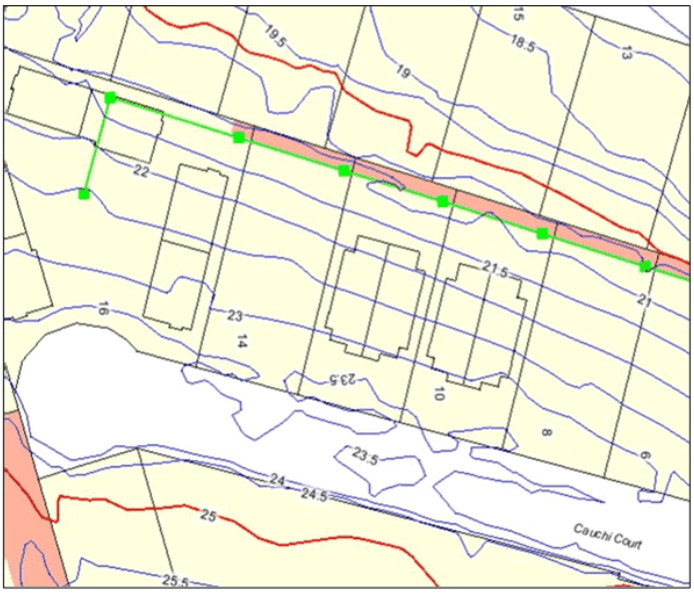
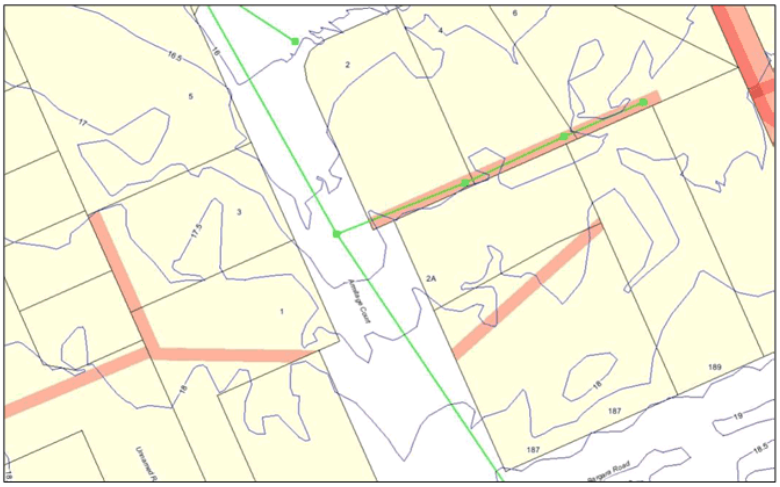


Figure SC6.3.3 Inter-allotment Drainage - Lower Land Development (note new lots were 2, 4, 6)



(2) Inter-allotment drainage systems must be designed to cater for 100 year ARI (1% AEP) (with Climate Change) flows unless specifically approved otherwise by Council's development engineer.

SC6.3.5.12 Construction

SC6.3.5.12.1 Backfilling and bedding

(1) Backfilling and bedding will be in accordance with AS 3725. Guidance is also given in Austroads Part 5: Drainage Design.

(2) Where backfill is 5mm spalls taken to a minimum 150mm above the pipe, every third EB may be replaced with geotextile band.

SC6.3.6 Open space, public parks and land for community facilities

This section defines the technical requirements for design and construction/preparation of the open space, public parks and land for community facilities. This section should be read in conjunction with Section 4.3 of the Planning Scheme which lists the desired standard of service for trunk public parks and land for community facilities. This policy is based on the Bundaberg Regional Council Parks and Open Space Study (Ross Planning, 2012).

SC6.3.6.1 Reference documents

The planning and design of open space, public parks and land for community facilities within the Bundaberg Regional Council local government area must be undertaken in accordance with the current edition of the following key reference documents, unless specifically outlined in this section or other Council references dictate otherwise:

(a) The following Australian Standard:

(i) AS4685:2004 (Part 1 to 6) sets out the general and specific requirements for playground equipment;

(ii) AS/NZS 4422: 1996 Playground Surfacing – Specifications, Requirements and Test Methods;

(iii) AS/NZS 4486.1: 1997 Playgrounds and Playground Equipment - Part 1: Development, Installation, Inspection, Maintenance and Operation;

(iv) AS2155: 1982 Playgrounds: Guide to Siting and to Installation and Maintenance of Equipment;

(v) AS2555: 1982 Supervised Adventure Playgrounds - Guide to Establishment and Administration;

(vi) AS 1428: 1992 Design for Access and Mobility;

(vii) AS1158.3.1 Prime Public Lighting Code;

(viii) AS4282 Control of Obtrusive Effects of Outdoor Lighting;

(ix) AS1798 Lighting Poles;

(x) AS3000 & 3008 Cabling.

(b) Crime Prevention through Environmental Design: Guidelines for Queensland, Part A: Essential features of safer places, Queensland Government, 2007.

(c) Bundaberg Regional Council – Standard Drawings – **Appendix SC6.3A (Standard drawings list)**.

SC6.3.6.2 Hierarchy and classifications

The open space hierarchy is divided into two main categories:

(a) Trunk public parks and land for community facilities that caters for higher order recreation, sport and community facilities.

(b) Non-trunk open space that caters for lower order recreational uses, cultural uses and nature reserves.

The classifications are shown in **Table SC6.3.7.2.1 (Open space hierarchy)**.

Table SC6.3.7.2.1 Open space hierarchy

Classification	Sub-type	Description
Trunk		
Recreation Park	Local	These parks provide a limited range of recreation opportunities for local residents. These parks contain basic infrastructure for recreation use, but generally cater for short visits only.
	Neighbourhood	Larger sized recreation parks providing a significant range of facilities and activity spaces for recreation. These parks have facilities to cater for large groups and are appealing to a range of users. They can service several suburbs or a whole town depending on population density and are fairly well known destinations for those people living within their catchment.
	Regional	Major recreation parks that offer a wide variety of opportunities to a broad cross-section of the local government area's population and visitors. These parks are generally large in size, embellished for recreation and/or sport, well-known amongst residents and are major destinations.
Sport Park	Neighbourhood	Neighbourhood sports parks are suitable for local fixtures but may not have the quality of playing surface or amenities of a Regional-level facility. The facilities would be of a significant standard but may not comply with State regulations for the sport.
	Regional	Regional sports facilities could comfortably host regional (or potentially State) competitions. Factors such as quality of playing surface, amenities and canteen availability and lighting standards (where lights are provided) have been considered.
Land for Community Facilities	Neighbourhood and Regional	Land for community buildings such as libraries, public pools and halls.

Classification	Sub-type	Description
Non-trunk		
Linear Park	Local	Local linear parks are most commonly used to link residential areas to neighbourhood scale pedestrian links (either in linear parks or major pedestrian multi-modal routes). The land contains infrastructure to facilitate recreation use, primarily a formed path. Drainage
	Neighbourhood	These linear corridors are embellished to provide pedestrian linkages that connect recreation facilities, other types of open space, residences, community infrastructure and commercial areas or form a circuit. The land contains infrastructure to facilitate recreation use, including a formed path and offers an attractive recreation setting. Drainage
Iconic/Civic Park	Neighbourhood	Local civic parks are either landscaped areas such as town entrance statements or offer some amenity in terms of function such as monument/memorial parks and lookouts. They provide little, to no, recreation opportunities.
	Regional	An iconic landmark property used for general purpose, recreation or civic ceremony, which features high use by the neighbourhood community and its visitors. Assessed on values including iconic representation, recreational appeal, visibility, location and heritage significance. These properties may include a monument and provide unique facilities for civic events, festivals, major community events, families and people of all ages, and are considered significant landmarks in their own right.
Nature Park	Neighbourhood	These properties are planned and managed to protect environmental values, but may also include basic facilities that enable passive use, including seating, pathway or cycleway.
	Regional	A property primarily used for an ecological or conservation purpose, usually being the protection of an area of significant environmental value, protecting and enhancing biodiversity by providing habitat for flora and fauna, including wildlife movement corridors and riparian zones.

SC6.3.6.3 Trunk open space infrastructure desired standards of service

(1) Desired Standards of Service (DSS) is the level of open space that Council strives to provide as a minimum to all residents across the local government area. DSS can be categorised under four broad measures and are explained in more detail in the LGIP tables listed below:

(a) Rate of land provision for public park and land for community facilities (see LGIP Table 4.4.5.2);

(b) Accessibility standard (see LGIP Table 4.4.5.3);

(c) Land characteristics (see LGIP Table 4.4.5.4);

(d) Standard facilities/embellishments for parks (see LGIP Table 4.4.5.5).

SC6.3.6.4 Waterways and foreshore land

(1) The Developer must provide land for open space purposes along all waterways, wetlands, natural drainage lines and foreshores to protect environmental processes and natural drainage systems and facilitate public access.

(2) Any Reconfiguration of Lot within the Central Coastal Urban Growth Area (as shown in Figure 7.2.1 (Central Coastal Urban Growth Area Structure Plan Concept)) must dedicate

open space along the foreshore to provide a continuous linear park from the Burnett Heads to Elliott Heads. This important recreational corridor will provide any missing links in the coastal Principal Pathway as shown in the LGIP mapping (i.e., LGIP-TNP-14, LGIP-TNP-17, LGIP-TNP-21 and LGIP-TNP-26). In addition, Council requires a road between this open space and development.

SC6.3.6.5 General treatment and preparation of site

(1) The following treatment and preparation of the site is required by Council.

(a) All existing structures and associated fixtures are removed from the site.

(b) Wells are filled and sealed;

(c) Bores are registered and upgraded and maintained for future use;

(d) Clearing of part or entire site as directed by Council's representative. No clearing of vegetation is to be carried out before a Council representative has inspected the site and approved such works.

(e) Levelled as directed by Council to provide a final landform suitable for ease of maintenance and practical use by the public. Earthworks may be required to:

(i) Re-profiling of existing dam/s, filling of minor depressions or, as a batter to approved roadworks;

(ii) Provide a 1 in 80 cross-fall on playing areas/ovals, 1 in 6 maximum batter slopes, catch drains and scour protection.

(f) Sufficient topsoil is provided in order to support the growth of flora that is compatible with the proposed use of the site;

(g) Turf grass used within the parkland areas is cut from a weed free environment and is to have no viable weed seed within the turf grass.

(h) Installation of an extruded concrete hard edge to all planted/revegetated areas which adjoin turfed/grass seeded areas;

(i) All declared and noxious weeds and trees are removed from the site as directed by Council's representative.

SC6.3.6.6 Bollards

(1) Bollards are to be provided along road frontages to open space to limit vehicular access. Bollards may also be required in association with infrastructure such as playground equipment as directed by a Council representative.

(2) Bollards are to be constructed as per Council's standard drawing R1061 (see **Appendix SC6.3A (Standard drawings list)**). Where bollards are not incorporated within a footpath, an edge restraint is to be used between the posts (see ER2 on standard drawing R1020). The maximum spacing between bollards is as follows:

(a) 1.5m when used to limit vehicular access;

(b) 3m for all other areas (must be approved by Council's development engineer).

SC6.3.7 Landscaping

SC6.3.7.1 General requirements

(1) Landscaping should be designed to be environmentally responsive and enhance the appearance of the development by:

(a) Being of an appropriate scale relative both to street reserve width and to the size and nature of the development;

(b) Incorporating significant existing vegetation, where possible being sensitive to site attributes such as streetscape character and natural landform;

(c) Maintaining existing vegetation (where possible);

(d) Taking into consideration views, micro-climatic conditions and drainage;

(e) Maximising areas suitable for on site infiltration of stormwater;

(f) Allowing adequate lighting and pedestrian and vehicular safety;

(g) Effectively screening storage and service areas, such as garbage collection areas, from views outside the site, and provided with a suitable irrigation system fitted with an approved backflow prevention device.

(2) In addition, where possible landscaping for residential development should

(a) Improve privacy and minimise overlooking between dwelling and/or rooming units,

(b) Provide an adequate screen to incompatible development on adjoining land,

(c) Integrate and form linkages with parks, reserves and transport corridors.

SC6.3.7.2 Landscape Plans

(1) The local government's standards are—

(a) for applications seeking a preliminary approval for a material change of use or reconfiguring a lot—a *Landscape Concept Plan* is to be submitted;

(b) for applications seeking a development permit for reconfiguring a lot resulting in an increase in the number of lots—a *Limited Landscape Plan* is to be submitted; and

(c) for applications seeking a development permit for a material change of use—a *Full Landscape Plan* is to be submitted.

(2) The local government may require the information to assess the application or in approving the application, subject the approval to a condition requiring that landscaping be carried out in accordance with satisfactory landscaping plans.

Table SC6.3.8.2.1 Landscape plan standards

Specific Information Required	Type of landscape plan		
	Concept	Limited	Full
Landscape areas defined	✓	✓	✓
Existing vegetation identified		✓	✓
Growth form and purpose of vegetation identified	✓	✓	✓
Surface treatments, fencing and other hardscape elements identified		✓	✓
Locations and species to be planted – plotted to scale		✓	✓
Additional details as shown in Section SC6.3.7.3			✓

SC6.3.7.3 Additional information for full landscape plans

(1) General information

(a) date;

(b) scale (1:100 is preferred);

(c) north point;

(d) project description and location;

(e) client's name, address and contact number;

(f) designer's name, address and contact number.

(g) General site and design information:

(h) extent of landscape areas;

(i) existing and proposed building and landscaped areas (where applicable);

(j) property boundaries, adjacent allotments, roads and street names;

(k) location of drainage, sewerage and other underground services and overhead power lines;

(l) location and name of all existing trees, clearly nominating those trees which are to be removed;

(m) soil type (e.g., sand, clay, loam) and condition (e.g., well drained, low lying);

(n) locality plan, showing site boundaries in relation to adjacent properties and streets;

(o) vehicle movement areas, bin storage areas, vehicle and bin washdown areas, and service and utility areas.

(2) Landscape area calculation:

(a) calculation of the area of landscaping (measured in square metres) proposed as a means of complying with any applicable code;

(b) calculation of the area of landscaping (measured in square metres) disaggregated into component parts, including:

(i) garden beds;
(ii) turfed or grassed areas;
(iii) paved pedestrian areas;
(iv) nature conservation areas;
(v) effluent land application areas; and,
(vi) water areas.

(c) calculation of the square metre area of landscaping actually provided broken down into turfed and planted areas.

(3) Detail design information:

(a) surface treatment e.g. paving, mulch, turf, roadway;

(b) edge treatments, particularly garden edges;

(c) plant schedule including botanical name, quantity and staking;

(d) location and species of proposed plants;

(e) planting bed preparation;

(f) subgrade treatment of planting beds in areas of compaction, particularly involving vehicle parking areas.

(g) details and soil depths of planter boxes and podiums;

(h) mounding, contouring, levelling or shaping of the surface levels, particularly around areas of changes of levels;

(i) surface and subsurface drainage and collection points;

(j) method of erosion control on slopes steeper than 1:4;

(k) position of external elements, e.g. seats, bollards, bins, lights, walls and fences;

(l) fence height, material and finish;

(m) irrigation systems;

(n) paving type if area includes public footpaths;

(o) the arrangements proposed to be made for the future maintenance of the landscaping.

SC6.3.7.4 Acceptable plant species

The list of approved:

(a) Street trees are shown in **Appendix SC6.3C (Approved street trees)**.

(b) Coastal trees are shown in **Appendix SC6.3D (Approved coastal trees)**.

(c) Open forest and woodland species are shown in **Appendix SC6.3E (Approved open forests and woodland species)**.

(d) Shrubs and vines forest species are shown in **Appendix SC6.3F (Approved shrubs and vine forests species)**.

(e) Species for banks of saltwater watercourses are shown in **Appendix SC6.3G (Approved species for banks of saltwater watercourses)**.

(f) Species for banks of freshwater watercourses are shown in **Appendix SC6.3H (Approved species for banks of freshwater watercourses)**.

(g) Small tree and tall shrub species are shown in **Appendix SC6.3I (Approved small trees and tall shrubs species)**.

SC6.3.7.5 Unacceptable plant species

The unacceptable plant species are shown in **Appendix SC6.3J (Unacceptable plant species)**.

SC6.3.7.6 Composts and mulches

The use of composts and mulches must comply with the following standards to ensure weeds and weed seed are not spread:

(a) Australian Standard AS 4454 (2012). Composts, Soil Conditioners and Mulches.

(b) Australian Standard AS 4419 (2003). Soils for Landscaping and Garden Use.

SC6.3.7.7 Landscaping within road or drainage reserves

Landscaping works that are not triggered in accordance with the Landscaping Code but are associated with road construction; including acoustic fences, or associated with drainage reserves must be prepared by a registered landscape architect and be approved as part of the Operational Works process.

SC6.3.7.7.1 Planting areas and street trees

SC6.3.7.7.1.1 Planting areas

(1) Planting areas (or garden beds) on the verge/footpath will only be approved at feature locations or where the design of the site lends itself to a planting area or landscaped area. High maintenance plants will not be accepted. The planting area will usually consist of a tree, shrub and ground cover layer and must not impede important sight lines and be designed with CPTED (Crime Prevention Through Environmental Design) guidelines in mind.

(2) Planting areas within the verge must usually not exceed 1.0 metre in width. All planting areas are to be contained within an approved garden edge.

SC6.3.7.7.1.2 Plant characteristics

Form, texture and colour of plants play an essential role in creating character and a unified landscape theme. Plant selection is to take into account location and site specific environmental conditions, such as soil type. The selection of plants should also reflect the purpose/function required, e.g., to screen an undesirable feature such as a pump station. The inclusion of indigenous species as the core element is promoted with remainder of planting made up of appropriate native species with inclusion of some non invasive exotic species for colour and interest considered.

SC6.3.7.7.1.3 Maintenance aspects

Maintenance aspects which would need to be considered within the design process would generally include:

(a) The provision of long life plants;

(b) Species chosen must be appropriate for the location and planting area provided. Adequate space must be provided to allow for root growth within the space, and not into adjacent surfaces /structures;

(c) Minimum water and pruning;

(d) No interference with existing services (above or below ground), signage, street lighting, footpaths, kerb and channel, structures, road pavement surfaces etc;

(e) Sub-surface drainage from medians and traffic islands are to discharge into a sealed pipe system.

SC6.3.7.7.1.4 Street trees general

Proposed street trees should be in keeping with the following:

(a) Significant existing trees are to be identified and incorporated within parkland and road reserve where possible. Prior to Council accepting these trees as an asset at Off Maintenance, the developer will be required to provide an Arborist report (at no cost to Council) outlining the current condition and long term viability of the trees.

(b) The use of same species where possible creating avenue planting. Incorporation of individual feature trees at focal points like roundabouts, medians and main collector roads etc. Designing in this way can assist in way finding within a development.

(c) Species chosen should reflect the local character of the area and where possible, use existing species which are appropriate for the available space allowing for future growth including root development and canopy spread.

(d) Planting techniques should incorporate containment of root growth where necessary. Setback from kerb should be sufficient to enable safe access and egress for parked vehicles and not impede visibility at driveway crossovers and pedestrian crossings etc. Consideration must also be given to service location, street lights and traffic signage when planning the positioning of trees.

SC6.3.7.7.1.5 Street tree locations

(1) Planting is to be avoided in the following situations:

  (a) Where the footpath is less than 3 meters wide. Where an existing street footpath containing trees and shrubs contradicts this, than discretion maybe exercised to vary this provision in accordance with the other elements of this policy.

  (b) Where kerb and channel has not yet been constructed, except with the written permission of the Council. The situation where this provision will be varied would be where the Council has an approved street design, or has determined a standard location of services/kerb and channelling for streets of a certain theme.

  (c) Within 3 meters of and invert crossing, driveway, electricity pole, fire hydrants, water valves and inspection boxes.

  (d) Within 7.5 meters of a street light.

  (e) Within 1 meter to the back of kerb or any service to minimise conflict with such utilities with an absolute minimum of 600 mm.

  (f) Within 7.5 meters of the property line for driveway access for the property.

  (g) Within 20 meters of the property line for an access street intersection.

  (h) Within 40 meters of the property line for a collector street intersection.

  (i) Within 55 meters of the property line for a trunk collection street intersection.

  (j) Within the sight triangle as defined by the aforementioned distance/footpath width. Trees and shrubs may be planted outside the sight triangle if no conflict with access drives or services is generated.

  (k) Under any overhead powerlines **unless** trees are of an approved type.

(2) Trees should be planted at a least 1 tree per allotment or on average 1 tree every 20 meters, whichever is lesser.

SC6.3.7.7.1.6 Street tree characteristics

(1) This section outlines the preferred characteristics of the proposed street trees that are to be considered when selecting species for utilisation within the road reserve. The species are to be approved by Council and are to be in keeping with the following points:

(a) Minimum stock size - *General* - is to be minimum 45 litre bag.

(b) Minimum stock size - *High Profile Location* - is to be minimum 100 litre bag.

(c) Tree is to demonstrate a strong single leader with no bifurcation of the trunk.

(d) Tree is to show good trunk taper and calliper and be self supporting without the assistance of stakes (stakes being required for the establishment period).

(e) Tree is to have a minimum clear trunk of 1.2 meters as to maintain sightlines.

(f) Trees are **not** to be pot bound. Pot bound specimens are to be rejected.

(g) Any pruning has been carried out in accordance with AS 4373 – *Pruning of Amenity Trees*.

(h) Trees are to be true to form, disease and pest free and in vigorous healthy condition.

(2) Tree is to be planted in accordance with best practice. Street tree species are selected in accordance with approved list shown in **Appendix SC6.3C (Approved street trees)**. An approved Root Barrier treatment to be installed where required by Council.

(3) Note it is expected that only one type of tree would be used per street treatment zone and any other tree must be specifically approved by the relevant Council development engineer.

(4) The 'Land Management Manuals' published by the Department of Environment and Resource Management must be referenced by Consultants to assist in plant species selection, planning strategies, design and site management decisions with regard to local environment and soil types.

SC6.3.7.7.1.7 Removal and reinstatement

(1) The Council may approve requests from property owners for removal of trees and shrubs within the road reserve within the following guidelines:

(a) The request shall be made by the owner of the property having frontage to the footpath. Where the request is made by any other person, it shall be accompanied by the written consent of the property owner in which the tree fronts.

(b) The request shall clearly state the reasons for the removal. Matters to which Council shall give due consideration include:

(i) The species of tree or shrub;
(ii) Damage to the applicant's land and improvements;
(iii) Death or disease of tree or shrub;
(iv) Danger to person's using the road reserve;
(v) Interference with visibility of traffic.

(c) Where, in the opinion of the Council, the complaint could be alleviated by other means, the removal of tree or shrub shall not be approved until such remedies have been applied.

(d) Where practical, a tree or shrub which is removed shall be replaced, by the applicant/owner, with an advanced tree or shrub of an approved species.

(2) All trees and shrubs within the road reserve, whom so ever planted, are considered the property of Council. Any interference with such trees and shrubs other than in strict compliance with the provisions of the policy shall be regarded as an offence for which a person may be prosecuted.

SC6.3.7.7.2 Traffic islands

(1) Landscaping of medians, traffic control devices etc. is to be carried out in accordance with the Main Roads Landscape Manual. Any proposals are to be documented in a landscape plan and submitted for approval. Medians and islands that will be planted must be designed to accommodate landscape works by providing:

(a) Adequate site preparation and soil depths,

(b) Root Barriers where needed,

(c) Conduit for future tap connection,

(d) Sub-soil drainage discharging to an enclosed pipe system.

(2) Plant selection should take into account:

(a) Sight paths at intersections and speed control devices,

(b) Tree form, shape and location within the road reserve must not encroach into the space required for a vehicle to pass through a traffic control device.

SC6.3.7.7.3 Planting of batters

SC6.3.7.7.3.1 Batters less than 1H in 6W

These batters can easily be mown and therefore maybe approved as being grassed. Each project will be assessed on a project by project basis with site location, accessibility, purpose and surrounding character being taken into account regarding the acceptability of grass as opposed to planting.

SC6.3.7.7.3.2 Batters Greater than 1H in 6W

These batters are not easily mown and therefore easily maintained landscape is required. Site location, accessibility, purpose and surrounding character will be taken into account when selecting plant species. Generally, these batters are densely planted and mulched with a suitable edge treatment installed. Very steep batters are to be constructed using a combination of retaining walls and gently sloped planting areas. Surface drainage should be managed by redirecting away from steep batters as to reduce erosion and batter destabilisation. Where there is a possibility of erosion, alternative mulching treatments are to be considered such as hydromulching or biodegradable matting product such as *Jutemat*.

SC6.3.7.7.4 Irrigation systems within road reserve

Irrigation systems proposed for installation within the road reserve are not to be installed on a permanent basis. If proposed, an irrigation plan accompanying the landscape plans is to be submitted to Council for approval.

SC6.3.7.7.5 Entrance features and fencing

(1) Marketing features to the entry of a developments such as waterfalls, fountains, flagpoles, ornate entrance walls/structures, landscaping and the like are to be contained within the private property boundary and are not to protrude onto any footpath, road reserve etc.

(2) Proposed fencing/acoustic fencing to the street frontage of a development is to be constructed within the private property boundary. The fencing is to have a maximum lineal run of no more than 20 meters without articulation. These articulations are to be setback a minimum of 1.5 meters into the block to provide an adequate planting area for soft landscaping to improve the aesthetics of the development frontage.

SC6.3.8 Electrical and Lighting

SC6.3.8.1 General

(1) Electrical Reticulation and Street Lighting shall be designed and installed to the requirements of the Electrical Safety Act 2002, Regulations and associated Australian Standards. All work shall be designed, constructed, supervised and certified by competent electrical engineers qualified to undertake such work. All lighting must be the

most energy efficient lighting available in the National Electricity Market Load Tables for Unmetered Connection Points (AEMO 2015). LED lights are Council's preferred technology, other types of lightings must be approved by Council's Development Engineers.

SC6.3.8.2 Urban and Rural Residential reticulation

(1) Underground electrical reticulation to each and every lot shall be provided in all new residential, commercial and industrial developments unless otherwise agreed to by Council.

(2) Where minor subdivisional development occurs within an area which has existing overhead reticulation, Council may approve overhead connection subject to Ergon approval.

(3) Conduit location and alignments shall be in accordance with the following requirements:

(a) Shared trenching with telephone reticulation at road crossings and on footpaths is permissible;

(b) No sharing of trenches is to occur with water reticulation;

(c) Crossing of existing roads are generally to be bored;

(d) Council's senior development engineer may approve open trenching to roads below collector standard dependent on the condition of the existing pavement and surfacing or where subsoil conditions or site specific constraints prohibit the use of boring equipment;

(e) Road crossings are to be at right angles to the road centre line;

(f) Electrical crossings are generally to be to the opposite boundary to water service crossings; and

(g) Electrical crossings are not permitted within the area defined as an intersection under the *Traffic Regulations 1962*, unless on standard 0.3 metre to 0.9 metre alignment of protected intersecting property line.

(4) Electrical pillar locations shall be in accordance with the following requirements:

(a) Pillars shall be located at side boundaries wherever possible;

(b) Pillars shall be located on alternative boundaries to water hydrants;

(c) No pillars shall be located on truncated boundaries at intersections; and

(d) Placement of pillars on tangent points may be accepted if necessary.

(5) Pad mount transformers shall be located within the road reserve fronting proposed or existing parkland or drainage reserves unless otherwise approved by Council.

(6) A Certificate of Electricity Supply from Ergon Energy is to be submitted to Council prior to approval of a plan of subdivision. A property note may be entered in Council's system to alert the property owner or prospective purchasers that the property may not be serviced by electricity until a Certificate of Acceptance for the development has been issued by Ergon Energy and it is energised.

SC6.3.8.3 Rural reticulation

(1) Electrical reticulation will generally not be required for sustainable rural lots, or lots created from a rural boundary realignment. Where electricity is not provided at the time of subdivision, a property note may be entered in Council's system to alert the property owner or prospective purchasers that –

At the time of its creation, Council did not require this lot to be connected to the reticulated electricity network. The owner and potential purchasers should investigate whether the lot has since been connected to the network or if alternative power arrangements have been made. Connecting to the reticulated electricity network provided by Ergon Energy or another provider is only one way of providing electricity to this lot.

(2) Electrical reticulation will be required for new lots that are not deemed sustainable for rural production, and which are not created from a rural boundary realignment, unless otherwise agreed to by Council.

(3) Council will generally accept overhead supply to rural allotments, however the developer shall install underground supply where required by Ergon Energy.

(4) Where electrical reticulation is required, a Certificate of Electricity Supply from Ergon Energy is to be submitted to Council prior to approval of a plan of subdivision. A property note may be entered in Council's system to alert the property owner or prospective purchasers that the property may not be serviced by electricity until a Certificate of Acceptance for the development has been issued by Ergon Energy and it is energised.

(5) For the purposes of this Policy, any lot that does not comply with the 100 hectare minimum area shall be considered unsustainable for rural production purposes, unless otherwise accepted as being sustainable for rural production through Council's assessment of the reconfiguring a lot application. To remove any doubt, any rural lot likely to be used primarily as a rural home site, is not considered sustainable for rural production.

SC6.3.8.4 Street lighting design requirements

SC6.3.8.4.1 General

All works are to be designed to the requirements of the following Ergon Energy standards and approval:

(a) Australian Standard Code of Practice AS1158.2005,

(b) Queensland Department of Main Roads requirements and approvals for State Controlled roads,

(c) Bundaberg Regional Council requirements.

SC6.3.8.4.2 Street lighting requirements

Table SC6.3.9.4.2.1 (Lighting standards for various road classifications) references street lighting requirements against road classifications.

Table SC6.3.9.4.2.1 Lighting standards for various road classifications

Zones/Uses	Road Type	Street Lighting Standard
Residential	Access Place	P4
	Access Street	P4
	Collector (Neighbourhood)	P4
	Trunk Collector (Suburban)	V4
Commercial	All	P2
Industry	All	P4

SC6.3.8.4.3 Street lighting in rural/ village/ township residential areas

Street lighting requirements for rural residential developments will be assessed on a case by case basis, but will generally be designed with 'flag' lighting at intersections and at other locations determined on safety issues. The standard for a Village/Township collector will be nominated with the development approval.

SC6.3.8.4.4 Pedestrian and bikeway pathway lighting

(1) Lighting of pedestrian and bikeway pathways between streets is to be achieved by arranging for a street light to coincide with the walkway entrance, such that the light is visible from every point within the walkway.

(2) Lighting of pedestrian and bikeway pathways will be assessed on a case by case basis and will generally be in accordance with the relevant Australian Standards.

SC6.3.8.4.5 Open space lighting

Lighting of open space and park areas will be undertaken on a case by case basis.

SC6.3.8.4.6 Pedestrian crossings and refuge lighting

Pedestrian crossings and refuges shall be lit to the requirements of AS1158.4 *"Supplementary Lighting at Pedestrian Crossings"*.

SC6.3.8.4.7 Intersection and roundabout lighting

Intersections and roundabouts shall be lit to the requirements of AS1158.1 "Vehicular Traffic Lighting".

SC6.3.8.4.8 Alignment of street lighting

(1) Where underground power is provided, the light pole location is to generally be 600 mm behind the back of kerb.

(2) Street light poles are to be located at side boundaries wherever possible.

(3) Street light poles shall not be located adjacent to water crossings.

(4) Offset of one (1) metre from physically located conduits is acceptable provided access to properties is not affected.

SC6.3.8.4.9 Lighting materials

All lighting poles and fittings shall comply with the following Australian Standards:

(a) AS1158 - "The lighting or urban roads and other public thoroughfares";

(b) AS1798 - "Lighting poles and bracket arms - preferred dimensions";

(c) AS3771 - "Road lighting luminaries with integral control gear";

(d) AS4065 - "Concrete poles for overhead lines and street lighting".

SC6.3.8.4.10 Turtle friendly lighting

Within an identified Sea Turtle Sensitive Area (as shown on the Coastal protection overlay map), all street lighting, park lighting and outdoor lighting shall be the most energy efficient, dark sky compliant, and amber lighting available in the National Electricity Market Load Tables for Unmetered Connection Points (AEMO 2015). Dark sky compliant lighting prevents light from escaping upward, where necessary lights may be shrouded to direct light down and away from the beach (e.g., aeroscreen light fittings).

SC6.3.8.4.11 Process

At the time of seating of the Plan of Survey, Council will accept that satisfactory arrangements have been made for the supply of electricity if a letter from Ergon Energy verifying such arrangements, is provided.

SC6.3.8.4.12 Controls

Electrical reticulation and street lighting shall be assessed during the Operational Works stage of a development.

SC6.3.9 Environmental requirements

SC6.3.9.1 Dust

Dust control measures must include minimising exposure of site areas, staging of earthworks and setting wind speed limits for site operation. Where works are considered to be operating in high winds or causing a sufficient dust nuisance, Council shall require development works to cease until conditions are favourable.

SC6.3.9.2 External surfaces

A Developer must ensure that during construction the external pavement surfaces are swept or washed regularly and maintained in good condition.

SC6.3.9.3 Erosion and sediment control

Erosion and sediment control must be designed in accordance with the recommendations contained within the Environment Protection Agency's (EPA) – *Guideline – EPA Best Practice Urban Stormwater Management – Erosion and Sediment Control* and International Erosion Control Association's (IECA) – *Best Practice Erosion & Sediment Control' and 'Queensland Urban Drainage Manual' (QUDM)*.

SC6.3.9.4 Protection of vegetation

(1) The identification and protection of trees on or in close proximity to a development site must be in accordance with AS4970 – Protection of trees on development sites. Trees requiring pruning are to be pruned in accordance with AS4373 - Pruning of amenity trees and must be agreed with Council's development engineer prior to commencement of works. No earthworks must be undertaken within the Tree Protection zone of protected vegetation or vegetation to be retained.

(2) The development site must be cleared of all weeds listed in the following documents or as otherwise specified in a weed management plan for the site:

(a) Land Protection (Pest and Stock Route Management) Regulation 2003;

(b) Council's Pest Management Plan;

(c) Invasive Naturalised Plants in Southeast Queensland, alphabetical by genus (Queensland Herbarium, 2002).

(3) The developer is to prevent the establishment of potential weeds as well as the spread of weeds and other pests through the movement of soil, weed seeds and contaminants through machinery, vehicular, building materials and other vectors.

SC6.3.10 Earthworks

SC6.3.10.1 General

General earthworks must be as follows:

(a) The minimum fall on residential or rural residential must be 1 in 200 to the street or other approved stormwater lawful point of discharge;

(b) The minimum fall on commercial or industrial allotments must be 1 in 400 to the street or other approved stormwater lawful point of discharge;

(c) A testing regime must be submitted for approval with the operational works approval.

SC6.3.10.2 Batter treatment

Batter treatments must comply with the following:

(a) Cut and fill batters must not exceed 1 in 6 in urban drains on overflow drainage paths (except rural road table drains where 1 in 4 is acceptable) which in all areas unless specifically approved otherwise;

(b) The toe of any fill batter and the top of any cut batter must be a minimum 300mm clear of the boundary line of an adjoining property.

(c) In certain circumstances it may be advantageous to construct cut or fill batters on adjoining property. In these situations, permission from adjoining property owner/s and Council's development engineer will be required.

(d) Batter treatments are preferred to retaining walls in parkland and other public owned lands (see **Section SC6.3.10.3 (Retaining walls and structures)**).

SC6.3.10.3 Retaining walls and structures

Retaining walls must be designed in accordance with the following:

(a) In residential areas, retaining walls and structures over 1.5 metres in height are to be stepped 1.0 metre (horizontally) for each 1.5 metres in height to a maximum height of 3.0 metres and landscaped appropriately, unless approved specifically otherwise;

(b) Retaining walls over 1.5 metres require approval by Council in the Development Approval;

(c) All retaining walls and structures abutting existing or proposed road reserves, parkland or other public owned lands must be contained within the proposed allotments, unless approved specifically otherwise;

(d) Design drawings for retaining walls and structures higher than 0.9 metres or subject to surcharge loadings must be certified by a RPEQ for compliance with AS4678- Earth-retaining structures.

SC6.3.10.4 Suitable material for embankments and earthworks (allotment fill)

Material suitable for earthworks and embankments will be as follows:

(a) In *Roads (Embankment and leads)* – refer to Austroads Part 4I: Earthworks Materials

(b) *Allotment Earthworks* – refer to AS3798 with further qualifications:

  (i) No rock within 600 mm of finished surface – with rock defined as stone with a dimension greater than 2/3 the layer thickness;

  (ii) In top 600 mm of fill - not greater than 20 percent retained on 37.5 mm sieve;

  (iii) Any fill that is defined as Moderately Expansive in Table 3.2 of Austroads 4I: Embankment Materials (2009, p.10) is deemed to be unsuitable, unless specifically approved for use by the relevant Council development engineer.

SC6.3.11 Telecommunications

(1) The Developer is required to enter into an agreement with a telecommunications infrastructure provider for the provision of telecommunications infrastructure to the development as per the Telecommunications Act 1997. More information about the Developer's responsibilities under the Telecommunications Act 1997 is available at https://www.communications.gov.au/policy/policy-listing/telecommunications-new-developments.

(2) Telecommunications conduits (fibre-ready pit and pipe) will be required for all new developments unless the development is exempt from the requirement to install fibre-ready pit and pipe under Part 20A of the Telecommunications Act 1997. The Developer will be required to provide evidence to Council that the development complies with any relevant exemption criteria. Information about the exemption process is available at https://www.communications.gov.au/policy/policy-listing/exemption-pit-and-pipe-requirements.

(3) The provision of connectivity and all other works (including operational works approvals) shall be entirely at the Developer's expense unless otherwise arranged under contract with the telecommunications infrastructure provider.

SC6.3.12 Gas supply

The Developer is encouraged to enter into an agreement with a gas distribution authority for the provision of a gas supply network within the development (e.g., especially commercial and industrial developments within existing gas supply service areas).

SC6.3.13 Operational works, construction, inspection, maintenance and bonding procedures

This section outlines the responsibilities, requirements and obligations on Developers and their consultants when undertaking operational works within the Bundaberg Regional Council local government area. The intent is to streamline the process of finalising a project to the 'on maintenance' and 'off maintenance' stages.

SC6.3.13.1 General

(1) The working hours for construction activities are only permitted between 7:00am and 5:00pm, Monday to Friday, unless otherwise approved by Council's development engineers.

(2) The location of all existing infrastructure services must be identified before operational works commence.

(3) Consultation with Council 's development engineers is encouraged, especially in areas involving design variations and certification this will assists in the early identification and resolution of matters and issues that may cause delays where a compliance assessment process is required (ROL - obtaining signed survey plans).

(4) Road closures must be undertaken in accordance with Bundaberg Regional Council's road closure policy.

(5) Asignit software must be used if works require the erection of traffic control signs on the road reserve. Asignit software is used to manage the documentation and reporting of roadworks, road closures (including signage placement), floods and other traffic events on Council's road network. It will also provide reporting to Council when internal staff, suppliers and contractors are working on Council's road network. Council provides Asignit software and training free of charge. Please contact Asignit directly at admin@asignit.com or through their website www.asignit.com for the software to be delivered to your business. Prior to commencing work in the road reserve, Traffic Management Control Plans must be uploaded to the Asignit system and confirmation sent to development@bundaberg.qld.gov.au.

(6) Public Liability Insurance must be maintained at the greater of the value given in the contract or $20 Million

SC6.3.13.2 Works supervision and responsibilities

(1) The Developer must engage the services of suitably qualified professionals to ensure all development work is designed and constructed to;

- (a) the engineering standards set out in this Planning Scheme Policy;
- (b) all relevant Australian Standards and Building Codes;
- (c) approved drawings and nominated standard drawings; and
- (d) the requirements outlined within all relevant technical specifications.

(2) The Developer must appoint a Developer's Superintendent to be the single point of contact for Council during the operational works. Typically, the Developer's Superintendent will be the civil Supervising Engineer or main civil contractor (i.e., Principal Contractor). The Developer's Superintendent has the following responsibilities:

- (a) Overall management, control and operation of the construction site;
- (b) Coordinating the development of the Construction Management Plan (see SC6.3.13.3);
- (c) Ensuring compliance with the Construction Management Plan;
- (d) Coordinating the supervision, construction and certification of all engineering, building, landscaping and minor works;
- (e) Coordinating Council inspections and testing;

(f) Coordinating resolution for non-conforming works;

(g) Implementing complaint management procedures;

(h) Coordinating meetings and record keeping (i.e., minuting meetings);

(i) Coordinating all reporting and submission of all as-constructed information.

(3) Where operational works requires engineering certification, the follow responsibilities apply:

(a) The Developer must appoint a Supervising Engineer, who is a Registered Professional Engineer of Queensland (RPEQ), for each area of engineering requiring certification. For example, a development requiring both electrical and civil works will require a Civil Supervising Engineer (RPEQ Civil) and an Electrical Supervising Engineer (RPEQ Electrical) in accordance with the Professional Engineers Act 2002. Each Supervising Engineer is responsible for the supervision and certification of engineering works in their respective engineering field.

(b) The Supervising Engineer is responsible for developing a Quality Plan (including inspection and test plans). The Supervising Engineer is responsible for compliance with the Quality Plan.

(c) A construction superintendent may be nominated or appointed by a Supervising Engineer but must be supervised by the Supervising Engineer at all times throughout the construction period. The Supervising Engineer is to take full responsibility for all construction work related to the infrastructure they are certifying.

(4) Where operational works requires building certification, the Developer must appoint a licensed Building Certifier to ensure works are designed and constructed to appropriate building standards.

(5) Where operational works requires landscape works, the Developer must appoint a suitably qualified person to ensure works are designed and constructed to the approved landscape plan.

(6) Council's development engineers are available to provide advice on the level of supervision required for development works.

SC6.3.13.3 Construction Management Plan

(1) The purpose of the Construction Management Plan (CMP) is to ensure:

(a) the operational works are undertaken in a safe and efficient manner,

(b) minimise the impact on surrounding properties,

(c) protects the environment,

(d) maintains the levels of service of existing infrastructure, and

(e) ensures new infrastructure is built to an appropriate quality.

(2) The CMP will include

(a) Key Contact Information,

(b) Construction Program,

(c) Safety Plan,

(d) Environmental Management Plan,

(e) Quality Plans, and

(f) Traffic Management Plan.

(3) The level of detail in the CMP will depend on the scope of the operational works. It is unlikely that one consultant will provide all components of the CMP, however, it is the responsibility of the Developer's Superintendent to coordinate the development of the entire document.

SC6.3.13.3.1 Key Contact Information

(1) The Key Contact Information will include the following:

(a) Developer's Superintendent (name and contact details);

(b) List of all Supervising Engineers (name, contact details, RPEQ details, engineering area and scope of works under their supervision)

(c) Principal Contractor (name and contact details);

(d) A list of nominated site personnel and contact details;

(e) Workplace Health and Safety Officer/Contact (name and contact details).

(2) Depending on the scope of the operational works the additional contacts may also be required:

(a) Building Certifier/s (name and contact details);

(b) Landscape Consultant (name and contact details);

SC6.3.13.3.2 Construction Program

(1) The Construction Program will be a broad overview of the significant milestones and their respective timings. The Construction Program should allow Council to program its staff to provide inspection and testing.

(2) The Construction Program will include two (2) sets of A3 "for construction" drawings incorporating any changes required by the Operational Works Approval. These drawings are to be provided in ADAC compliant XML files too.

SC6.3.13.3.3 Safety Plan

Council encourages a culture of safe working environments and procedures. A Safety Plan must be completed for a construction 'workplace' in accordance with the Work Place Health and Safety Act 2011. The CMP must clearly state that a Safety Plan has been completed for the workplace. The CMP must include an extract from the Safety Plan that outlines the induction process for Council staff entering the workplace. If requested the Safety Plan must be made available to Council at any time during the works.

SC6.3.13.3.4 Environmental Management Plan

The Environmental Management Plan must be completed in accordance with the Environmental Protection Legislation. The Environmental Management Plan must be submitted with the CMP for Council's information. The Environmental Management Plan will include the following:

(a) Hours of work;

(b) Access and site restrictions;

(c) Procedures to ensure that the external road surfaces remain in a clean state, free of detritus generated from the site;

(d) Noise and vibration;

(e) Air quality, dust and odour;

(f) Acid sulphate soils;

(g) Cultural Heritage;

(h) Management of adjacent fauna;

(i) Storage of fuel and other hazardous goods;

(j) Fuelling and maintenance of vehicles and equipment;

(k) Disposal of waste (including fuel, oil, chemicals and sewage);

(l) Disposal of excess spoil;

(m) Water quality and surface water runoff;

(n) Management of Site Dewater;

(o) Sedimentation and erosion control;

(p) Stockpile management;

(q) Re-vegetation and reinstatement of disturbed areas;

(r) Management of weeds and pests;

(s) Waste management;

(t) Handling and reporting of complaints and environmental incidents (including dispute resolution procedures).

SC6.3.13.3.5 Quality Plans

(1) The Quality Plans must be completed for all works being undertaken as part of the operational works. The Quality Plans may cover a range of activities where different levels of supervision and certification are required.

(2) For contributed assets (i.e., future Council assets), Quality Plans must be submitted for Council's approval with the CMP. The Quality Plan for contributed assets will include the following:

(a) Details of who is responsible for supervision and certification of each component of the works (e.g., engineer, building certifier and/or landscape architect);

(b) Inspection and Test Plans (ITP) for all relevant components of the works. The ITPs must include the proposed test frequencies and Council inspection hold points as listed in section SC6.3.13.4. This will include provision on the ITP to allow Council's inspectors to sign attendance at hold points (see SC6.3.13.4.1);

(c) For all other assets, the CMP must state who is responsible for the Quality Plans of these assets. If requested the Quality Plans must be made available to Council at any time during the works.

SC6.3.13.3.6 Traffic Management Plan

The Traffic Management Plan (TMP) must be completed in accordance with the requirements of the Manual for Uniform Traffic Control Devices (MUTCD). The TMP and supporting Traffic Guidance Scheme (TGS) must be submitted with the CMP for Council's information and feedback. The TMP must be undertaken by a qualified Traffic Management Designer (TMD) and uploaded to the Asignit system and with a confirmation sent to development@bundaberg.qld.gov.au.

SC6.3.13.4 Council Inspections and testing standards

It is the responsibility of the Supervising Engineer to arrange all inspections, testing and certifications. The Supervising Engineer must be present during all Council inspections. Council officers will not deal directly with Contractors.

SC6.3.13.4.1 Inspections (Council Hold Points)

(1) Provide at least 48 hours notice for Council officers to inspect:

(a) Placement of reinforcement, formwork and areas of construction jointing prior to pouring of all concrete;

(b) Installation of root barriers and trees;

(c) All pavement layer proof rolls (i.e., sub-grade, sub-base and base);

(d) All prepared pavement prior to prime (i.e., after brooming);

(e) Location of each electrical light pole within the works;

(f) Bedding, pipelaying and backfilling for water supply, sewerage and stormwater drainage features, including sewer points of connection, water service connections and stormwater connections to existing network;

(g) Pressure testing for all water and sewerage mains segments;

(h) Sewerage and stormwater access chambers for the following:

(i) Prior to pouring/placement of access chamber bases;
(ii) Formwork/placement for access chambers prior to pouring;
(iii) Vacuum testing for wastewater access chambers.

SC6.3.13.4.2 Testing

(1) The Supervising Engineer is responsible for ensuring all works are tested in accordance with the appropriate standards. All costs associated with testing are to be borne by the Developer.

(2) Tests may include, but are not limited to, the following:

(a) Closed circuit television (CCTV) report and footage of all sewerage and stormwater infrastructure prior to the commencement of the maintenance period and again prior to the conclusion of the maintenance period;

(b) Vacuum testing of the required proportion of sewerage access chambers as per the relevant standard;

(c) Proof rolls and compaction testing of all pavement layers (i.e., sub-grade, sub-base and base) as per the relevant standard;

(d) Geotechnical tests and quality/uniformity of fill tests for all earthworks.

SC6.3.13.4.3 Tag and Bag Procedure for Partial Water Services

(1) Provide at least 2 weeks notice for Council officers to organise tags for partial water services.

(2) Provide at least 48 hours notice for Council officers to undertake Tag and Bag of partial water services. Prior to contacting Council, the Developer's Superintendent is to ensure the following:

(a) Sterilisation and pressure testing of all water mains associated with the partial service have been undertaken;

(b) the partial services are live;

(c) lots to be serviced are at their finished surface level; and

(d) final survey and pegging of all lots is completed.

SC6.3.13.5 On-Maintenance Report

(1) The Developer's Superintendent is required to provide an On-Maintenance Report prior to acceptance of on-maintenance. This report must include the following:

(a) Certification signed by the relevant Supervising Engineer/s (i.e., an RPEQ for each area of engineering) that all works have been undertaken, completed and inspected in accordance with:

(i) the operational works approval,
(ii) the relevant conditions of any higher order Material Change of Use approval or Reconfiguring a Lot approval, and
(iii) requirements of Bundaberg Regional Council Planning Scheme Policy for Development Works and associated standard drawings.

(b) Certification signed by the relevant Supervising Engineer/s (i.e., RPEQ) confirming any variations to the design that result in Operational Work being outside of design tolerance will not result in a failure of the Operational Work to perform as intended by the design;

(c) "As Constructed" information as listed in Section SC6.3.13.7. Including certification signed by a engineering or cadastral surveyor confirming the "As Constructed" information has been collected and documented in accordance with standard industry practice and is accurate to within 20mm.

(d) Certification of building work signed by a licensed Building Certifier.

(e) Certification that landscape works are constructed as per the approved landscape plan by the landscape architect/designer.

(f) Completed quality plans, including:

(i) A plan identifying where and when inspections and testing occurred;

(ii) All ITPs associated with contributed assets (any variations from the ITPs submitted at pre-start should be justified);

(iii) Test results from CCTV for all sewerage and stormwater infrastructure (including WSA compliant Infrastructure Condition Reports and all CCTV data);

(iv) Test results from pressure testing water and sewerage mains;

(v) Road compaction testing and proof test rolling results; and

(vi) All tests associated of earthworks including drawing/s identifying fill depth and location on the site.

(2) If required, an exceptions report with rectification timeframes will be provided by the Developer's Superintendent to Council after the inspection.

SC6.3.13.6 Amendment to approved drawings

The relevant Council development engineer must approve all design variations on a project. Where amendments are carried out without Council approval, the change is to be substantiated by the Developer's Superintendent. Council reserves the right to order variations to the works where they don't meet design standards provided in this Planning Scheme Policy. Where rectification works are required, such works will be carried out at the Developer's expense.

SC6.3.13.7 As Constructed information

SC6.3.13.7.1 Minor projects

(1) *Electronic* - collated "As Constructed" information is required as follows:

(a) Formatted as AutoCAD 2004 or later 'model space',

(b) Scaled to 1 unit = 1 metre,

(c) Tied to a minimum of two permanent survey marks with 2nd order horizontal accuracy (MGA94 Zone 56 coordinates) or better (to enable linking of the "As Constructed" information to Council's GIS system),

(d) With finished surfaces (spot heights and contours) to 5m outside the plan area of the Operational Work,

(e) With separate layers for each type of infrastructure (water main, water service, electricity, telecommunication, lighting, stormwater drainage, roadwork, sewerage, footpath within the plan area of the Operational Work,

(f) That highlights infrastructure within the plan area of the Operational Work that has not been affected by the Operational Work and therefore may not be accurately located,

(g) Compiled using AutoCAD's eTransmit function resulting in one file (*.zip) that contains all "As Constructed" information relevant to the Operational Work and all plot style tables, font maps, etc that are necessary to successfully extract the eTransmit file and access the "As Constructed" information.

(2) Hard Copies - Two (2) complete sets of scale drawings on A1 or A3 paper, complete with annotations and amendments, presented in a clear & legible form.

(3) PDF Copies – 'As Constructed' signed drawings in .pdf format

SC6.3.13.7.2 Major projects - as design as construct (ADAC) submission

(1) Electronic - Council has adopted the ADAC system of presentation of 'as constructed' information for major projects. Refer to Council's Guidelines on the Implementation of ADAC for Major Projects with the Bundaberg Regional Council Local Government Area.

(2) Hard Copies - Two (2) complete sets of scale drawings on A1 or A3 paper, complete with annotations and amendments, presented in a clear & legible form.

SC6.3.13.8 Pre-start procedure

(1) A pre-start meeting must be held on site prior to any works commencing. The following people are required to attend the pre-start meeting:

(a) Developer's Superintendent (i.e., Single point of contact for works)

(b) Supervising Engineer/s (i.e., Civil RPEQ and other RPEQs as required - see SC6.3.13.2)

(c) Principal Contractor (i.e., Main Civil Contractor)

(d) Council's representatives (i.e., Development Engineer and Technical Officer), and

(e) Developer (where appropriate).

(2) At least 48 hours notice must be given prior to the pre-start meeting. This notice will include the submission of a CMP for approval (see SC6.3.13.3). Where the components of the CMP cannot be completed before the pre-start meeting, the Developer's Superintendent must seek approval to provide an incomplete CMP.

(3) The Developer's Superintendent is responsible for organising and minuting the pre-start meeting. The draft minutes are to be forwarded to the Council for approval within one week of the meeting. Once approved, the Developer's Superintendent is responsible for distribution of the approved minutes to all attendees of the pre-start meeting.

SC6.3.13.9 On-Maintenance procedure

SC6.3.13.9.1 On-Maintenance meeting and inspection

(1) An On-Maintenance meeting must be held on site prior to commencing the maintenance period. The following people are required to attend the On-Maintenance meeting:

(a) Developer's Superintendent (i.e., Single point of contact for works),

(b) Supervising Engineer/s (i.e., Civil RPEQ and other RPEQs as required - see SC6.3.13.2),

(c) Principal Contractor (i.e., Main Civil Contractor),

(d) Council's representatives (i.e., Development Engineer and Technical Officer), and

(e) Developer (where appropriate).

(2) At least 48 hours notice must be given prior to the On-Maintenance meeting. This notice will include the submission of an On-Maintenance Report for approval (see SC6.3.13.5).

(3) The Developer's Superintendent is responsible for organising and minuting the On-Maintenance meeting. The draft minutes are to be forwarded to the Council for approval within one week of the meeting. Once approved, the Developer's Superintendent is responsible for distribution of the approved minutes to all attendees of the On-Maintenance meeting.

SC6.3.13.9.2 General (security) performance bond and maintenance bonds

(1) Council at its discretion may accept a Performance Bond to provide surety of completion of outstanding works. The Performance Bond must be to a value of 1.3* the value of the expected works. Generally, Bank Guarantees will NOT be accepted as a Performance Bonds.

(2) Where Performance bonds are for a considerable amount of monies Council will consider a staged reduction of the bond monies.

(3) The Developer is required to submit a Maintenance Bond to the value of 5% of the total construction cost of Operational Work, including all variations, or $2,000, whichever is higher. This bond will be held by the Assessment Manager until the Operational Work is

accepted 'Off Maintenance'. The maintenance bond may be in the form of an unconditional Bank Guarantee.

SC6.3.13.9.3 Works accepted On-Maintenance

Council will provide written confirmation that a project has been accepted On-Maintenance. The letter may include a list of outstanding minor works.

SC6.3.13.9.4 On-Maintenance period

(1) The On-Maintenance period for a project will generally be 12 months except for bioretention areas which will have a period of 24 months. The On-Maintenance period may be extended in part or in whole where outstanding works have not been finished or maintenance is undertaken by the contractor, delaying acceptance of the Operational Work Off-Maintenance.

(2) The On-Maintenance period is to commence on the date nominated in Council's On-Maintenance acceptance letter and is to conclude on the date nominated in the Council's Off-Maintenance acceptance letter. During the On-Maintenance Period, the Developer's Superintendent must:

(a) Ensure Operational Work is maintained at no cost to Council;

(b) Footpaths, street trees and landscaping, drainage reserves and Parks are kept in a tidy manner by seeding and mowing; and

(c) Ensure defects (if any) are rectified within a reasonable time (generally 2 weeks from when they are identified).

(3) The On-Maintenance period is between Council and the Developer should not be confused with any Defects Liability Period that may exist

SC6.3.13.10 Off-Maintenance procedure

Prior to the Operational Work being accepted Off-Maintenance:

(a) Ensure grass coverage of at least 80% (per square metre) is obtained over all public access land;

(b) Confirm with Council's representative that temporary erosion and sediment control measures are no longer required and, if warranted, arrange for their disposal, and

(c) Ensure any defects (if any) raising during the maintenance period are rectified.

SC6.3.13.10.1 Off-Maintenance meeting and inspection

(1) An Off-Maintenance meeting must be held on site prior to Council accepting the Operational Work as Off-Maintenance. The following people are required to attend the 'Off Maintenance' meeting:

(a) Developer's Superintendent (i.e., Single point of contact for works),

(b) Supervising Engineer/s (i.e., Civil RPEQ and other RPEQs as required – see SC6.3.13.2),

(c) Principal Contractor (i.e., Main Civil Contractor),

(d) Council's representatives (i.e., Development Engineer and Technical Officer), and

(e) Developer (where appropriate).

(2) At least 48 hours notice must be given prior to the Off-Maintenance meeting. This notice will include the following:

(a) Confirmation signed by the Supervising Engineer (i.e., RPEQ) that all infrastructure are in a satisfactory condition;

(b) Identification of remedial works undertaken during the maintenance period (including test reports if required);

(c) Final test results from CCTV for all sewerage and stormwater infrastructure (including WSA compliant Infrastructure Condition Reports and all CCTV data);

(3) The Developer's Superintendent is responsible for organising and minuting the Off-Maintenance meeting. The draft minutes are to be forwarded to the Council for approval within one week of the meeting. Once approved, the Developer's Superintendent is responsible for distribution of the approved minutes to all attendees of the Off-Maintenance meeting.

SC6.3.13.10.2 Works accepted Off-Maintenance

Council will provide written confirmation that the operational works have been accepted Off-Maintenance.

Appendix SC6.3A Standard drawings list

Council's standard drawings are shown in **Table SC6.3A.1 (Standard drawings)**.

Table SC6.3A.1 Standard drawings

Drawing Number	Description
Roads - Bundaberg Regional Council	
R1002	Residential Roads – Optional Type Plans & Cross Section to suit WSUD
R1004	Typical Cross Sections – Industrial Collector and Access Street
R1010	Driveways – Residential Driveway Slabs
R1011	Driveways – Industrial and Commercial Driveway Slabs – Two Way Access
R1012	Driveways – Rural and Urban Accesses Requiring Culverts – No Kerb and Channel
R1013	Driveways - Rural and Urban Accesses – No Kerb and Channel
R1014	Driveways – Residential Invert Crossings (Layback & Standard Kerb & Channel)
R1015	Driveways – Residential Invert Crossing – Steep Driveways
R1016	Driveways – Residential Driveway Slabs for Brown Streets
R1020	Kerb and Channel – Kerbs, Channels and Inverts – Profiles and Dimensions
R1021	Kerb and Channel – Kerb and Channel Drainage Connections
R1030	Footpaths and Cycle Paths – Concrete Strip Footpaths
R1031	Footpaths and Cycle Paths – Bicycle Deflection Rail
R1032	Footpaths and Cycle Paths – Chicane Entrance Treatment
R1040	Signage – Street Name Sign and Post
R1041	Signage – Sign – Footings and Locations
R1042	Signage – Location Plan or Rural Addressing Number Post
R1043	Signage – Bus Stop Sign Details
R1050	Public Utilities – Typical Service Conduit Alignment
R1051	Public Utilities – Conduit/Service Road – Crossing Details
R1060	Road Edge Guide Posts and Bollards – Posts Types and Spacings
R1061	Road Edge Guide Posts and Bollards – Standard Bollard Treatment with 4 PVC Casing
R1062	Road Edge Guide Posts and Bollards – Standard Bollard Treatment
R2001	Road Type cross sections – Urban Road – Sub-arterial
R2002	Road Type cross sections – Urban Road – Trunk Collector
R2003	Road Type cross sections – Urban Road – Collector Street
R2004	Road Type cross sections – Urban Road – Access Street
R2005	Road Type cross sections – Urban Road – Access Place
R2006	Road Type cross sections – Urban Road – CBD/Commercial Access
R2007	Road Type cross sections – Urban Road – Industrial Collector
R2008	Road Type cross sections – Urban Road – Industrial Access
R3001	Road Type cross sections – Rural Road – Principal Rural Road
R3002	Road Type cross sections – Rural Road – Collector Roads
R3003	Road Type cross sections – Rural Road – Access Roads
R3004	Road Type cross sections – Rural Road – Unsealed Roads
Roads - Institute of Public Works Engineering Australasia Queensland Division (IPWEAQ) Standard Drawings	
SEQ R - 090	Kerb Ramp – Ramped Pedestrian Crossings
SEQ R - 091	Kerb Ramp – Ramped and Cut Through Treatments for Pedestrian Crossings Slip Lanes and Medians
SEQ R - 092	Kerb Ramp – Installation of TGSI's on Ramped Kerb Crossings (Sheet 1 of 2)
SEQ R - 093	Kerb Ramp – Installation of TGSI's on Ramped Kerb Crossings (Sheet 2 of 2)
SEQ R - 094	Kerb Ramp – Locations and Configurations
SEQ R - 140	Subsoil Drains - Detail

Drawing Number	Description
SEQ R - 142	Subsoil Drains – Access Points
SEQ R – 180	Typical Bus Stop layout
SEQ R – 181	Typical Bus Stop layout – Guidelines for the Layout of a Rural Bus Stop
Stormwater - Bundaberg Regional Council	
D1001	Field Inlet - Filed Inlet/Grated Gully Pit – Profiles and Dimensions
D1002	Field Inlet -Field Inlet pit Dome Top Cover Partially Submerged Inlet
R1002	Residential Roads – Optional Type Plans & Cross Section to Suit WSUD
37133	WSUD – Bioretention – Infill Sites
Stormwater - IPWEAQ	
SEQ D-010	Stormwater Access Chamber Details – 1050 – 2100 diameter
SEQ D-014	Manhole Frame – (Roadway and Non-Roadway) - 1050 to 1500 diameter
SEQ D-018	Manhole Riser Details – (Roadway)
SEQ D-019	Manhole Cover – (Roadway) – 1050 – 1500 diameter
SEQ D-020	Manhole Cover – (Non Roadway) – 1050 – 1500 diameter
SEQ D-021	Manhole Cover Concrete Infill – (Pedestrian Traffic) – 1050 – 1500 diameter
SEQ D-060	Drainage Pits Kerb inlet – Kerb in Line General Arrangements
SEQ D-061	Drainage Pits - Kerb Inlet – Precast Lintel Details
SEQ D-062	Drainage Pits – Kerb Inlet – Grate and Frame
SEQ D-082	Drainage Details – Culvert Inlet Screens
D-0011	Access Chamber – Roof Slabs – Dia 1050 - 2100
D-0012	Access Chamber – Roof Slabs – Dia 1500 Extended 600 and 900
D-0013	Access Chamber – Roof Slabs – Rectangular Standard Reinforcement
D-0017	Access Chamber – Roof Slabs – Rectangular Fabric Reinforcement
D-0030	Excavation, Bedding and Backfill of Stormwater Drainage Pipes
D-0031	Excavation, Bedding and Backfill of Precast Box Culverts
D-0040	Sediment Control Devices – Sediment Fence – Entry/Exit Sediment Trap
D-0041	Sediment Control Devices – Kerb and Field Inlets – Check Dams & Straw Bale Bank
D-0080	Inlets and Outlets to Stormwater Drains (Concrete)
D3201	Residential Property Access Standard Box Culvert Base Slabs
D3202	Residential Property Access Standard Box Culvert Wings/Headwalls
Water and wastewater - WBBROC	
WBB-GEN-1100-1	General Standard Drawing – Water Supply, Sewerage, Vacuum Sewerage and Pressure Sewerage Legend
WBB-SEW SET	Sewerage Standard Drawing Set
WBB-SPS SET	Sewage Pump Station Standard Drawing Set
WBB-WAT SET	Water Supply Standard Drawing Set
Open space, public parks and land for community facilities	
16566	Picnic shelter shed
16567	Picnic shelter table and seating
16568	Picnic table with roof
16478-S01	Picnic shelter – layout and construction details
Tree Planting Details – Bundaberg Regional Council	
P6111	Standard Street Planting Details - Typical detail – Road shoulder planting
P6211	Standard Street Planting Details - Typical detail – Back of kerb planting
P6311	Standard Street Planting Details - Typical detail – Tree protection requirements

Appendix SC6.3B Street and park naming procedure

SC6.3B.1 Park names

(1) Park names shall reflect respected persons and families who have made a significant contribution to the well being of the region where the park is located. The Council at its sole discretion may determine contrary to this requirement.

(2) The Council shall consider suggestions from developers of new parks for park names.

SC6.3B.2 Street names

(1) Street names shall reflect aspects of the area they are located, including historical names. The Council at its sole discretion may determine contrary to this requirement.

(2) Council's order of preference in allocating street names shall be:

(a) Historical Persons/Historical Place Names,

(b) Other relevant aspects (e.g., local flora and fauna) ,

(c) Themed Street Names.

(3) The Council shall consider up to 3 suggestions per street from Developers of new streets for street names.

(4) The Council will consider developments where street and park names follow a particular theme.

(5) Street names shall be nouns and generally contain one (1) word. Composite words may be acceptable when they supplement the primary name. Names shall be unique and un-ambiguous to the Bundaberg Regional Council Local Government Area.

(6) Where a street is extended, the new section created will retain the name of the extended street.

SC6.3B.3 Definition of terms

Table SC6.3B.3.1 (Street name – Nomenclature description) provides the road definitions which apply in the naming of streets.

Table SC6.3B.3.1 Street name – Nomenclature description

Type	Definition
Road	An Arterial, Sub Arterial, Trunk Collector, Collector Road;
Street	An Arterial, Sub Arterial, Trunk Collector, Collector or Access Road;
Drive	Collector or Access Road of substantial length;
Avenue	A tree lined Collector or Access Road;
Boulevard	A Collector or Access Road with significant landscape;
Terrace	Collector or Access Road with significant topographical features;
Crescent	A Loop Road;
Circuit	A Loop Road that rejoins itself;
Way	Similar to Drive or Avenue;
Lane	A narrow public right of way of reserve width;
Court	A cul-de-sac less than 100 metres in length;
Close	A cul-de-sac less than 100 metres in length;
Place	A cul-de-sac greater than 100 metres in length.

SC6.3B.4 Process of approval of names of park or streets

The process for approval of Park and Street names is as follows:

(d) Council will keep a list of suggested names for streets which will be updated when requests are received from the public. The list will be available to developers and the public on request;

(e) Prior to the sealing of a Plan of Survey creating a road, the developer shall submit 3 suggested road names for each new street in their development;

(f) Prior to the sealing of a Plan of Survey creating a park, the developer may submit a suggested park name for each new park in their development;

(g) For "themed" developed the developer shall submit a list of potential street and park names for the entire development prior to the sealing of the Plan of Survey for Stage 1 of the development;

(h) The Council will consider suggested street and park names at its Planning and Development Committee Meetings guided by this Policy;

(i) The Council has the sole right to determine street and park names;

(j) The developer will be advised of Council's chosen street and park names and shall provide appropriate signage in accordance with the relevant policies and guidelines.

Appendix SC6.3C Approved street trees

The following is a list of approved street trees for developments in the Bundaberg Regional Council area.

Table SC6.3E.1 Approved street trees (not under powerlines)

Botanical Name	Common Name	Use	Comments
Agathis robusta	Kauri Pine	Rural Street Tree	Large tree, Pine like in form, large fruit when mature makes this unsuitable for urban location.
Banksia integrifolia	Coastal Banksia	Coastal Street Tree	Gnarled form, Yellow flowers, woody seed pods.
Brachychiton acerfolius	Illawarra Flame Tree	Urban/Rural Street Tree	Deciduous tree to approximately 15m, red flowers in spring/summer. Best suited to larger road reserve.
Brachychiton rupestris	Qld Bottle Tree	Urban/Rural Street Tree	Semi deciduous tree to 15m. Large swollen bottle trunk a feature. Creamy flowers in spring/summer. Best suited to larger road reserve.
Buckinghamia celsissima	Ivory Curl	Urban Street Tree	Masses of creamy flowers
Callistemon viminalis	Weeping Bottlebrush	Urban/Rural Street Tree	Masses of red flowers, weeping in form, can look untidy.
Cupaniopsis anacardiodes	Tuckeroo	Coastal Street Tree	Lime green foliage, orange berries, lollipop form, mature specimens have buttressed trunk.
Elaeocarpus eumundii	Eumundi Quandong	Urban/Rural Street Tree	Med rainforest tree, red new growth a feature, columnar in form.
Elaeocarpus obovatus	Hard Quandong	Urban/Rural Street Tree	Med rainforest tree, small cream flowers followed by blue berries, peach coloured new growth a feature.
Flindersia australis	Crows Ash	Urban/Rural Street Tree	Green foliage, woody seed pods, columnar in form, many mature specimens within Bundaberg streetscape.
Grevillea baileyana	White Oak	Urban/Rural Street Tree	Masses of white/cream flowers, Lobbed leaves with gold undersides.
Harpullia pendula	Tulipwood	Urban Street Tree	Lime green foliage, orange berries, light coloured bark, many examples within the Bundaberg streetscape.
Hymenosporum flavum	Native Frangipani	Urban/Rural Street Tree	Narrow evergreen tree to 10m. Fragrant yellow flowers in spring. Grows in sun or shade, prefers good quality well drained soil. Does not like to be too exposed.
Lophostemon confertus	Brush Box	Rural Street Tree	Dense crown of shiny leaves, Columnar in habit
Stenocarpus sinuatus	Qld Firewheel Tree	Urban/Rural Street Tree	Tall evergreen tree 15-20m tall. Variable dark green leaves. Orange red flowers in summer. Best suited to larger road reserve
Syzygium luehmannii	Small Leaved Lilly Pilly	Urban Street Tree	Dense tree requiring lift pruning within streetscape, red berries, red/pink new growth a feature.

Botanical Name	Common Name	Use	Comments
Waterhousea floribunda	Weeping Lilly Pilly	Urban/Rural Street Tree	Bushy tree, weeping habit, white/cream flowers followed by berries, found naturally along creek lines.

Table SC6.3E.2 Approved street trees (under powerlines)

Botanical Name	Common Name	Use	Comments
Acmena hemilampra	Satin Ash	Urban Street Tree	Cream flowers followed by white berries. Lush green tree, Can require periodic lift pruning.
Acronychia imperforata	Fraser Island Apple	Coastal Street Tree	
Alectryon coriaceus	Beach Birds Eye	Coastal Street Tree	
Backhousea myrtifolia	Grey Myrtle	Urban/Rural Street Tree	
Backhousea citriodora	Lemon Scented Myrtle	Urban/Rural Street Tree	Small tree, creamy flowers, lemon scented leaves used in cooking
Corymbia ptychocarpa	Swamp Bloodwood	Urban/Rural Street Tree	Small tree, large leaves flowers Pink or Red (Winter/Spring)
Elaeocarpus reticulatus	'Prima Donna' cultivar	Urban/Rural Street Tree	Small evergreen tree, this cultivar has small pink frilled flowers
Phaleria clerodendron	Scented Daphne	Urban/Rural Street Tree	Small tree to 6m large, glossy green leaves. White fragrant flowers on trunk and branches predominantly in summer.
Xanthostemon chrysanthus	Golden Penda	Urban Street Tree	Small evergreen tree. Bright yellow pom pom flowers a feature.

Appendix SC6.3D Approved coastal trees

The following is a list of approved coastal trees for developments in the Bundaberg Regional Council area.

Table SC6.3F.1 Approved coastal trees development

Botanical Name	Common Name	Comments
Araucaria cunninghamii	Hoop pine	Very tall and erect pineshaped tree with symmetrical branches. Frost tender.
Banksia integrifolia	Coast banksia	Shapely tree with large dull green leaves with white underneath. Strongly scented yellow flowers in thick dense spikes
Banksia serrata	Red honeysuckle	Small tree with hard, toothed leaves. Widely cultivated as a coastal ornamental. Bird attractant.
Callistemon viminalis	Weeping bottlebrush	A large shrub or small tree 3-8m high with a graceful, weeping appearance that produces brilliant red flowers in spring and early summer.
Callitris columellaris	Coast cypress pine	A tall dense, evergreen pine that can be cut back to form a dense hedge. Prefers deep sandy loams.
Casuarina equisetifolia	Coast she-oak	Small she-oak with sparse drooping needle-like foliage. Highly resistant to wind and salt spray and grows on raw sand.
Cupaniopsis anacardioides	Tuckeroo	Excellent shade tree with dark green foliage. Will stand planting in exposed situations on poor soils along the coastal strip.
Eucalyptus ptychocarpa	Swamp bloodwood	A small spreading ornamental tree bearing masses of spectacular crimson, pink or white flowers. Has large leathery leaves.
Eucalyptus tereticornis	Blue gum	Eucalypt with smooth bluey grey trunk with irregular blotches. An important hollow producing tree. Flowers used by native birds and bats and leaves used by koalas.
Eucalyptus tessellaris	Moreton Bay Ash	A tall, slender, attractive eucalypt with smooth, white bark on the upper trunk and hard, chunky, tessellated bark around the base. White flowers attract parrots.
Eugenia reinwardtiana	Beach cherry	Shrub to 3m producing edible red fruits about 2cm in diameter.
Harpullia pendula	Tulipwood	Shade tree with large, glossy leaves and clusters of yellow flowers followed by red or yellow seed cases containing two shiny black seeds. Widely used as a street tree on a variety of soils where it rarely exceeds 10m.
Leptospermum petersonii	Lemon-scented teatree	Bushy shrub to 5m bearing masses of white flowers. Excellent for hedges and screens. Grows on most soil types.
Livistona decipiens	Weeping cabbage palm	Tall native palm with a dense head of fan-shaped leaves and slender trunk. Requires warm conditions for best growth and moist, shady conditions when young.
Melaleuca dealbata	Silver-leafed paperbark	Common tree on coastal creeks north of Maryborough. Greyish green leaves that fade to red with age. Bears white flowers attractive to birds and bees.
Melaleuca leucadendra	Broad-leaved tea-tree	Weeping tree with a fairly straight trunk covered with layers of papery white bark. Bird attracting when in flower.

Appendix SC6.3E Approved open forests and woodland species

The following is a list of approved open forests and woodland species for developments in the Bundaberg Regional Council area.

Table SC6.3G.1 Approved open forest and woodland species

Botanical Name	Common Name	Comments
Acacia disparrima (syn aulacocarpa)	Hickory wattle	Small fast growing tree with a height range of 6-20m. Produces sweetly scented yellow flowers in autumn. Good pioneer species widely used by native wildlife.
Acacia maidenii	Maiden's wattle	Small, compact, fast growing wattle bearing yellow flowers.
Alphitonia excelsa	Soap tree or red ash	Tree with a layered, spreading canopy and leaves distinctly white on the underside. Fast growing and widely used by native fauna.
Casuarina littoralis	Forest oak	Small tree usually with a conical shape and branches characteristically curving upwards. Usually found on stony or sandy soils.
Corymbia citriodora	Lemon-scented gum	A clean, straight tree of graceful appearance with smooth pinkish grey trunk. Leaves have a strong lemon scented smell when crushed. Food tree for greater gliders.
Corymbia intermedia	Pink bloodwood	A medium to tall tree covered with brownish-chunky bark. Flowers used by fruitbats and lorikeets.
Eucalyptus tereticornis	Blue gum	Eucalypt with smooth bluey grey trunk with irregular blotches. An important hollow producing tree. Flowers used by native birds and bats and leaves used by koalas.
Eucalyptus tessellaris	Moreton Bay Ash	A tall, slender, attractive eucalypt with smooth, white bark on the upper trunk and hard, chunky, tessellated bark around the base. White flowers attract parrots.
Grevillea banksii	Red flowered silky oak	An attractive small shrub with heads of red or white blooms and fern-like foliage.
Lophostemon confertus	Brush box	Tree with a dense crown of dark green, shiny leaves often used for street and park planting as a shade tree.
Lophostemon suaveolens	Swamp mahogany	A medium sized tree with rough, flaky bark and attractive white flowers. Fast growing and suitable for wet soils.
Melia azedarach	White cedar	A deciduous tree with attractive compound leaves and blue flowers, and clusters of yellow berries. Berries are poisonous to some domestic animals but eaten by possums and native birds.

Appendix SC6.3F Approved shrubs and vine forests species

The following is a list of approved shrubs and vine forests species for developments in the Bundaberg Regional Council area.

Table SC6.3H.1 Approved shrubs and vine forest species

Botanical Name	Common Name	Comments
Alchornea ilicifolia	Holly bush	Shrub or small tree with sharply toothed, stiff leathery leaves.
Alectryon connatus	Bird's eye alectryon	Small tree with young parts and flowers densely hairy. Pale blue-green colour under the leaves.
Aphananthe philippinensis	Rough-leaved elm	Small to medium-sized tree with rough-surfaced leaves and branchlets, and prickly toothed leaves.
Bridelia leichhardtii	Small-leaved brush ironbark	Shrub or small tree with small leaves and red fruit 4-5mm across.
Canthium coprosmoides	Coast canthium	Tall shrub or small tree with orange-red 2-lobed fruit 8mm across.
Cassine melanocarpa	Black olive plum	Small tree with thick and leathery leaves with shiny black fruit 1 ½ -2 ½ cm across.
Cleistanthus cunninghamii	Cleistanthus	Small tree with branchlets having raised protuberances. Fruit a 3-lobed capsule.
Clerodendrum floribundum	Lolly bush	Small tree or shrub with branchlets often purplish. Attractive black fruit are seated in a bright red petal like calyx.
Cupaniopsis anacardioides	Tuckeroo	Excellent shade tree with dark green foliage. Will stand planting in exposed situations on poor soils along the coastal strip.
Drypetes deplanchei	Yellow tulip	Medium sized tree with young leaves sharply toothed. Fruit a red/orange coloured drupe.
Ficus obliqua	Small-leaved Moreton Bay fig	Tall tree growing to 40m. Fruit a yellow to orange coloured fig. Fruit eaten by birds.
Flindersia australis	Crows ash	Large shade tree reaching to about 18m in open plantings. Foliage is dark green in a dense rounded crown. An excellent shade and avenue tree native to Queensland.
Flindersia collina	Leopard ash	Queensland native tree with slender trunk and glossy green crown and white flowers. Trunk has leopard like blotches. Ideal as a medium sized shade tree.
Harpullia pendula	Tulipwood	Shade tree with large, glossy leaves and clusters of yellow flowers followed by red or yellow seed cases containing two shiny black seeds. Widely used as a street tree on a variety of soils where it rarely exceeds 10m.
Jagera pseudorhus	Foambark	Small tree with capsules covered with rusty brown irritating hairs, splitting into 3 segments. Seeds eaten by ground-dwelling native fauna.
Melia azedarach	White cedar	A deciduous tree with attractive compound leaves and blue flowers, and clusters of yellow berries. Berries are poisonous to some domestic animals but eaten by possums and native birds.
Mischocarpus pyriformis	Yellow pear-fruit	Medium tree with yellow/orange, pear-shaped capsules. Slow growing.
Pleiogynium timorense	Burdekin plum	Medium to large tree with a large, spreading crown that produces an edible reddish purple plum.
Rapanea variabilis	Muttonwood	Small tree to about 5m. Produces mauve to blue small drupes about 5mm in diameter. Has attractive foliage and decorative fruit.

Appendix SC6.3G Approved species for banks of saltwater watercourses

The following is a list of approved species for banks of saltwater watercourses within developments in the Bundaberg Regional Council area.

Table SC6.3I.1 Approved species for banks of saltwater watercourses

Botanical Name	Common Name	Comments
Acacia disparrima (syn aulacocarpa)	Hickory wattle	Small fast growing tree with a height range of 6-20m. Produces sweetly scented yellow flowers in autumn. Good pioneer species widely used by native wildlife.
Alphitonia excelsa	Soap tree or red ash	Tree with a layered, spreading canopy and leaves distinctly white on the underside. Fast growing and widely used by native fauna.
*Callitris columellaris**	Coast cypress pine	A tall dense, evergreen pine that can be cut back to form a dense hedge. Prefers deep sandy loams.
*Casuarina equisetifolia**	Coast she-oak	Small she-oak with sparse drooping needle-like foliage. Highly resistant to wind and salt spray and grows on raw sand.
Casuarina glauca	Swamp oak	Fast growing sheoak native of saline and wet sites but used for windbreaks and shelter belts in heavy soils. Seeds eaten by pigeons.
Clerodendrum floribundum	Lolly bush	Small tree or shrub with branchlets often purplish. Attractive black fruit are seated in a bright red petal like calyx.
Cupaniopsis anacardioides	Tuckeroo	Excellent shade tree with dark green foliage. Will stand planting in exposed situations on poor soils along the coastal strip.
Eucalyptus tereticornis	Blue gum	Eucalypt with smooth bluey-grey trunk with irregular blotches. An important hollow-producing tree. Flowers used by native birds and bats and leaves used by koalas.
Eucalyptus tessellaris	Moreton Bay Ash	A tall, slender, attractive eucalypt with smooth, white bark on the upper trunk and hard, chunky, tessellated bark around the base. White flowers attract parrots.
Ficus opposita	Sandpaper fig	Small tree with sandpapery rough leaves. Figs eaten by native birds.
Glochidion ferdinandi	Coast glochidion	Small densely growing tree to 10m. Green to red roundish, ribbed capsule.
Jagera pseudorhus	Foambark	Small tree with capsules covered with rusty brown irritating hairs, splitting into 3 segments. Seeds eaten by ground-dwelling native fauna.
Livistona decipiens	Weeping cabbage palm	Tall native palm with a dense head of fan-shaped leaves and slender trunk. Requires warm conditions for best growth and moist, shady conditions when young.
Melia azedarach	White cedar	A deciduous tree with attractive compound leaves and blue flowers, and clusters of yellow berries. Berries are poisonous to some domestic animals but eaten by possums and native birds.
Pleiogynium timorense	Burdekin plum	Medium to large tree with a large, spreading crown that produces an edible reddish purple plum.

Note— * Found mainly in coastal river areas rather than saltwater river areas.

Appendix SC6.3H Approved species for banks of freshwater watercourses

The following is a list of approved species for banks of freshwater watercourses within developments in the Bundaberg Regional Council area.

Table SC6.3J.1 Approved species for banks of freshwater watercourses

Botanical Name	Common Name	Comments
Acacia disparrima (syn aulacocarpa)	Hickory wattle	Small fast growing tree with a height range of 6-20m. Produces sweetly scented yellow flowers in autumn. Good pioneer species widely used by native wildlife.
Alphitonia excelsa	Soap tree or red ash	Tree with a layered, spreading canopy and leaves distinctly white on the underside. Fast growing and widely used by native fauna.
Clerodendrum floribundum	Lolly bush	Small tree or shrub with branchlets often purplish. Attractive black fruit are seated in a bright red petal-like calyx.
Cupaniopsis anacardioides	Tuckeroo	Excellent shade tree with dark green foliage. Will stand planting in exposed situations on poor soils along the coastal strip.
Eucalyptus tereticornis	Blue gum	Eucalypt with smooth bluey-grey trunk with irregular blotches. An important hollow-producing tree. Flowers used by native birds and bats and leaves used by koalas.
Ficus coronata	Creek sandpaper fig	Small fig growing along creek banks. Fruit edible, purplish and hairy.
Glochidion sumatranum	Cheese tree	Small to medium fast growing tree. Fruits are flattened and fluted similar to round cheese.
Jagera pseudorhus	Foambark	Small tree with capsules covered with rusty brown irritating hairs, splitting into 3 segments. Seeds eaten by ground-dwelling native fauna.
Leptospermum polygalifolium	Wild may	Slender, twiggy shrub with small, narrow scented leaves and white flowers.
Melaleuca quinquenervia	Paper bark	Medium sized-tree that likes wet and wallum-like areas. Birds, bats and ants feed on the nectar.
Melia azedarach	White cedar	A deciduous tree with attractive compound leaves and blue flowers, and clusters of yellow berries. Berries are poisonous to some domestic animals but eaten by possums and native birds.
Pleiogynium timorense	Burdekin plum	Medium to large tree with a large, spreading crown that produces an edible reddish-purple plum.
Waterhousea floribunda	Weeping cherry	Excellent spreading tree with decorative yellow flowers and dense green foliage. Suited to moist soils. Fruit attractive to birds and bats.

Appendix SC6.3I Approved small trees and tall shrubs species

The following is a list of approved small trees and tall shrubs species for developments in the Bundaberg Regional Council area.

Table SC6.3K.1 Approved small tree and tall shrub species

Botanical Name	Common Name	Comments
Barklya syringifolia	Barklya, Golden shower tree	Slow growing, very showy, evergreen small tree with heart-shaped leaves. Bears masses of brilliant, yellow flowers in early summer.
Buckinghamia celsissima	Ivory curl	Showy small tree bearing masses of grevillea-like white flowers. Excellent tree for avenue planting. Rarely exceeds 6m in amenity plantings.
Callistemon polandii	Red bottlebrush	A bushy small tree growing to 5m that is noted for its long lasting 9cm long, bright red, gold-tipped flowers.
Callistemon Viminalis	Weeping bottlebrush	A large shrub or small tree 3-8m high with a graceful, weeping appearance that produces brilliant red flowers in spring and early summer.
Eucalyptus ptychocarpa	Swamp bloodwood	A small spreading ornamental tree bearing masses of spectacular crimson, pink or white flowers. Has large leathery leaves.
Euodia muelleri	Little euodia	Small tree to about 5m. Colourful reddish-pink flowers grow from trunk.
Harpullia pendula	Tulipwood	Shade tree with large, glossy leaves and clusters of yellow flowers followed by red or yellow seed cases containing two shiny black seeds. Widely used as a street tree on a variety of soils where it rarely exceeds 10m.
Leptospermum petersonii	Lemon-scented tea-tree	Bushy shrub to 5m bearing masses of white flowers. Excellent for hedges and screens. Grows on most soil types.
Melaleuca leucadendra	Broad-leaved tea-tree	Weeping tree with a fairly straight trunk covered with layers of papery white bark. Bird attracting when in flower.
Melaleuca viridiflora	Red-flowering tea-tree	Medium sized paperbark that has pale lemon to pink and occasionally red flowers.
Pittosporum rhombifolium	White pittosporum	Usually grows to about 6m in cultivation. Has a dense crown of glossy, dark green, toothed leaves and small white flowers which produces clusters of orange berries in winter.
Xanthostemon chrysanthus	Golden penda	Small tree that occurs in coastal north Qld. Flowers are bright yellow, very prominent and bird attracting. Excellent specimen tree where ample moisture is available.

Appendix SC6.3J Unacceptable plant species

The following plant species are unacceptable for landscaping within the Bundaberg Regional Council area.

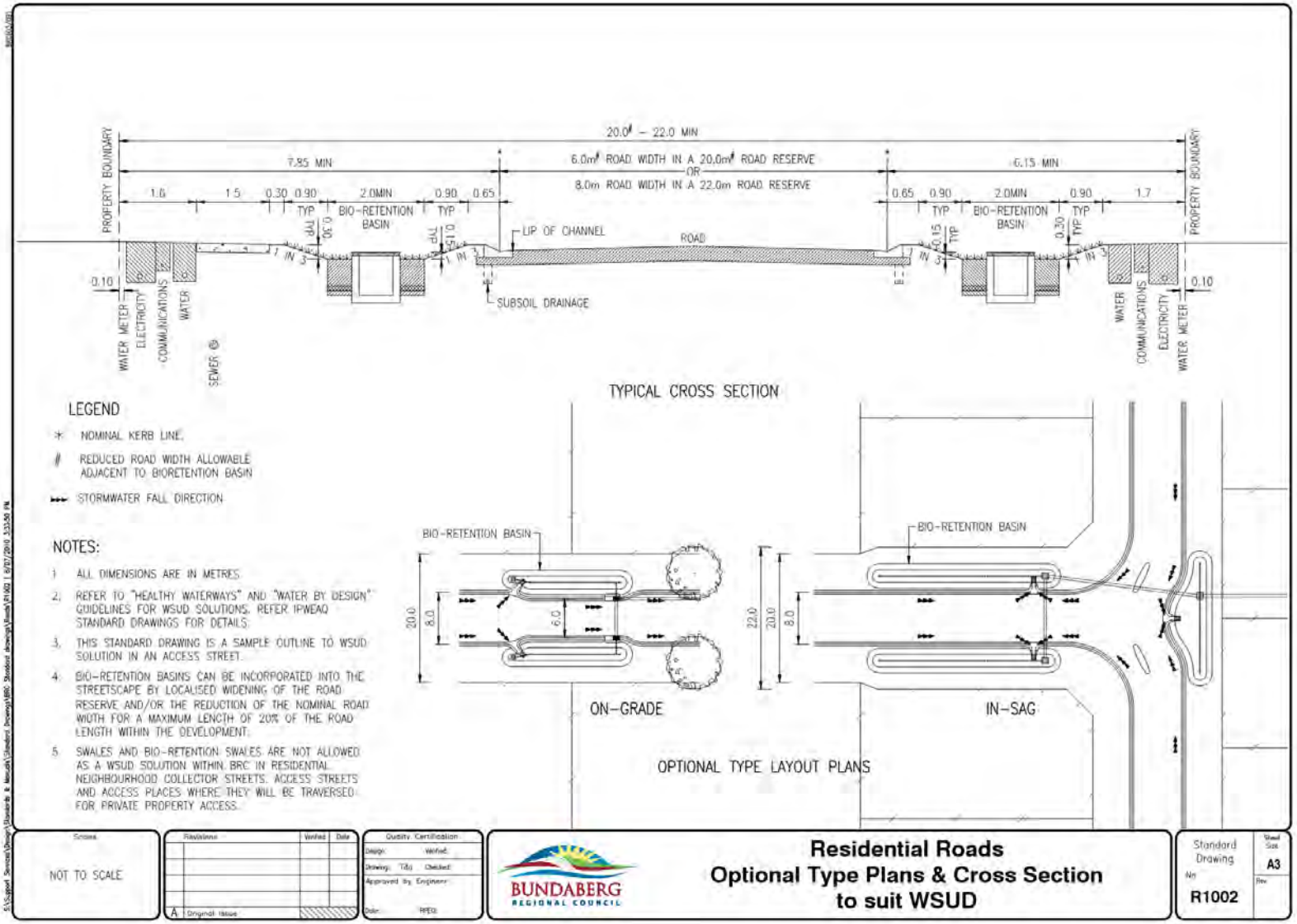
Table SC6.3L.1 Unacceptable plant species

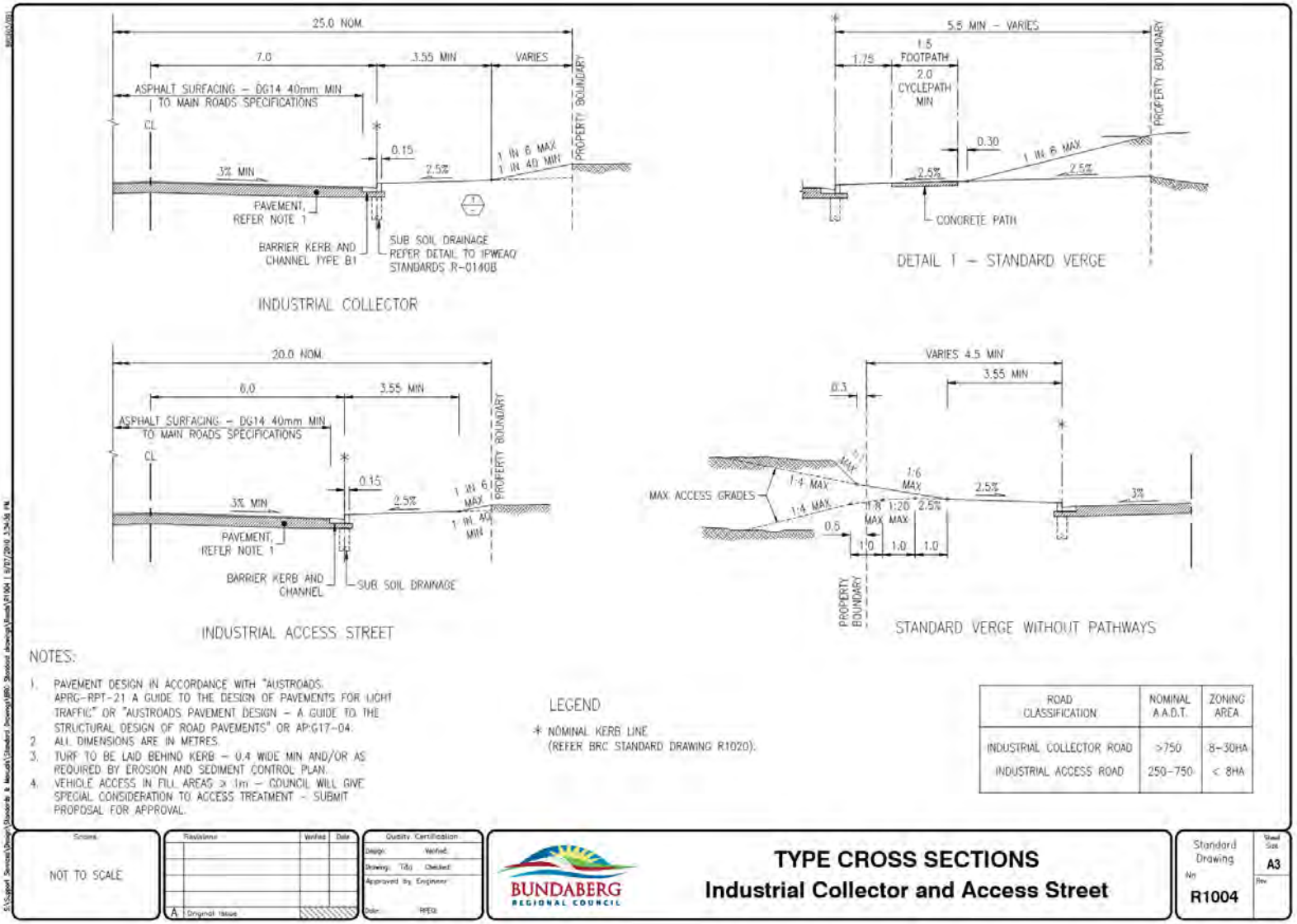
Botanical Name	Common Name
Acacia farnesiana	Mimosa Bush
Acalypha sinensis	Chinese Acalypha
Acetosa sagittata	Rambling Dock
Agave americana	Century Plant
Agave sisalana	Sisal
Agave vivipara var. vivipara	Sisal
Ageratina adenophora	Crofton Weed
Ageratina riparia	Mistflower
Ageratum houstonianum	Blue Billygoat Weed
Alternanthera philoxeroides	Aligator Weed
Anredera cordifolia	Madeira Vine, Lamb's Tail, Potato Vine
Araujia horotum	White Moth Vine
Ardisia crispa/crenata	Coral Berry, Ardisia
Ardisia humilis	Spice Berry
Arecastrum (syn. Syagrus) romanzoffianum	Cocos Palm
Aristolochia elegans	Dutchman's Pipe or Calico Flower
Arunda donax	Giant Reed
Asclepias curassavica	Red Cotton Bush
Asparagus africans	Asparagus fern
Asparagus (Myrsiphullum) asparagoides	Bridal Creeper
Asparagus densiflora	Asparagus fern
Asparagus plumosus	Ferny Asparagus
Baccharis halimifolia	Groundsel Bush
Bidens pilosa	Cobbler's Pegs
Brachiaria decumbens	Signal Grass
Brachiaria multica	Para Grass
Bryophyllum delagoense (Syn.B.diagremontianum x tubiflorum)	Mother-of-Millions Hybrid
Bryophyllum pinnatum	Live Plant
Bryophyllum tubiflorum	Mother-of-Millions
Caesilpinia decapetala	Thorny Poinciana
Callisia fragrans	Purple Succulent
Canna species (indica and generalis)	Canna Lilly
Cardiospermum grandiflorum	Balloon Vine
Cascabela thevitia syn. Thevitia peruviana)	Yellow Oleander
Cassia coluteoides	Easter Cassia
Catharanthus roseus	Pink Periwinkle
Celtis sinensis	Chinese Elm, Chinese Celtis
Cenchrus caliculatis	
Cenchrus echinatus	Mossman River Grass
Cestrum parqui	Cestrum
Chloris gayana	Rhodes Grass
Chrysanthemoides monilifera subsp. rotunda	Bitou Bush
Cinnamomum camphora	Camphor Laurel
Commelina benghalensis	Hairy Wandering Jew

Botanical Name	Common Name
Conyza bonariensis	Flax-leaf Fleabane
Conyza canadensis	Canadian Fleabane
Conyza sumantrensis	Tall Fleabane
Corymbia torelliana	Cadaga or Cadaghi
Cynodon dactylon	Bahama Grass / Green Couch
Cyperus brevifolius	Mullumbimy Couch
Cyperus involucratus	African Sedge
Cyperus rotundus	Nut Grass
Desmodium intortum	Green-leaved Desmodium
Desmodium uncinatum	Silver-leaved Desmodium
Digitaria eriantha	Pangola Grass
Duranta erecta	Duranta, Blue Sky Flower
Eichornia crassipes	Water Hyacinth
Eleusine indica	Crowsfoot Grass
Eragrostis curvula	African Lovegrass
Erythrina crista-galli	Cockspur Coral Tree
Eugenia uniflora	Brazillian Cherry
Euphorbia cyathophora	Painted Spurge
Euphorbia heterophylla	Milk Weed
Furcrea foetida	Cuban Hemp
Furcrea selloa	Hemp
Gleditisia triacanthos (+ all ornamental varieties)	Honey Locust Tree
Gloriosa superba	Glory Lilly
Gomphocarpus physocarpus	Balloon Cotton Bush
Gymnocoronis spilanthoides	Senegal Tea
Hymenachne amplexicaulis	
Hypoestes phyllostachya	Polka-dot Plant
Impatiens walleriana	Balsam
Ipomoea cairica	Mile a Minute
Ipomoea indica	Morning Glory
Juncus articulatus	Jointed Rush
Koelreuteria elegans	Golden Rain Tree
Lantana camara var. camara	Lantana
Lantana montevidensis	Creeping Lantana
Leucaena leucocephala	Leucaena
Ligustrum lucidum	Privet Broad Leaf
Ligustrum sinense	Privet Small Leaf, Chinese Privet
Lilium formosanum	Taiwam Lily
Lonicera japonica	Japanese Honeysuckle
Ludwigia ochoualis	
Lycium ferocissimum	African Boxthorn
Macfadyena unuis-cati	Cats Claw Creeper
Macroptilium atropurpureum	Siratro
Macrotyloma axillare	Perrenia Horse Gram
Melinis minutiflora	Molasses Grass
Melinis repens	Red Natal Grass
Mimosa pudica	Common Sensitive Plant
Murraya paniculata cv. Exotica	Murraya, mock orange
Myriophyllum aqauticum	Parrot's Feather
Nasella neessiana	Chilean Needle Grass

Botanical Name	Common Name
Neonotonia wightii	Glycine
Nephrolepsis cordifolia	Fish bone fern
Nymphaea caerulea subsp.zanzibarensis	Blue Lotus
Ochna serrulata	Ochna, Mickey Mouse Bush
Oenthera drummondii subsp. drummondii	Beach evening Primrose
Olea africana	African Olive
Olea europea	Olive
Optuntia spp.	Drooping Pear Tree, prickly pears
Oxalis corniculata	Creeping Oxalis, Yellow Wood Sorrell
Panicum maxiumum	Green Panic / Guinea Grass
Parkinsonia aculeata	Jeruselum Thorn
Paspalum conjugatum	Paspalum
Paspalum dilatatum	Paspalum
Paspalum mandiocanum	
Paspalum notatum	Bahia Grass
Passiflora edulis	Passion Fruit
Passiflora foetida	Stinking Passion Vine
Passiflora suberosa	Corky Passion Vine
Passiflora subpeltata	White Passion Fruit
Parthenium hysterophorus	Parthenium Weed
Paulownia spp	Paulownia
Pennisetum alopecuroies	Swamp Foxtail
Pennisetum clandestinum	Kikuyu Grass
Pennisetum purpureum	Elephant Grass
Pennisetum setaceum	African Fountain Grass
Phyla canescens	Condamine Couch / Lippia
Phyllostachys aurea	Fishpole Bamboo
Phytolacca octandra	Inkweed
Pinus caribaea	Caribbean Slash Pine
Pinus elliottii	Slash Pine
Pistia stratiotes	Water Lettuce
Prosopis pallida	Algaroba
Prunus munsoniana	Wild Goose Plum
Psidium guajava	Guajava, Guava
Pueraria lobata	Kudzu
Pyrostegia venusta	Flame Vine
Rhaphiolepis indica	Indian Hawthorn
Ricinus communis	Castor Oil Plant
Rivina humilis	Spice Berry
Rorippa nasturtium-aquaticum (syn. Nasturtium officinale)	Watercress
Rubus bellobatus	Kittatinny Blackberry
Rubus discolor (R.fruticosa complex)	a Blackberry
Rubus ellipticus	Yellow Berry
Rubus fruticosus	Blackberry
Ruellia malacosperma	Ruellia
Ruppia maratima	Sea Tassel
Salvia coccinea	Red Salvia
Salvinia molesta	Salvinia
Sansevieria trifasciata	Mother in Laws Tongue

Botanical Name	Common Name
Scheffera actinophylla	Umbrella Tree
Schinus molle	Pepper Tree
Schinus terebinthifolia	Broad Leafed Pepperina Tree, Pepper Tree
Senecio madagascariensis	Fire Weed
Senecio tamoides	Canary Creeper
Senna pendulina	Easter cassia, Winter senna
Senna septentrionalis (syn. floribunda)	Arsenic Bush
Setaria sphacelata	South African Pigeon Grass
Sida rhombifolia	Paddy's Lucerna
Solanum erianthum	Tobacco Bush
Solanum hispidum	Giant Devil's Fig
Solanum mauritianum	Wild tobacco tree
Solanum seaforthianum	Brazilian nightshade
Solanum torvum	Devil's Fig
Solidago canadensis var. scabra	Canadian Goldenrod
Spathodea campanulata	African Tulip Tree
Sphagneticola (syn. Wedelia) trilobata	Singapore Daisy
Sporobolus africanus	Paramatta Grass
Sporobolus fertilis	Giant Paramatta Grass
Sporobolus jacquemontii	American rat's tail Grass
Stylosanthes scabra	Shrubby Stylo
Tagetes minuta	Stinking Roger
Stenolobium stans	Yellow Bells, Yellow Bell Flower
Themada quadrivalvis	Grader Grass, Thatch Grass
Thunbergia alata	Black-eyed Susan
Thunbergia grandiflora	Blue Thunbergia
Tithonia diversifolia	Mexican Sunflower
Tradescantia albiflora	Wandering jew
Tradescantia zebrina	Zebrina
Triumfetta rhomboidea	Chinese Burr
Verbesina enceloides	Crownbeard
Xanthium spinosum	Bathurst Burr


20.0 – 22.0 MIN
7.85 MIN
6.0m ROAD WIDTH IN A 20.0m ROAD RESERVE
OR
8.0m ROAD WIDTH IN A 22.0m ROAD RESERVE
6.15 MIN
PROPERTY BOUNDARY
1.0
1.5
0.30
0.90
2.0MIN
BIO-RETENTION BASIN
0.65
1.7
TYP
LIP OF CHANNEL
ROAD
SUBSOIL DRAINAGE
0.10
WATER METER
ELECTRICITY
COMMUNICATIONS
WATER
SEWER
TYPICAL CROSS SECTION
LEGEND
NOMINAL KERB LINE.
REDUCED ROAD WIDTH ALLOWABLE ADJACENT TO BIORETENTION BASIN
STORMWATER FALL DIRECTION
NOTES:
1. ALL DIMENSIONS ARE IN METRES.
2. REFER TO "HEALTHY WATERWAYS" AND "WATER BY DESIGN" GUIDELINES FOR WSUD SOLUTIONS. REFER IPWEAQ STANDARD DRAWINGS FOR DETAILS.
3. THIS STANDARD DRAWING IS A SAMPLE OUTLINE TO WSUD SOLUTION IN AN ACCESS STREET.
4. BIO-RETENTION BASINS CAN BE INCORPORATED INTO THE STREETSCAPE BY LOCALISED WIDENING OF THE ROAD RESERVE AND/OR THE REDUCTION OF THE NOMINAL ROAD WIDTH FOR A MAXIMUM LENGTH OF 20% OF THE ROAD LENGTH WITHIN THE DEVELOPMENT.
5. SWALES AND BIO-RETENTION SWALES ARE NOT ALLOWED AS A WSUD SOLUTION WITHIN BRC IN RESIDENTIAL NEIGHBOURHOOD COLLECTOR STREETS, ACCESS STREETS AND ACCESS PLACES WHERE THEY WILL BE TRAVERSED FOR PRIVATE PROPERTY ACCESS.
BIO-RETENTION BASIN
20.0
8.0
6.0
ON-GRADE
22.0
20.0
8.0
IN-SAG
OPTIONAL TYPE LAYOUT PLANS
Scales
NOT TO SCALE
Revisions
Verified
Date
A
Original Issue
Quality Certification
Design:
Verified:
Drawing:
Title
Checked:
Approved by Engineer:
Date:
RPEQ:
BUNDABERG
REGIONAL COUNCIL
Residential Roads
Optional Type Plans & Cross Section
to suit WSUD
Standard Drawing No
R1002
Sheet Size
A3
Rev



NOTES:

1. PAVEMENT DESIGN IN ACCORDANCE WITH "AUSTROADS APRG-RPT-21 A GUIDE TO THE DESIGN OF PAVEMENTS FOR LIGHT TRAFFIC" OR "AUSTROADS PAVEMENT DESIGN – A GUIDE TO THE STRUCTURAL DESIGN OF ROAD PAVEMENTS" OR AP:G17-04.
2. ALL DIMENSIONS ARE IN METRES.
3. TURF TO BE LAID BEHIND KERB – 0.4 WIDE MIN AND/OR AS REQUIRED BY EROSION AND SEDIMENT CONTROL PLAN.
4. VEHICLE ACCESS IN FILL AREAS > 1m – COUNCIL WILL GIVE SPECIAL CONSIDERATION TO ACCESS TREATMENT – SUBMIT PROPOSAL FOR APPROVAL.

LEGEND

* NOMINAL KERB LINE (REFER BRC STANDARD DRAWING R1020).

ROAD CLASSIFICATION	NOMINAL A.A.D.T.	ZONING AREA
INDUSTRIAL COLLECTOR ROAD	>750	8-30HA
INDUSTRIAL ACCESS ROAD	250-750	< 8HA

Scales: NOT TO SCALE

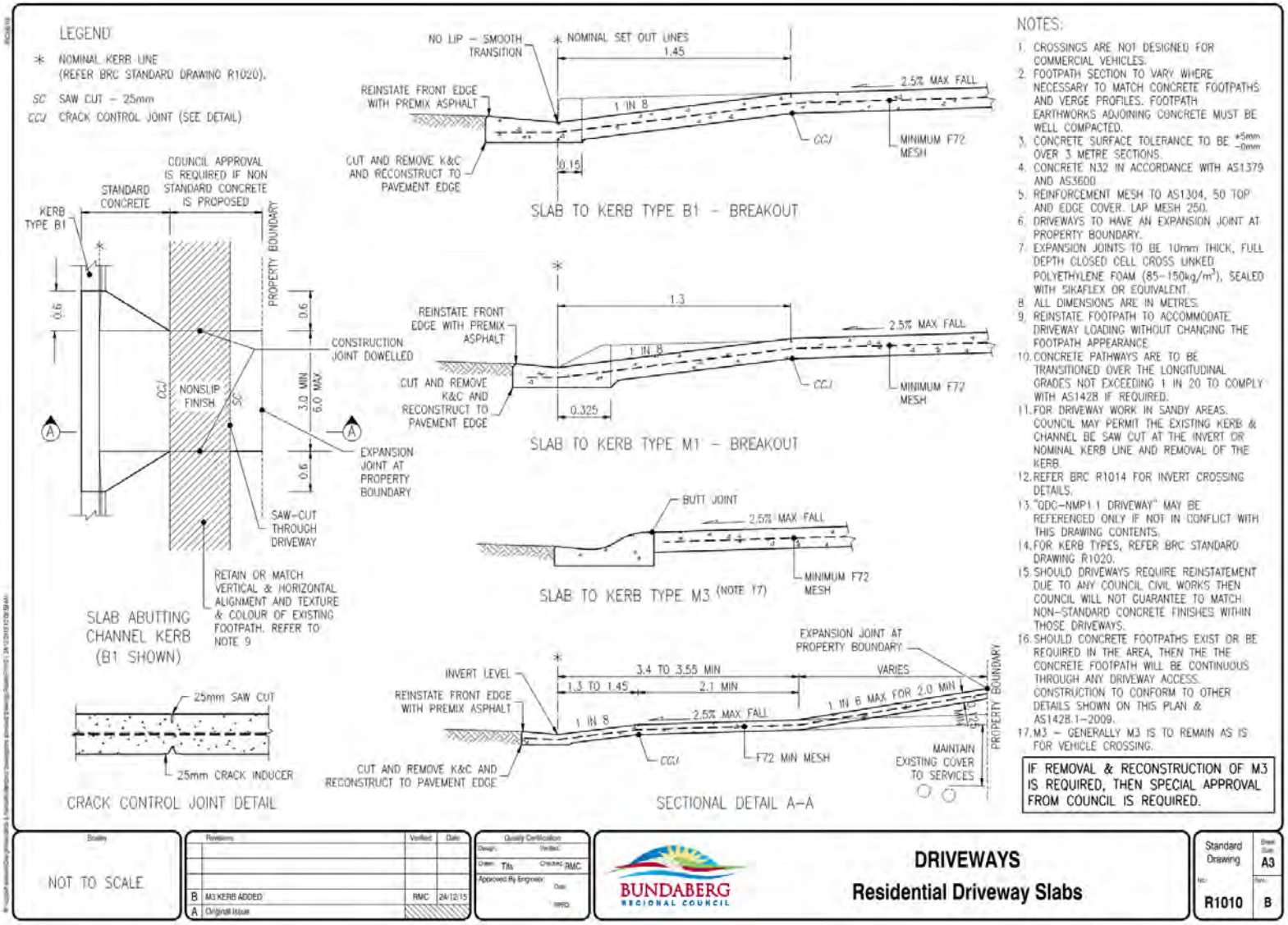
Revisions: A Original Issue

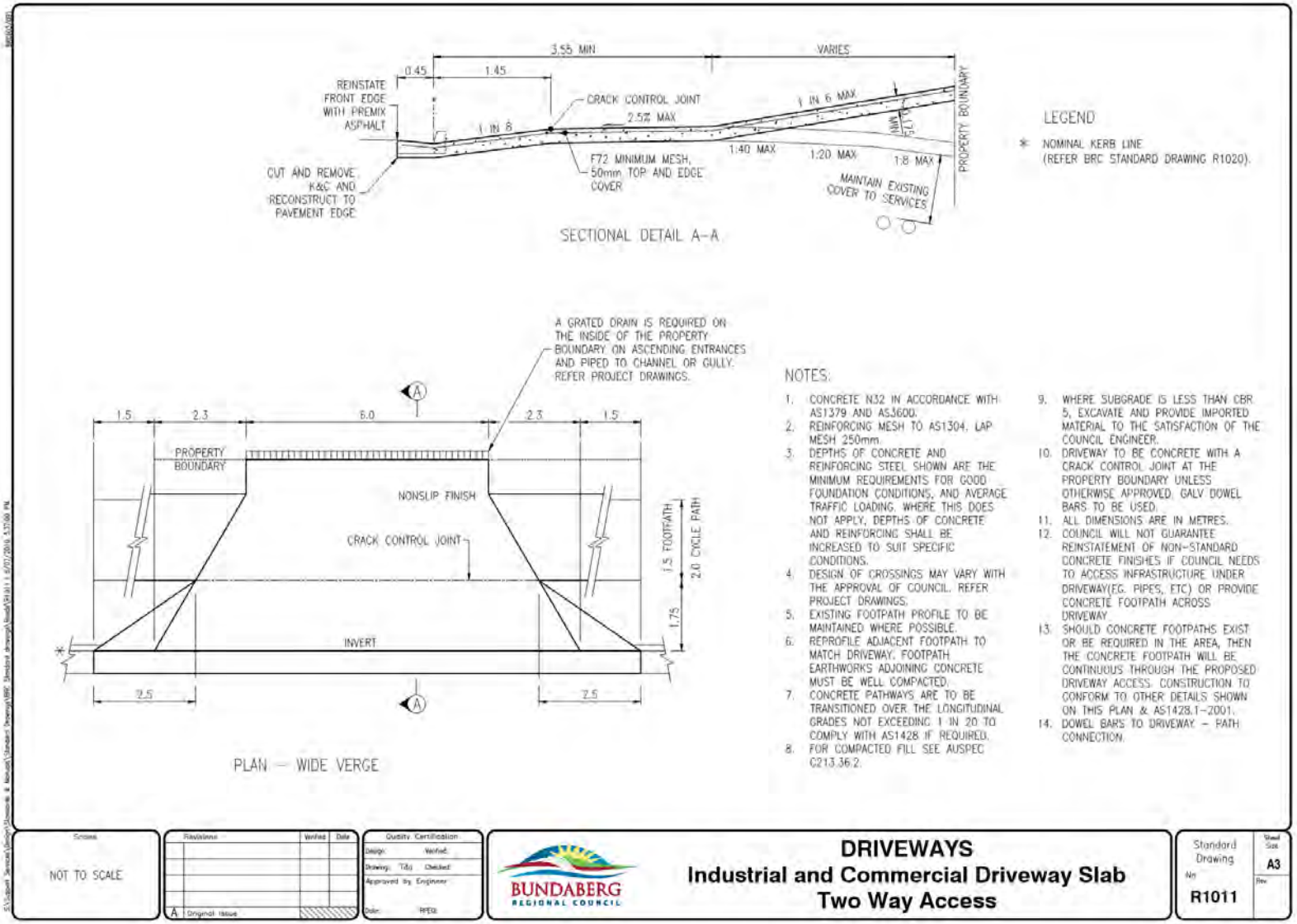
Quality Certification: Design: Verified: Drawing: Tdg: Checked: Approved by Engineer: Date: RPEQ:

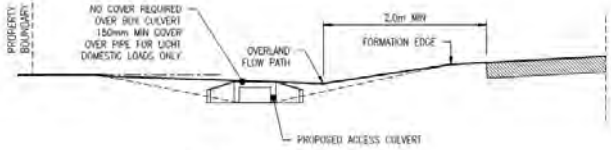
BUNDABERG REGIONAL COUNCIL

TYPE CROSS SECTIONS
Industrial Collector and Access Street

Standard Drawing No: **R1004** Sheet Size: A3 Rev:


LEGEND
* NOMINAL KERB LINE (REFER BRC STANDARD DRAWING R1020).
SC SAW CUT – 25mm
CCJ CRACK CONTROL JOINT (SEE DETAIL)
NO LIP – SMOOTH TRANSITION
NOMINAL SET OUT LINES
1.45
REINSTATE FRONT EDGE WITH PREMIX ASPHALT
1 IN 8
2.5% MAX FALL
CCJ
MINIMUM F72 MESH
CUT AND REMOVE K&C AND RECONSTRUCT TO PAVEMENT EDGE
0.15
SLAB TO KERB TYPE B1 – BREAKOUT
1.3
REINSTATE FRONT EDGE WITH PREMIX ASPHALT
1 IN 8
2.5% MAX FALL
CCJ
MINIMUM F72 MESH
CUT AND REMOVE K&C AND RECONSTRUCT TO PAVEMENT EDGE
0.325
SLAB TO KERB TYPE M1 – BREAKOUT
BUTT JOINT
2.5% MAX FALL
MINIMUM F72 MESH
SLAB TO KERB TYPE M3 (NOTE 17)
COUNCIL APPROVAL IS REQUIRED IF NON STANDARD CONCRETE IS PROPOSED
STANDARD CONCRETE
KERB TYPE B1
PROPERTY BOUNDARY
0.6
CONSTRUCTION JOINT DOWELLED
CCJ
NONSLIP FINISH
SC
3.0 MIN 6.0 MAX
EXPANSION JOINT AT PROPERTY BOUNDARY
SAW-CUT THROUGH DRIVEWAY
RETAIN OR MATCH VERTICAL & HORIZONTAL ALIGNMENT AND TEXTURE & COLOUR OF EXISTING FOOTPATH. REFER TO NOTE 9
SLAB ABUTTING CHANNEL KERB (B1 SHOWN)
25mm SAW CUT
25mm CRACK INDUCER
CRACK CONTROL JOINT DETAIL
EXPANSION JOINT AT PROPERTY BOUNDARY
INVERT LEVEL
3.4 TO 3.55 MIN
VARIES
1.3 TO 1.45
2.1 MIN
REINSTATE FRONT EDGE WITH PREMIX ASPHALT
1 IN 8
2.5% MAX FALL
1 IN 6 MAX FOR 2.0 MIN
CCJ
F72 MIN MESH
MAINTAIN EXISTING COVER TO SERVICES
PROPERTY BOUNDARY
CUT AND REMOVE K&C AND RECONSTRUCT TO PAVEMENT EDGE
SECTIONAL DETAIL A–A
NOTES:
1. CROSSINGS ARE NOT DESIGNED FOR COMMERCIAL VEHICLES.
2. FOOTPATH SECTION TO VARY WHERE NECESSARY TO MATCH CONCRETE FOOTPATHS AND VERGE PROFILES. FOOTPATH EARTHWORKS ADJOINING CONCRETE MUST BE WELL COMPACTED.
3. CONCRETE SURFACE TOLERANCE TO BE +5mm −0mm OVER 3 METRE SECTIONS.
4. CONCRETE N32 IN ACCORDANCE WITH AS1379 AND AS3600.
5. REINFORCEMENT MESH TO AS1304, 50 TOP AND EDGE COVER. LAP MESH 250.
6. DRIVEWAYS TO HAVE AN EXPANSION JOINT AT PROPERTY BOUNDARY.
7. EXPANSION JOINTS TO BE 10mm THICK, FULL DEPTH CLOSED CELL CROSS LINKED POLYETHYLENE FOAM (85–150kg/m³), SEALED WITH SIKAFLEX OR EQUIVALENT.
8. ALL DIMENSIONS ARE IN METRES.
9. REINSTATE FOOTPATH TO ACCOMMODATE DRIVEWAY LOADING WITHOUT CHANGING THE FOOTPATH APPEARANCE.
10. CONCRETE PATHWAYS ARE TO BE TRANSITIONED OVER THE LONGITUDINAL GRADES NOT EXCEEDING 1 IN 20 TO COMPLY WITH AS1428 IF REQUIRED.
11. FOR DRIVEWAY WORK IN SANDY AREAS, COUNCIL MAY PERMIT THE EXISTING KERB & CHANNEL BE SAW CUT AT THE INVERT OR NOMINAL KERB LINE AND REMOVAL OF THE KERB.
12. REFER BRC R1014 FOR INVERT CROSSING DETAILS.
13. "QDC–NMP1.1 DRIVEWAY" MAY BE REFERENCED ONLY IF NOT IN CONFLICT WITH THIS DRAWING CONTENTS.
14. FOR KERB TYPES, REFER BRC STANDARD DRAWING R1020.
15. SHOULD DRIVEWAYS REQUIRE REINSTATEMENT DUE TO ANY COUNCIL CIVIL WORKS THEN COUNCIL WILL NOT GUARANTEE TO MATCH NON–STANDARD CONCRETE FINISHES WITHIN THOSE DRIVEWAYS.
16. SHOULD CONCRETE FOOTPATHS EXIST OR BE REQUIRED IN THE AREA, THEN THE THE CONCRETE FOOTPATH WILL BE CONTINUOUS THROUGH ANY DRIVEWAY ACCESS. CONSTRUCTION TO CONFORM TO OTHER DETAILS SHOWN ON THIS PLAN & AS1428.1–2009.
17. M3 – GENERALLY M3 IS TO REMAIN AS IS FOR VEHICLE CROSSING.
IF REMOVAL & RECONSTRUCTION OF M3 IS REQUIRED, THEN SPECIAL APPROVAL FROM COUNCIL IS REQUIRED.
NOT TO SCALE
B M3 KERB ADDED RMC 24/12/15
A Original Issue
BUNDABERG REGIONAL COUNCIL
DRIVEWAYS
Residential Driveway Slabs
Standard Drawing
A3
R1010
B

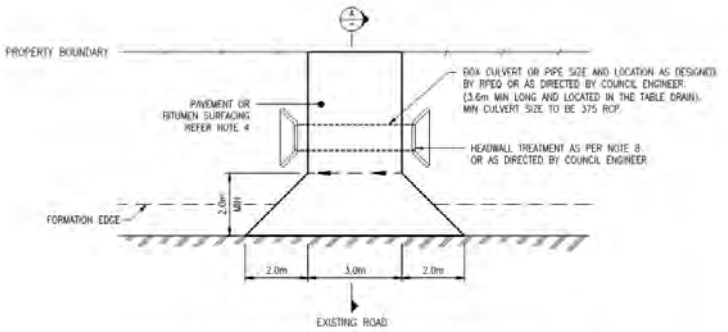

3.55 MIN
VARIES
0.45
1.45
REINSTATE FRONT EDGE WITH PREMIX ASPHALT
CRACK CONTROL JOINT
2.5% MAX
1 IN 8
1 IN 6 MAX
F72 MINIMUM MESH, 50mm TOP AND EDGE COVER
1:40 MAX
1:20 MAX
1:8 MAX
CUT AND REMOVE K&C AND RECONSTRUCT TO PAVEMENT EDGE
MAINTAIN EXISTING COVER TO SERVICES
PROPERTY BOUNDARY
SECTIONAL DETAIL A-A
A GRATED DRAIN IS REQUIRED ON THE INSIDE OF THE PROPERTY BOUNDARY ON ASCENDING ENTRANCES AND PIPED TO CHANNEL OR GULLY. REFER PROJECT DRAWINGS.
1.5
2.3
6.0
2.3
1.5
PROPERTY BOUNDARY
NONSLIP FINISH
CRACK CONTROL JOINT
1.5 FOOTPATH
2.0 CYCLE PATH
1.75
INVERT
2.5
2.5
PLAN – WIDE VERGE
LEGEND
* NOMINAL KERB LINE (REFER BRC STANDARD DRAWING R1020).
NOTES:
1. CONCRETE N32 IN ACCORDANCE WITH AS1379 AND AS3600.
2. REINFORCING MESH TO AS1304. LAP MESH 250mm.
3. DEPTHS OF CONCRETE AND REINFORCING STEEL SHOWN ARE THE MINIMUM REQUIREMENTS FOR GOOD FOUNDATION CONDITIONS, AND AVERAGE TRAFFIC LOADING. WHERE THIS DOES NOT APPLY, DEPTHS OF CONCRETE AND REINFORCING SHALL BE INCREASED TO SUIT SPECIFIC CONDITIONS.
4. DESIGN OF CROSSINGS MAY VARY WITH THE APPROVAL OF COUNCIL. REFER PROJECT DRAWINGS.
5. EXISTING FOOTPATH PROFILE TO BE MAINTAINED WHERE POSSIBLE.
6. REPROFILE ADJACENT FOOTPATH TO MATCH DRIVEWAY. FOOTPATH EARTHWORKS ADJOINING CONCRETE MUST BE WELL COMPACTED.
7. CONCRETE PATHWAYS ARE TO BE TRANSITIONED OVER THE LONGITUDINAL GRADES NOT EXCEEDING 1 IN 20 TO COMPLY WITH AS1428 IF REQUIRED.
8. FOR COMPACTED FILL SEE AUSPEC C213.36.2.
9. WHERE SUBGRADE IS LESS THAN CBR 5, EXCAVATE AND PROVIDE IMPORTED MATERIAL TO THE SATISFACTION OF THE COUNCIL ENGINEER.
10. DRIVEWAY TO BE CONCRETE WITH A CRACK CONTROL JOINT AT THE PROPERTY BOUNDARY UNLESS OTHERWISE APPROVED. GALV DOWEL BARS TO BE USED.
11. ALL DIMENSIONS ARE IN METRES.
12. COUNCIL WILL NOT GUARANTEE REINSTATEMENT OF NON-STANDARD CONCRETE FINISHES IF COUNCIL NEEDS TO ACCESS INFRASTRUCTURE UNDER DRIVEWAY(EG. PIPES, ETC) OR PROVIDE CONCRETE FOOTPATH ACROSS DRIVEWAY.
13. SHOULD CONCRETE FOOTPATHS EXIST OR BE REQUIRED IN THE AREA, THEN THE CONCRETE FOOTPATH WILL BE CONTINUOUS THROUGH THE PROPOSED DRIVEWAY ACCESS. CONSTRUCTION TO CONFORM TO OTHER DETAILS SHOWN ON THIS PLAN & AS1428.1-2001.
14. DOWEL BARS TO DRIVEWAY – PATH CONNECTION.
Scales
NOT TO SCALE
Revisions
Verified
Date
A Original Issue
Quality Certification
Design: Verified:
Drawing: T.D.I. Checked:
Approved by Engineer:
Date: RPEQ:
BUNDABERG REGIONAL COUNCIL
DRIVEWAYS
Industrial and Commercial Driveway Slab
Two Way Access
Standard Drawing No
R1011
Sheet Size
A3
Rev



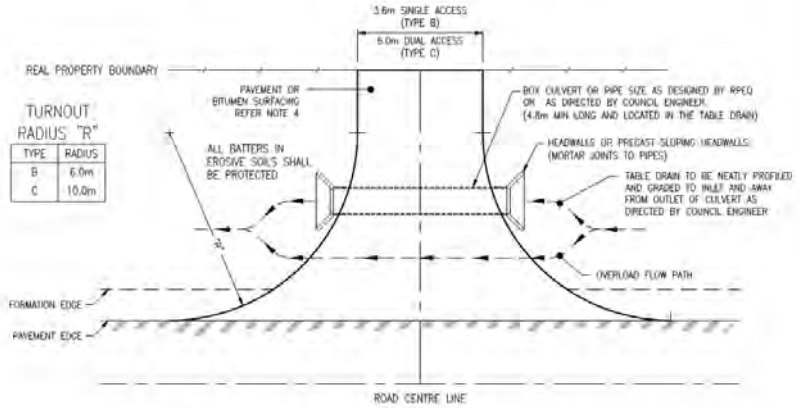
TYPICAL SECTION A–A

NOTES:

1. THE CONSTRUCTION & MAINTENANCE OF PROPERTY ACCESSES IS THE RESPONSIBILITY OF THE LAND OWNER.
2. BUNDABERG REGIONAL COUNCIL (BRC) APPROVAL TO UNDERTAKE CIVIL WORKS IN THE ROAD RESERVE IS REQUIRED PRIOR TO ANY CIVIL WORKS BEING UNDERTAKEN.
3. THE ACCESS CULVERT – RCBC OR RCP SIZE AND LOCATION UNDER THE ACCESS SHALL BE NOMINATED BY A COUNCIL REPRESENTATIVE. SHALLOW ROADSIDE DRAINS MAY REQUIRE THE INSTALLATION OF AN ACCESS AS PER BRC PLAN R1013.
4. PAVEMENT REQUIREMENTS IF NOMINATED: THE CIVIL CONTRACTOR SHOULD DETERMINE THE DEPTH OF PAVEMENT TO SUIT LOAD REQUIREMENTS AFTER EXCAVATION HAS BEEN COMPLETED;
   a. PAVEMENT DRIVEWAYS:
      - THE MINIMUM DEPTH OF PAVEMENT IS TO BE 150mm OF CBR 60. ZERO COVER IS ALLOWED OVER RCBC.
      - IF A BITUMEN SEALING IS REQUIRED, THEN IT SHALL BE A TWO COAT SEAL WITH 16mm & 10mm AGGREGATE TO COUNCIL STANDARDS.
      - IF ASPHALT IS REQUIRED, IT WILL ALSO BE TO COUNCIL STANDARDS (25mm MIN)
   b. CONCRETE DRIVEWAYS:
      - IF CONCRETE IS REQUIRED, IT WILL BE OFF FORMATION EDGE, OR 1m OFF BITUMEN EDGE WHICHEVER IS GREATER, OR AS DIRECTED BY COUNCIL REPRESENTATIVE.
      - MIN. CONCRETE ACCESS TO HAVE N32 CONCRETE, 100mm THICK ON 100mm THICK SUB-BASE GRAVEL. CONCRETE REINFORCED WITH F72 MESH (40mm TOP COVER)
5. FOR TRAFFIC CONTROL AND SAFETY, THE MINIMUM REQUIREMENTS FROM THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) MUST BE IN PLACE BEFORE WORK COMMENCES.
6. DRIVEWAY ACCESS IS TO BE CONSTRUCTED SO AS TO ALLOW AN OVERLAND FLOW PATH OVER THE ACCESS ROAD. THIS OVERLAND FLOW PATH IS TO BE GENERALLY BETWEEN THE ACCESS CULVERT AND THE EDGE OF ROAD OR AS DIRECTED BY COUNCIL ENGINEER. GENERALLY THE OVERLAND FLOW PATH IS TO BE 300MM BELOW ROAD CROWN.
7. BOX CULVERT ACCESS TO HAVE WINGWALLS AND APRON.
8. PIPE CULVERTS TO HAVE PRECAST HEADWALLS WITH WINGS (OR EQUAL CRS HUMES HEADWALLS) FOR SINGLE/MULTIPLE PIPES OR CAST INSITU ENDWALLS AS PER TMR DRAWINGS 1304,1305 & 1306.
9. COUNCIL MAY DIRECT THE USE OF SLOPING HEADWALLS IF REQUIRED IN LIEU OF THE HEADWALL TREATMENT MENTIONED IN NOTE 8.
10. MINIMUM LONGITUDINAL GRADE OF CULVERT IS 0.3%.



TYPE A – SINGLE ACCESS WITH CULVERT (LOW ORDER ROAD)



TYPE B AND C – ACCESS WITH CULVERT

Scales: NOT TO SCALE

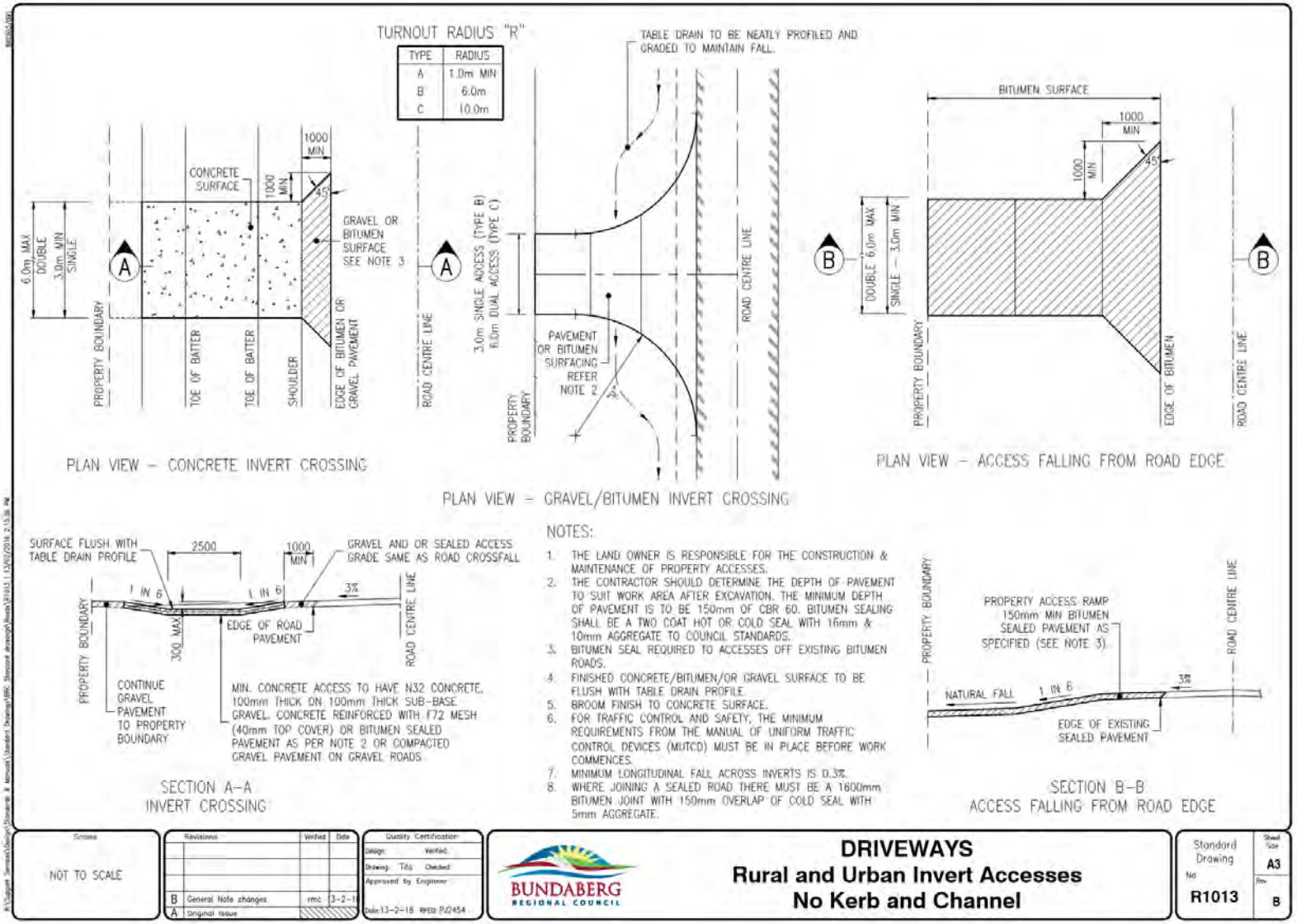
	Revisions	Verified	Date
D	PLANS AND NOTES AMENDMENT	RMC	03/17
C	SECTIONAL DETAIL AND NOTES AMENDMENT	RMC	24/12/15
B	NOTE 4 AMENDMENT		12/10
A	Original Issue		

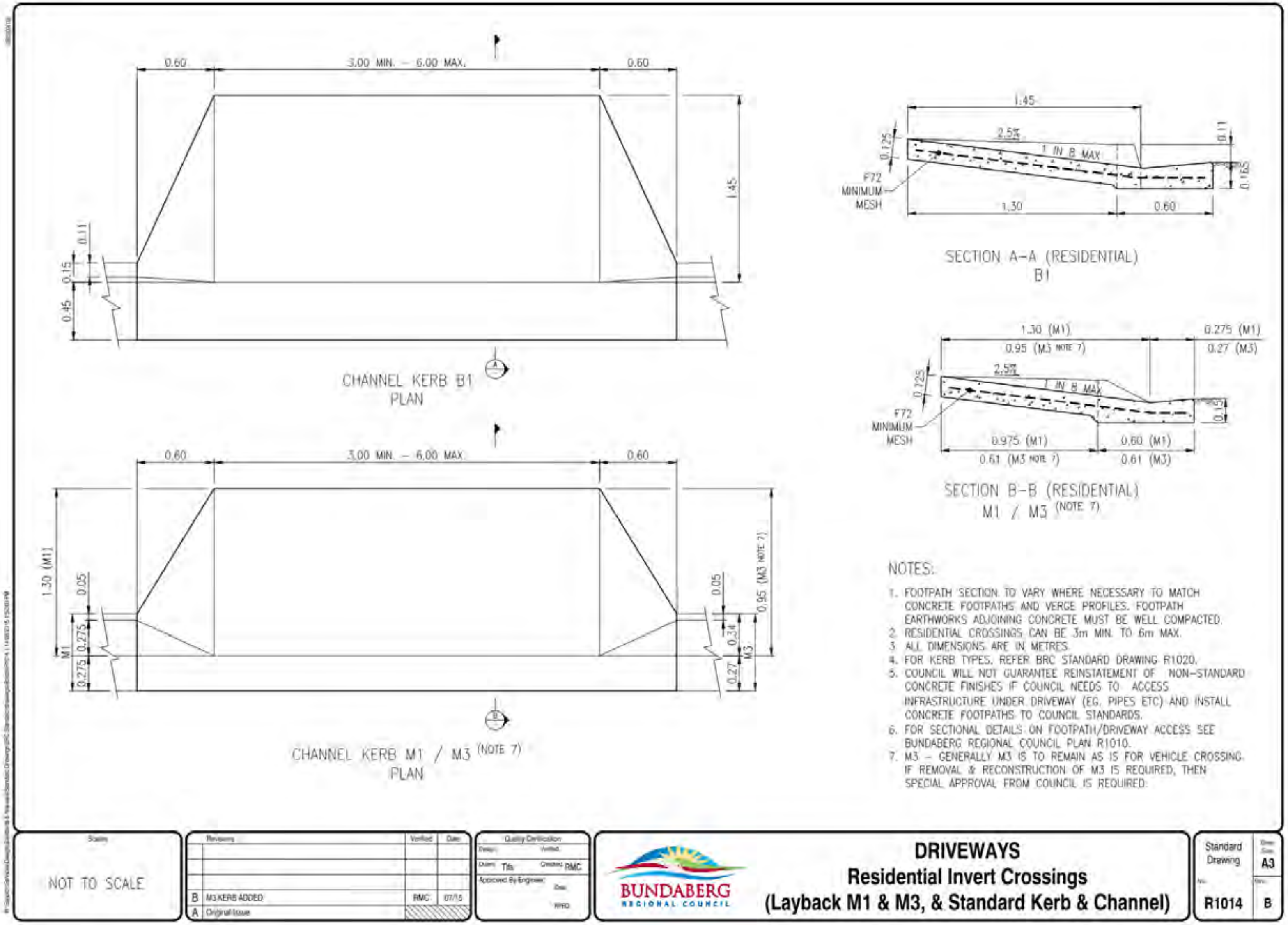
Quality Certification — Design: Verified: Drawn: TRs Checked: RMC Approved By Engineer: Date: RPEQ:

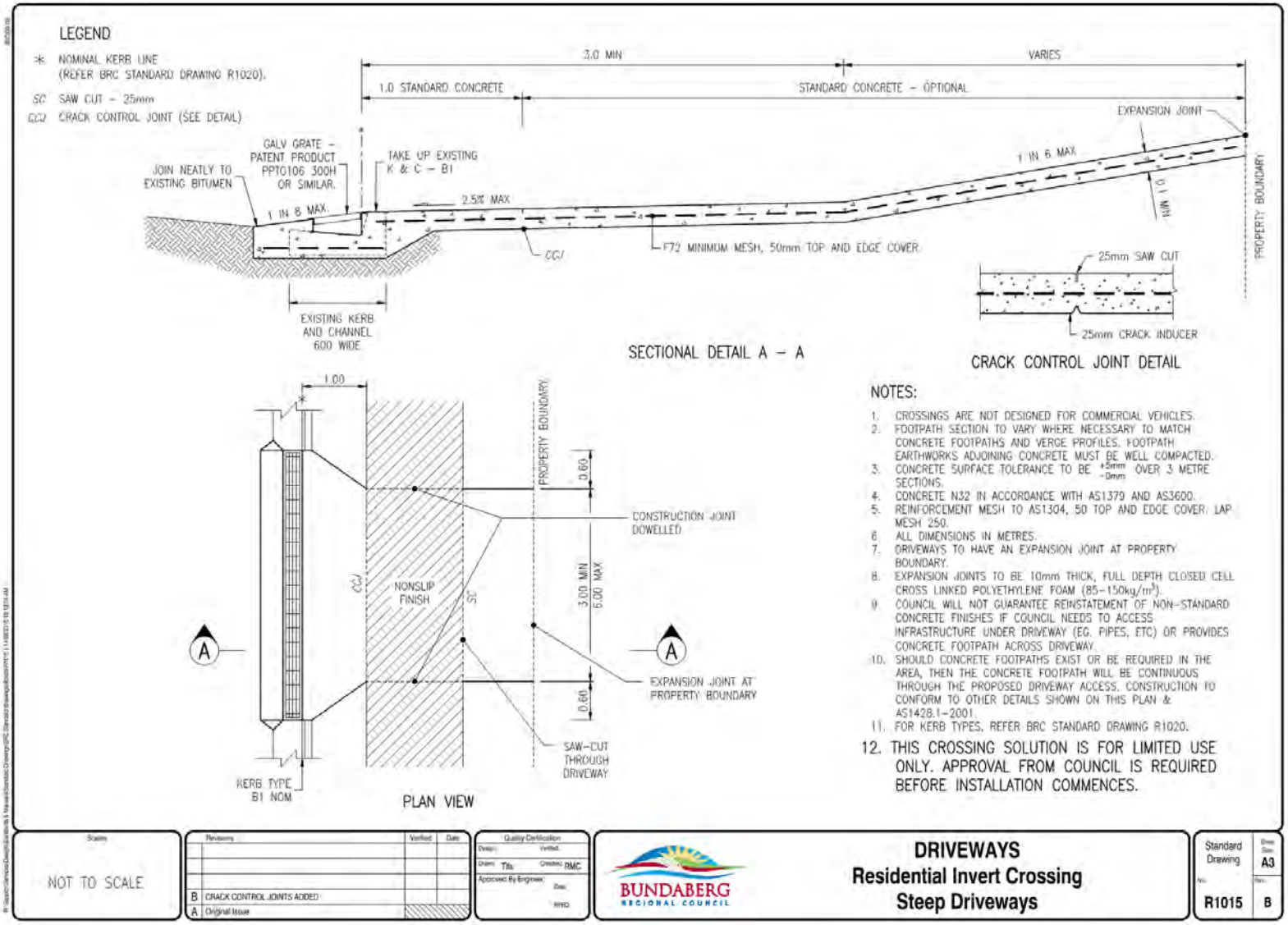
BUNDABERG REGIONAL COUNCIL

DRIVEWAYS
Rural and Urban Accesses Requiring Culverts
No Kerb and Channel

Standard Drawing No: R1012 | Sheet Size: A3 | Rev: D


TURNOUT RADIUS "R"
TYPE | RADIUS
A | 1.0m MIN
B | 6.0m
C | 10.0m
TABLE DRAIN TO BE NEATLY PROFILED AND GRADED TO MAINTAIN FALL.
CONCRETE SURFACE
1000 MIN
45°
GRAVEL OR BITUMEN SURFACE SEE NOTE 3
6.0m MAX DOUBLE 3.0m MIN SINGLE
PROPERTY BOUNDARY
TOE OF BATTER
SHOULDER
EDGE OF BITUMEN OR GRAVEL PAVEMENT
ROAD CENTRE LINE
3.0m SINGLE ACCESS (TYPE B) 6.0m DUAL ACCESS (TYPE C)
PAVEMENT OR BITUMEN SURFACING REFER NOTE 2
BITUMEN SURFACE
DOUBLE 6.0m MAX SINGLE – 3.0m MIN
EDGE OF BITUMEN
PLAN VIEW – CONCRETE INVERT CROSSING
PLAN VIEW – GRAVEL/BITUMEN INVERT CROSSING
PLAN VIEW – ACCESS FALLING FROM ROAD EDGE
SURFACE FLUSH WITH TABLE DRAIN PROFILE
2500
GRAVEL AND OR SEALED ACCESS GRADE SAME AS ROAD CROSSFALL
1 IN 6
3%
300 MAX
EDGE OF ROAD PAVEMENT
CONTINUE GRAVEL PAVEMENT TO PROPERTY BOUNDARY
MIN. CONCRETE ACCESS TO HAVE N32 CONCRETE, 100mm THICK ON 100mm THICK SUB-BASE. GRAVEL CONCRETE REINFORCED WITH F72 MESH (40mm TOP COVER) OR BITUMEN SEALED PAVEMENT AS PER NOTE 2 OR COMPACTED GRAVEL PAVEMENT ON GRAVEL ROADS
SECTION A–A INVERT CROSSING
NOTES:
1. THE LAND OWNER IS RESPONSIBLE FOR THE CONSTRUCTION & MAINTENANCE OF PROPERTY ACCESSES.
2. THE CONTRACTOR SHOULD DETERMINE THE DEPTH OF PAVEMENT TO SUIT WORK AREA AFTER EXCAVATION. THE MINIMUM DEPTH OF PAVEMENT IS TO BE 150mm OF CBR 60. BITUMEN SEALING SHALL BE A TWO COAT HOT OR COLD SEAL WITH 16mm & 10mm AGGREGATE TO COUNCIL STANDARDS.
3. BITUMEN SEAL REQUIRED TO ACCESSES OFF EXISTING BITUMEN ROADS.
4. FINISHED CONCRETE/BITUMEN/OR GRAVEL SURFACE TO BE FLUSH WITH TABLE DRAIN PROFILE.
5. BROOM FINISH TO CONCRETE SURFACE.
6. FOR TRAFFIC CONTROL AND SAFETY, THE MINIMUM REQUIREMENTS FROM THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) MUST BE IN PLACE BEFORE WORK COMMENCES.
7. MINIMUM LONGITUDINAL FALL ACROSS INVERTS IS 0.3%.
8. WHERE JOINING A SEALED ROAD THERE MUST BE A 1600mm BITUMEN JOINT WITH 150mm OVERLAP OF COLD SEAL WITH 5mm AGGREGATE.
PROPERTY ACCESS RAMP 150mm MIN BITUMEN SEALED PAVEMENT AS SPECIFIED (SEE NOTE 3)
NATURAL FALL
1 IN 6
3%
EDGE OF EXISTING SEALED PAVEMENT
SECTION B–B ACCESS FALLING FROM ROAD EDGE
Scales
NOT TO SCALE
Revisions | Verified | Date
B General Note changes rmc 13-2-18
A Original Issue
Quality Certification:
Design: Verified:
Drawing: Title Checked:
Approved by Engineer:
Date: 13-2-18 RPEQ 9454
BUNDABERG REGIONAL COUNCIL
DRIVEWAYS
Rural and Urban Invert Accesses
No Kerb and Channel
Standard Drawing No R1013
Sheet Size A3
Rev B

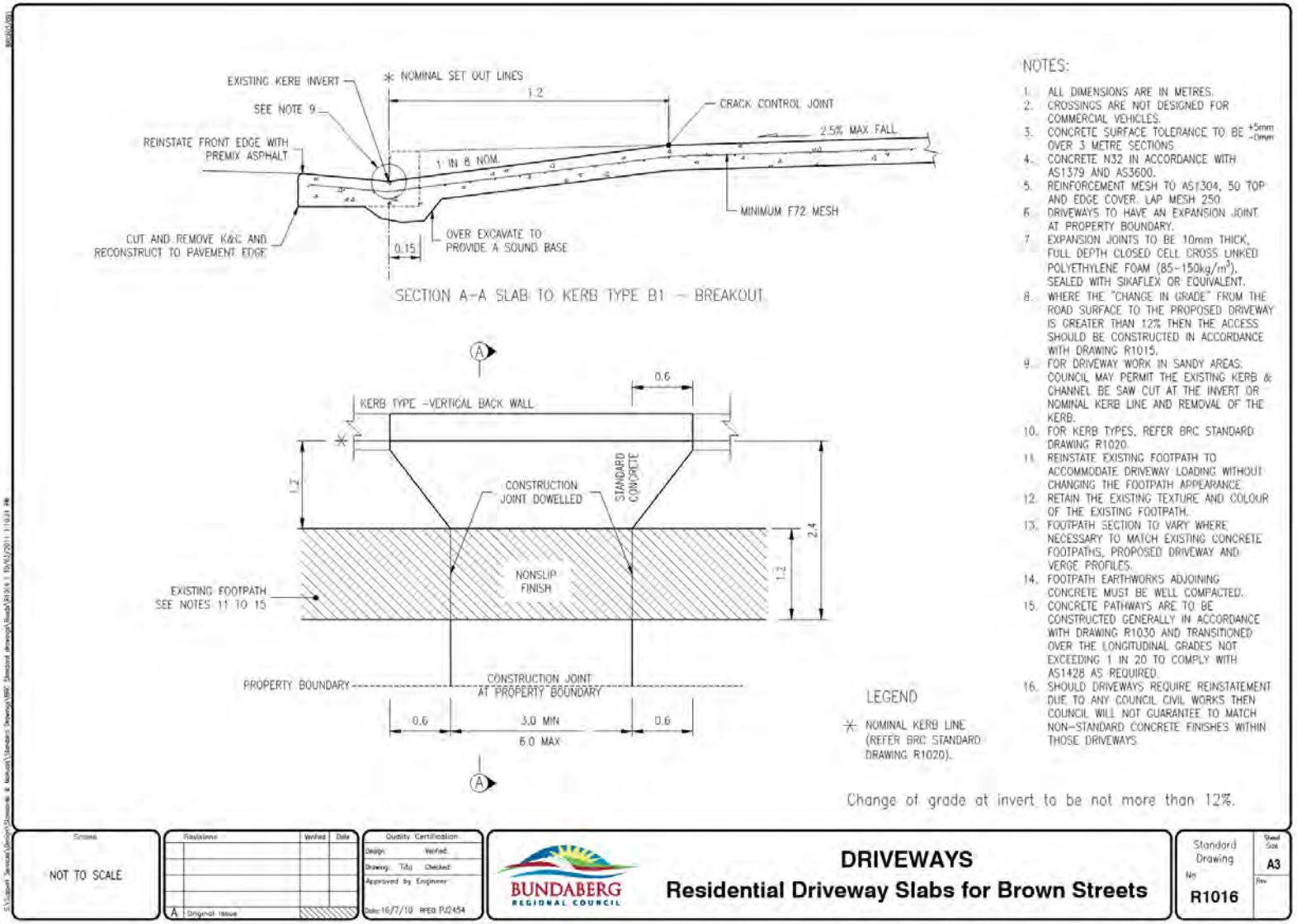

0.60
3.00 MIN. – 6.00 MAX.
0.60
1.45
0.11
0.15
0.45
CHANNEL KERB B1
PLAN
0.60
3.00 MIN. – 6.00 MAX.
0.60
1.30 (M1)
0.05
M1 0.275 0.275
0.05
0.34
0.27
M3
0.95 (M3 NOTE 7)
CHANNEL KERB M1 / M3 (NOTE 7)
PLAN
1.45
0.125
2.5%
1 IN 8 MAX
0.11
0.165
F72
MINIMUM
MESH
1.30
0.60
SECTION A-A (RESIDENTIAL)
B1
1.30 (M1)
0.95 (M3 NOTE 7)
0.275 (M1)
0.27 (M3)
0.125
2.5%
1 IN 8 MAX
0.15
F72
MINIMUM
MESH
0.975 (M1)
0.61 (M3 NOTE 7)
0.60 (M1)
0.61 (M3)
SECTION B-B (RESIDENTIAL)
M1 / M3 (NOTE 7)
NOTES:
1. FOOTPATH SECTION TO VARY WHERE NECESSARY TO MATCH CONCRETE FOOTPATHS AND VERGE PROFILES. FOOTPATH EARTHWORKS ADJOINING CONCRETE MUST BE WELL COMPACTED.
2. RESIDENTIAL CROSSINGS CAN BE 3m MIN. TO 6m MAX.
3. ALL DIMENSIONS ARE IN METRES.
4. FOR KERB TYPES, REFER BRC STANDARD DRAWING R1020.
5. COUNCIL WILL NOT GUARANTEE REINSTATEMENT OF NON-STANDARD CONCRETE FINISHES IF COUNCIL NEEDS TO ACCESS INFRASTRUCTURE UNDER DRIVEWAY (EG. PIPES ETC) AND INSTALL CONCRETE FOOTPATHS TO COUNCIL STANDARDS.
6. FOR SECTIONAL DETAILS ON FOOTPATH/DRIVEWAY ACCESS SEE BUNDABERG REGIONAL COUNCIL PLAN R1010.
7. M3 – GENERALLY M3 IS TO REMAIN AS IS FOR VEHICLE CROSSING. IF REMOVAL & RECONSTRUCTION OF M3 IS REQUIRED, THEN SPECIAL APPROVAL FROM COUNCIL IS REQUIRED.
Scale
NOT TO SCALE
Revisions
Verified
Date
B M3 KERB ADDED RMC 07/15
A Original Issue
Quality Certification
RMC
BUNDABERG
REGIONAL COUNCIL
DRIVEWAYS
Residential Invert Crossings
(Layback M1 & M3, & Standard Kerb & Channel)
Standard Drawing
A3
R1014
B

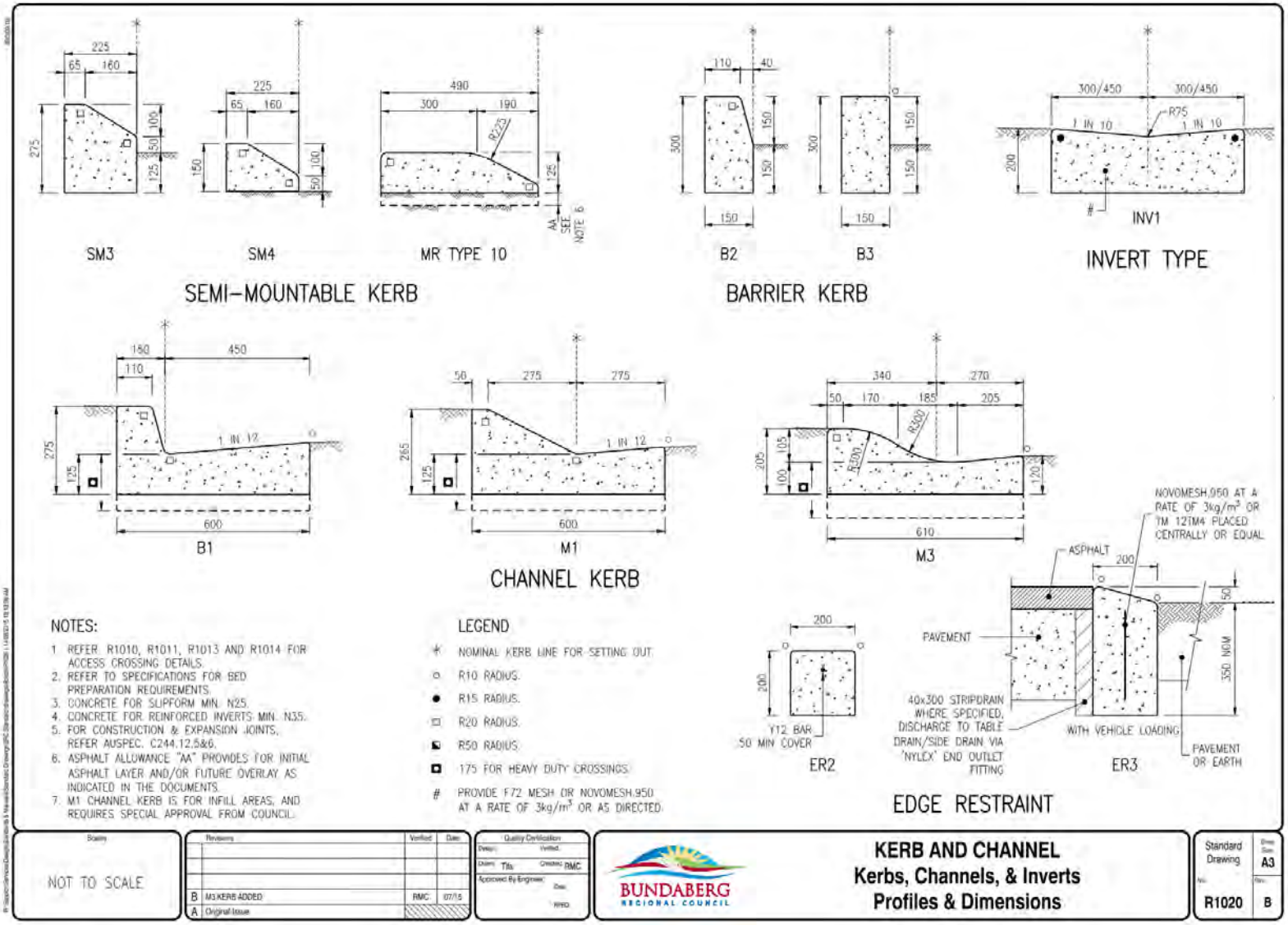


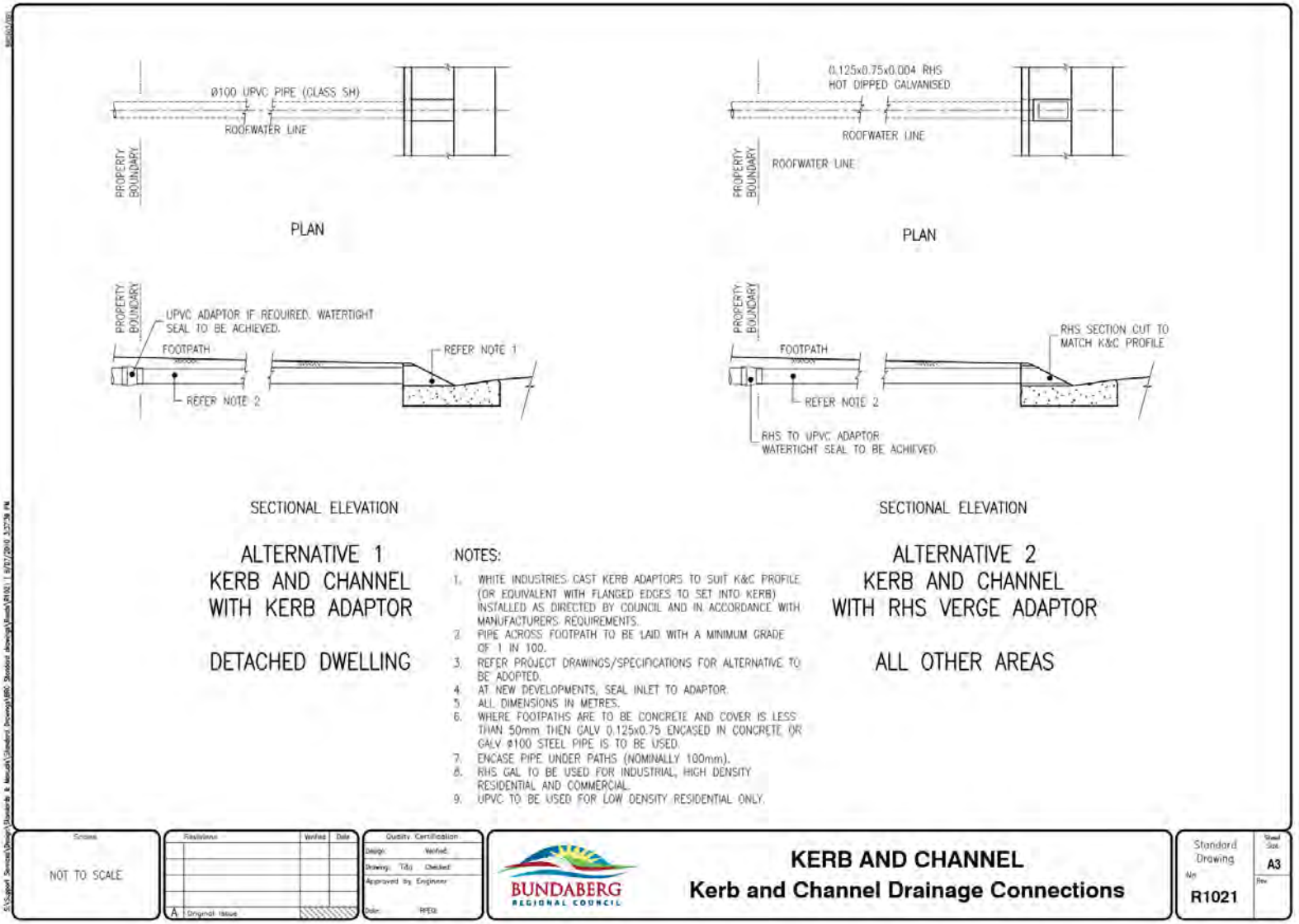
NOTES:

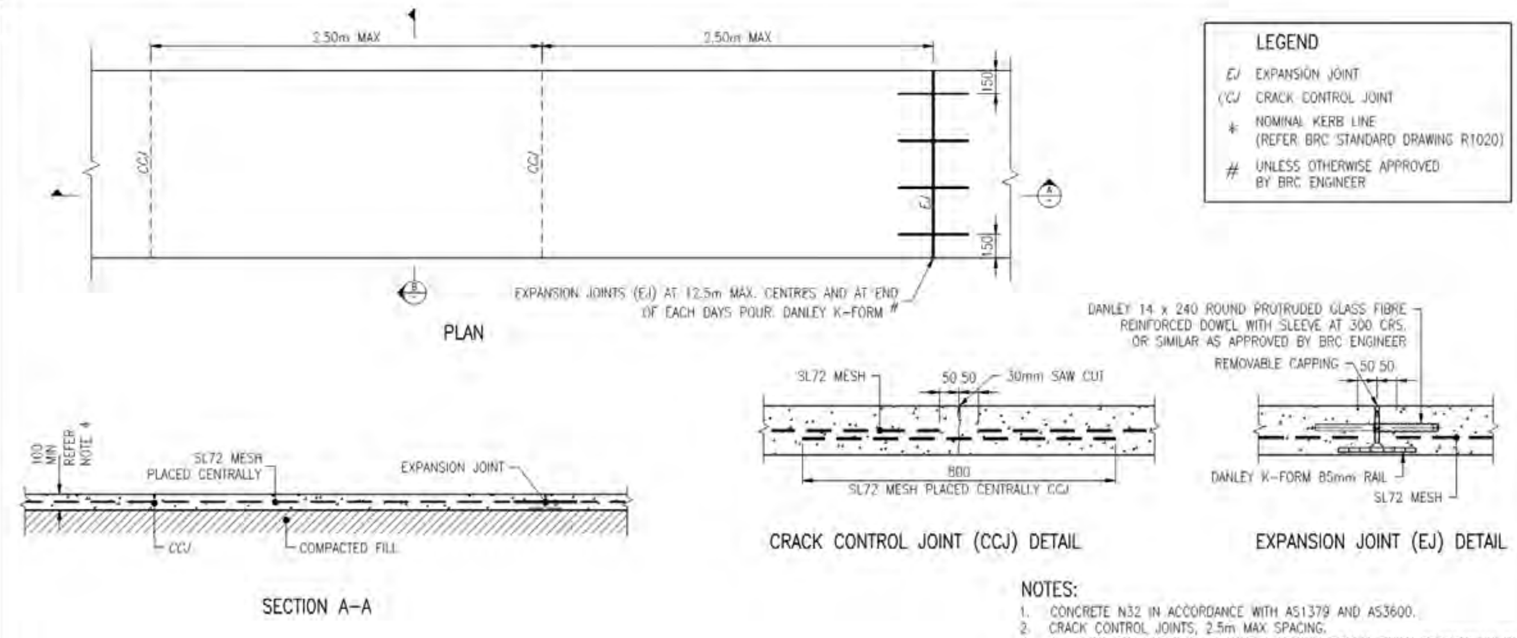
1. CROSSINGS ARE NOT DESIGNED FOR COMMERCIAL VEHICLES.
2. FOOTPATH SECTION TO VARY WHERE NECESSARY TO MATCH CONCRETE FOOTPATHS AND VERGE PROFILES. FOOTPATH EARTHWORKS ADJOINING CONCRETE MUST BE WELL COMPACTED.
3. CONCRETE SURFACE TOLERANCE TO BE $^{+5mm}_{-0mm}$ OVER 3 METRE SECTIONS.
4. CONCRETE N32 IN ACCORDANCE WITH AS1379 AND AS3600.
5. REINFORCEMENT MESH TO AS1304, 50 TOP AND EDGE COVER. LAP MESH 250.
6. ALL DIMENSIONS IN METRES.
7. DRIVEWAYS TO HAVE AN EXPANSION JOINT AT PROPERTY BOUNDARY.
8. EXPANSION JOINTS TO BE 10mm THICK, FULL DEPTH CLOSED CELL CROSS LINKED POLYETHYLENE FOAM (85–150kg/m³).
9. COUNCIL WILL NOT GUARANTEE REINSTATEMENT OF NON-STANDARD CONCRETE FINISHES IF COUNCIL NEEDS TO ACCESS INFRASTRUCTURE UNDER DRIVEWAY (EG. PIPES, ETC) OR PROVIDES CONCRETE FOOTPATH ACROSS DRIVEWAY.
10. SHOULD CONCRETE FOOTPATHS EXIST OR BE REQUIRED IN THE AREA, THEN THE CONCRETE FOOTPATH WILL BE CONTINUOUS THROUGH THE PROPOSED DRIVEWAY ACCESS. CONSTRUCTION TO CONFORM TO OTHER DETAILS SHOWN ON THIS PLAN & AS1428.1–2001.
11. FOR KERB TYPES, REFER BRC STANDARD DRAWING R1020.
12. THIS CROSSING SOLUTION IS FOR LIMITED USE ONLY. APPROVAL FROM COUNCIL IS REQUIRED BEFORE INSTALLATION COMMENCES.

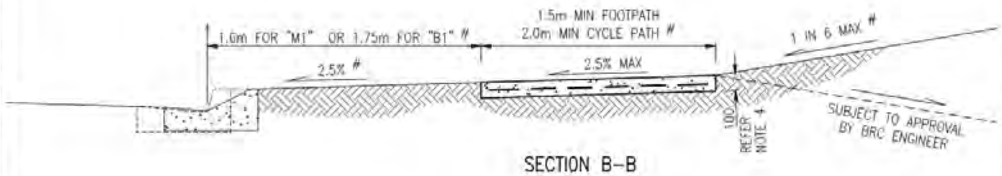
Scale	Revisions	Verified	Date	Quality Certification		
NOT TO SCALE	B CRACK CONTROL JOINTS ADDED			Design: Verified:	BUNDABERG REGIONAL COUNCIL	Standard Drawing No. R1015
	A Original Issue			Drawn: Tita Checked: RMC	DRIVEWAYS Residential Invert Crossing Steep Driveways	Drawing Size A3 Rev. B
				Approved By Engineer: Date: RPEQ		


EXISTING KERB INVERT
SEE NOTE 9
REINSTATE FRONT EDGE WITH PREMIX ASPHALT
CUT AND REMOVE K&C AND RECONSTRUCT TO PAVEMENT EDGE
NOMINAL SET OUT LINES
1.2
CRACK CONTROL JOINT
2.5% MAX FALL
1 IN 8 NOM.
MINIMUM F72 MESH
0.15
OVER EXCAVATE TO PROVIDE A SOUND BASE
SECTION A-A SLAB TO KERB TYPE B1 – BREAKOUT
A
0.6
KERB TYPE -VERTICAL BACK WALL
1.2
CONSTRUCTION JOINT DOWELLED
STANDARD CONCRETE
2.4
NONSLIP FINISH
EXISTING FOOTPATH SEE NOTES 11 TO 15
PROPERTY BOUNDARY
CONSTRUCTION JOINT AT PROPERTY BOUNDARY
0.6
3.0 MIN
6.0 MAX
0.6
A
NOTES:
1. ALL DIMENSIONS ARE IN METRES.
2. CROSSINGS ARE NOT DESIGNED FOR COMMERCIAL VEHICLES.
3. CONCRETE SURFACE TOLERANCE TO BE +5mm -0mm OVER 3 METRE SECTIONS.
4. CONCRETE N32 IN ACCORDANCE WITH AS1379 AND AS3600.
5. REINFORCEMENT MESH TO AS1304, 50 TOP AND EDGE COVER. LAP MESH 250.
6. DRIVEWAYS TO HAVE AN EXPANSION JOINT AT PROPERTY BOUNDARY.
7. EXPANSION JOINTS TO BE 10mm THICK, FULL DEPTH CLOSED CELL CROSS LINKED POLYETHYLENE FOAM (85-150kg/m3), SEALED WITH SIKAFLEX OR EQUIVALENT.
8. WHERE THE "CHANGE IN GRADE" FROM THE ROAD SURFACE TO THE PROPOSED DRIVEWAY IS GREATER THAN 12% THEN THE ACCESS SHOULD BE CONSTRUCTED IN ACCORDANCE WITH DRAWING R1015.
9. FOR DRIVEWAY WORK IN SANDY AREAS, COUNCIL MAY PERMIT THE EXISTING KERB & CHANNEL BE SAW CUT AT THE INVERT OR NOMINAL KERB LINE AND REMOVAL OF THE KERB.
10. FOR KERB TYPES, REFER BRC STANDARD DRAWING R1020.
11. REINSTATE EXISTING FOOTPATH TO ACCOMMODATE DRIVEWAY LOADING WITHOUT CHANGING THE FOOTPATH APPEARANCE.
12. RETAIN THE EXISTING TEXTURE AND COLOUR OF THE EXISTING FOOTPATH.
13. FOOTPATH SECTION TO VARY WHERE NECESSARY TO MATCH EXISTING CONCRETE FOOTPATHS, PROPOSED DRIVEWAY AND VERGE PROFILES.
14. FOOTPATH EARTHWORKS ADJOINING CONCRETE MUST BE WELL COMPACTED.
15. CONCRETE PATHWAYS ARE TO BE CONSTRUCTED GENERALLY IN ACCORDANCE WITH DRAWING R1030 AND TRANSITIONED OVER THE LONGITUDINAL GRADES NOT EXCEEDING 1 IN 20 TO COMPLY WITH AS1428 AS REQUIRED.
16. SHOULD DRIVEWAYS REQUIRE REINSTATEMENT DUE TO ANY COUNCIL CIVIL WORKS THEN COUNCIL WILL NOT GUARANTEE TO MATCH NON-STANDARD CONCRETE FINISHES WITHIN THOSE DRIVEWAYS.
LEGEND
NOMINAL KERB LINE (REFER BRC STANDARD DRAWING R1020).
Change of grade at invert to be not more than 12%.
Scales
NOT TO SCALE
Revisions
Verified
Date
A Original Issue
Quality Certification
Design
Verified
Drawing
Checked
Approved by Engineer
Date: 16/7/19 REG FU2454
BUNDABERG REGIONAL COUNCIL
DRIVEWAYS
Residential Driveway Slabs for Brown Streets
Standard Drawing No
R1016
Sheet Size
A3
Rev


SM3
SM4
MR TYPE 10
B2
B3
INV1
INVERT TYPE
SEMI-MOUNTABLE KERB
BARRIER KERB
B1
M1
M3
CHANNEL KERB
NOTES:
1. REFER R1010, R1011, R1013 AND R1014 FOR ACCESS CROSSING DETAILS.
2. REFER TO SPECIFICATIONS FOR BED PREPARATION REQUIREMENTS.
3. CONCRETE FOR SLIPFORM MIN. N25.
4. CONCRETE FOR REINFORCED INVERTS MIN. N35.
5. FOR CONSTRUCTION & EXPANSION JOINTS, REFER AUSPEC. C244.12.5&6.
6. ASPHALT ALLOWANCE "AA" PROVIDES FOR INITIAL ASPHALT LAYER AND/OR FUTURE OVERLAY AS INDICATED IN THE DOCUMENTS.
7. M1 CHANNEL KERB IS FOR INFILL AREAS, AND REQUIRES SPECIAL APPROVAL FROM COUNCIL.
LEGEND
NOMINAL KERB LINE FOR SETTING OUT
R10 RADIUS.
R15 RADIUS.
R20 RADIUS.
R50 RADIUS.
175 FOR HEAVY DUTY CROSSINGS.
PROVIDE F72 MESH OR NOVOMESH.950 AT A RATE OF 3kg/m² OR AS DIRECTED.
ER2
ER3
EDGE RESTRAINT
NOVOMESH.950 AT A RATE OF 3kg/m² OR TM 12TM4 PLACED CENTRALLY OR EQUAL
ASPHALT
PAVEMENT
Y12 BAR 50 MIN COVER
40x300 STRIPDRAIN WHERE SPECIFIED, DISCHARGE TO TABLE DRAIN/SIDE DRAIN VIA 'NYLEX' END OUTLET FITTING
WITH VEHICLE LOADING
PAVEMENT OR EARTH
NOT TO SCALE
B M3 KERB ADDED RMC 07/15
A Original Issue
BUNDABERG REGIONAL COUNCIL
KERB AND CHANNEL
Kerbs, Channels, & Inverts
Profiles & Dimensions
Standard Drawing
R1020
A3
B


Ø100 UPVC PIPE (CLASS SH)
ROOFWATER LINE
PROPERTY BOUNDARY
PLAN
0.125x0.75x0.004 RHS HOT DIPPED GALVANISED
ROOFWATER LINE
PROPERTY BOUNDARY
ROOFWATER LINE
PLAN
PROPERTY BOUNDARY
UPVC ADAPTOR IF REQUIRED. WATERTIGHT SEAL TO BE ACHIEVED.
FOOTPATH
REFER NOTE 1
REFER NOTE 2
PROPERTY BOUNDARY
FOOTPATH
RHS SECTION CUT TO MATCH K&C PROFILE
REFER NOTE 2
RHS TO UPVC ADAPTOR WATERTIGHT SEAL TO BE ACHIEVED
SECTIONAL ELEVATION
ALTERNATIVE 1
KERB AND CHANNEL
WITH KERB ADAPTOR
DETACHED DWELLING
NOTES:
1. WHITE INDUSTRIES CAST KERB ADAPTORS TO SUIT K&C PROFILE (OR EQUIVALENT WITH FLANGED EDGES TO SET INTO KERB) INSTALLED AS DIRECTED BY COUNCIL AND IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS.
2. PIPE ACROSS FOOTPATH TO BE LAID WITH A MINIMUM GRADE OF 1 IN 100.
3. REFER PROJECT DRAWINGS/SPECIFICATIONS FOR ALTERNATIVE TO BE ADOPTED.
4. AT NEW DEVELOPMENTS, SEAL INLET TO ADAPTOR.
5. ALL DIMENSIONS IN METRES.
6. WHERE FOOTPATHS ARE TO BE CONCRETE AND COVER IS LESS THAN 50mm THEN GALV 0.125x0.75 ENCASED IN CONCRETE OR GALV Ø100 STEEL PIPE IS TO BE USED.
7. ENCASE PIPE UNDER PATHS (NOMINALLY 100mm).
8. RHS GAL TO BE USED FOR INDUSTRIAL, HIGH DENSITY RESIDENTIAL AND COMMERCIAL.
9. UPVC TO BE USED FOR LOW DENSITY RESIDENTIAL ONLY.
SECTIONAL ELEVATION
ALTERNATIVE 2
KERB AND CHANNEL
WITH RHS VERGE ADAPTOR
ALL OTHER AREAS
Scales
NOT TO SCALE
Revisions
Verified
Date
A Original Issue
Quality Certification
Design: Verified:
Drawing: T.D.I. Checked:
Approved by Engineer:
Date: RPEQ:
BUNDABERG REGIONAL COUNCIL
KERB AND CHANNEL
Kerb and Channel Drainage Connections
Standard Drawing No
R1021
Sheet Size
A3
Rev





NOTES:

1. CONCRETE N32 IN ACCORDANCE WITH AS1379 AND AS3600.
2. CRACK CONTROL JOINTS, 2.5m MAX SPACING.
3. ALL CONCRETE SURFACE TO HAVE A MEDIUM BROOM FINISH PERPENDICULAR TO DIRECTION OF PEDESTRIAN TRAVEL TO COMPLY WITH SLIP RESISTANCE REQUIREMENTS.
4. CONCRETE FOOTPATHS, ADJOINING EXISTING DRIVEWAYS ARE TO BE TRANSITIONED OVER LONGITUDINAL GRADES NOT TO EXCEED 1 IN 20 AND TO COMPLY WITH REQUIREMENTS OF AS1428–1–2009. THICKNESS TO BE INCREASED TO 125mm AT VEHICULAR CROSSOVERS.
5. AFTER CONSTRUCTION TOPSOIL TO BE PLACED ADJACENT TO FOOTPATH TO FINISH FLUSH WITH CONCRETE PATH.
6. IF REQUIRED, COMPACTED FILL TO BE IN ACCORDANCE WITH MRTS04, TOP 50mm TO BE TOP SOIL.
7. COLOURED CONCRETE (HERITAGE RED) TO BE USED IN ALL RED SOIL AREAS AS DIRECTED BY COUNCIL ENGINEER.
8. SAW CUTS TO BE UNDERTAKEN WITHIN 15 TO 24hrs OF CONCRETE POUR.
9. CROSS FALL MAY VARY IN ACCORDANCE WITH AS1428, OTHERWISE SUBJECT TO BRC ENGINEER APPROVAL.
10. OPTIONAL REINFORCEMENT – HIGH PERFORMANCE POLYMER FIBRES. REFER STD DRG R1033 FOR DETAILS.
11. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.

Scale: NOT TO SCALE

	Revisions	Verified	Date
D	MESH, FILL SPECIFICATION AND XFALL NOTE UPDATED	RMC	24/10/18
C	SLOPES CHANGED	CNP	09/16
B	CRACK CONTROL JOINTS ADDED	RMC	26/08/15
A	Original issue		

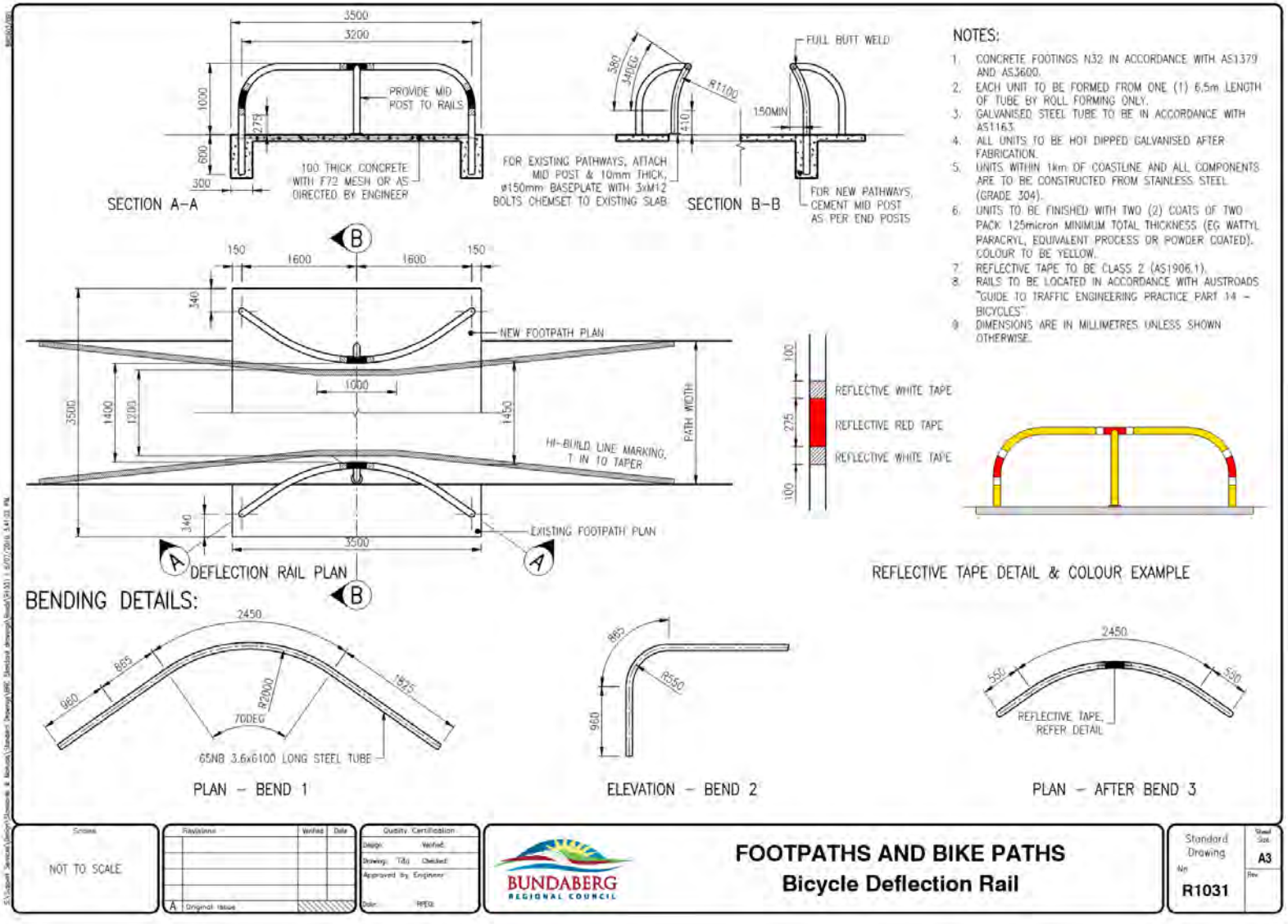
Quality Certification — Design: Verified: RMC — Drawn: Tifs Checked: — Approved By Engineer: Date: — RPEQ:

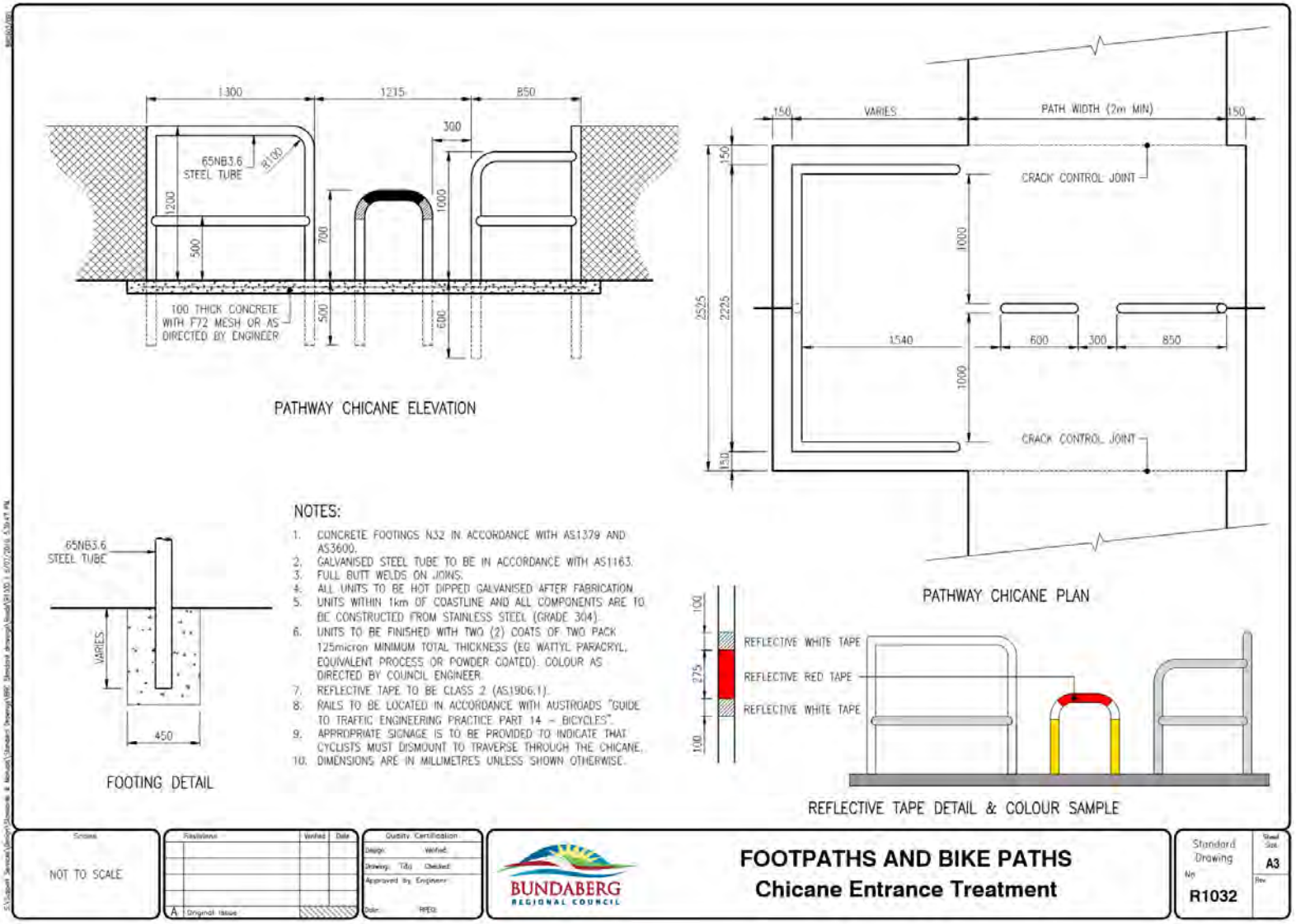
BUNDABERG REGIONAL COUNCIL

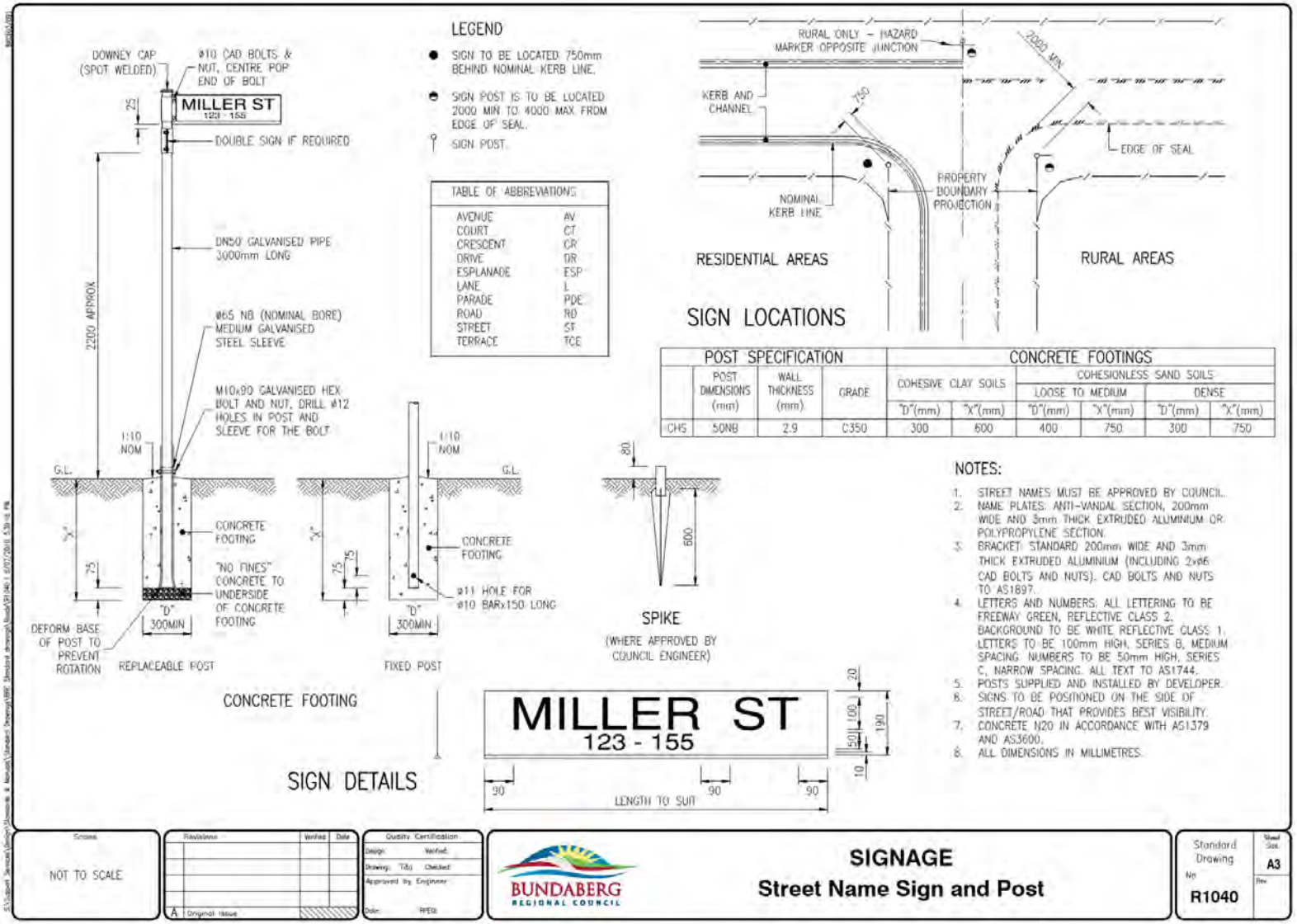
FOOTPATHS AND CYCLE PATHS

Concrete Strip Footpath - Mesh Reinforcement

Standard Drawing — Sheet Size: A3 — No.: R1030 — Rev.: D


3500
3200
1000
600
300
275
PROVIDE MID POST TO RAILS
100 THICK CONCRETE WITH F72 MESH OR AS DIRECTED BY ENGINEER
SECTION A-A
FOR EXISTING PATHWAYS, ATTACH MID POST & 10mm THICK, ø150mm BASEPLATE WITH 3xM12 BOLTS CHEMSET TO EXISTING SLAB
SECTION B-B
FULL BUTT WELD
R1100
150MIN
FOR NEW PATHWAYS, CEMENT MID POST AS PER END POSTS
NOTES:
1. CONCRETE FOOTINGS N32 IN ACCORDANCE WITH AS1379 AND AS3600.
2. EACH UNIT TO BE FORMED FROM ONE (1) 6.5m LENGTH OF TUBE BY ROLL FORMING ONLY.
3. GALVANISED STEEL TUBE TO BE IN ACCORDANCE WITH AS1163.
4. ALL UNITS TO BE HOT DIPPED GALVANISED AFTER FABRICATION.
5. UNITS WITHIN 1km OF COASTLINE AND ALL COMPONENTS ARE TO BE CONSTRUCTED FROM STAINLESS STEEL (GRADE 304).
6. UNITS TO BE FINISHED WITH TWO (2) COATS OF TWO PACK 125micron MINIMUM TOTAL THICKNESS (EG WATTYL PARACRYL, EQUIVALENT PROCESS OR POWDER COATED). COLOUR TO BE YELLOW.
7. REFLECTIVE TAPE TO BE CLASS 2 (AS1906.1).
8. RAILS TO BE LOCATED IN ACCORDANCE WITH AUSTROADS "GUIDE TO TRAFFIC ENGINEERING PRACTICE PART 14 – BICYCLES".
9. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
150
1600
1600
150
340
NEW FOOTPATH PLAN
1000
3500
1400
1200
1450
HI-BUILD LINE MARKING, 1 IN 10 TAPER
PATH WIDTH
340
EXISTING FOOTPATH PLAN
3500
A
A
DEFLECTION RAIL PLAN
B
B
100
275
100
REFLECTIVE WHITE TAPE
REFLECTIVE RED TAPE
REFLECTIVE WHITE TAPE
REFLECTIVE TAPE DETAIL & COLOUR EXAMPLE
BENDING DETAILS:
2450
865
960
R2000
70DEG
1825
65NB 3.6x6100 LONG STEEL TUBE
PLAN – BEND 1
865
R550
950
ELEVATION – BEND 2
2450
550
550
REFLECTIVE TAPE, REFER DETAIL
PLAN – AFTER BEND 3
Scales
NOT TO SCALE
Revisions
Verified
Date
A Original Issue
Quality Certification
Design: Verified:
Drawing: Tdg: Checked:
Approved by Engineer:
Date: RPEQ:
BUNDABERG REGIONAL COUNCIL
FOOTPATHS AND BIKE PATHS
Bicycle Deflection Rail
Standard Drawing No
R1031
Sheet Size
A3
Rev

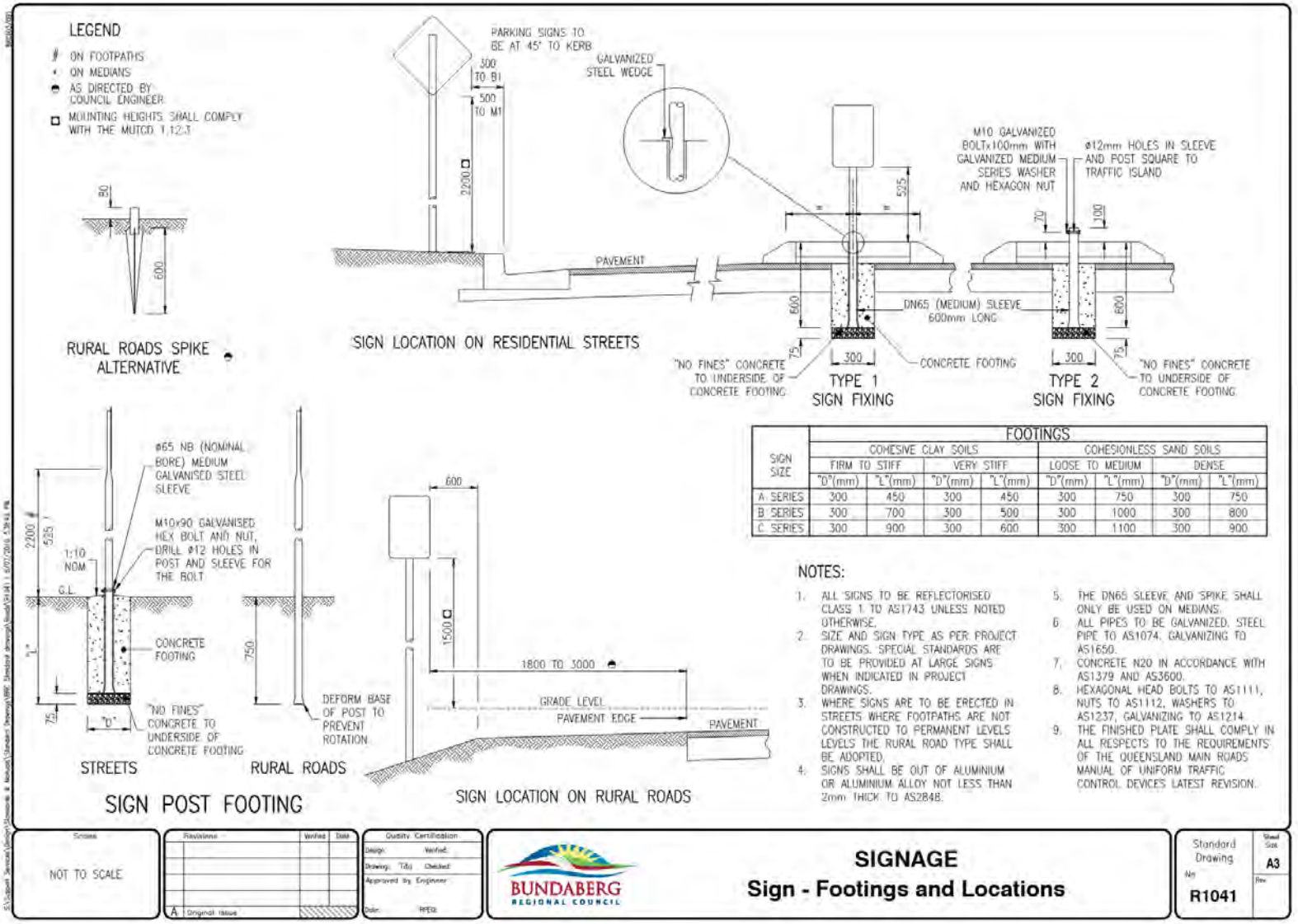

1300
1215
850
300
65NB3.6
STEEL TUBE
R100
1200
500
700
1000
100 THICK CONCRETE
WITH F72 MESH OR AS
DIRECTED BY ENGINEER
500
600
PATHWAY CHICANE ELEVATION
150
VARIES
PATH WIDTH (2m MIN)
150
CRACK CONTROL JOINT
150
2525
2225
1000
1540
600
300
850
1000
CRACK CONTROL JOINT
150
PATHWAY CHICANE PLAN
65NB3.6
STEEL TUBE
VARIES
450
FOOTING DETAIL
NOTES:
1. CONCRETE FOOTINGS N32 IN ACCORDANCE WITH AS1379 AND AS3600.
2. GALVANISED STEEL TUBE TO BE IN ACCORDANCE WITH AS1163.
3. FULL BUTT WELDS ON JOINS.
4. ALL UNITS TO BE HOT DIPPED GALVANISED AFTER FABRICATION.
5. UNITS WITHIN 1km OF COASTLINE AND ALL COMPONENTS ARE TO BE CONSTRUCTED FROM STAINLESS STEEL (GRADE 304).
6. UNITS TO BE FINISHED WITH TWO (2) COATS OF TWO PACK 125micron MINIMUM TOTAL THICKNESS (EG WATTYL PARACRYL, EQUIVALENT PROCESS OR POWDER COATED). COLOUR AS DIRECTED BY COUNCIL ENGINEER.
7. REFLECTIVE TAPE TO BE CLASS 2 (AS1906.1).
8. RAILS TO BE LOCATED IN ACCORDANCE WITH AUSTROADS "GUIDE TO TRAFFIC ENGINEERING PRACTICE PART 14 – BICYCLES".
9. APPROPRIATE SIGNAGE IS TO BE PROVIDED TO INDICATE THAT CYCLISTS MUST DISMOUNT TO TRAVERSE THROUGH THE CHICANE.
10. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
100
275
100
REFLECTIVE WHITE TAPE
REFLECTIVE RED TAPE
REFLECTIVE WHITE TAPE
REFLECTIVE TAPE DETAIL & COLOUR SAMPLE
Scales
NOT TO SCALE
Revisions
Verified
Date
A Original Issue
Quality Certification
Design: Verified:
Drawing: Tdo Checked:
Approved by Engineer:
Date: RPEQ:
BUNDABERG
REGIONAL COUNCIL
FOOTPATHS AND BIKE PATHS
Chicane Entrance Treatment
Standard Drawing No
R1032
Sheet Size
A3
Rev



POST SPECIFICATION				CONCRETE FOOTINGS					
	POST DIMENSIONS (mm)	WALL THICKNESS (mm)	GRADE	COHESIVE CLAY SOILS		COHESIONLESS SAND SOILS			
						LOOSE TO MEDIUM		DENSE	
				"D"(mm)	"X"(mm)	"D"(mm)	"X"(mm)	"D"(mm)	"X"(mm)
CHS	50NB	2.9	C350	300	600	400	750	300	750

NOTES:

1. STREET NAMES MUST BE APPROVED BY COUNCIL.
2. NAME PLATES: ANTI-VANDAL SECTION, 200mm WIDE AND 3mm THICK EXTRUDED ALUMINIUM OR POLYPROPYLENE SECTION.
3. BRACKET: STANDARD 200mm WIDE AND 3mm THICK EXTRUDED ALUMINIUM (INCLUDING 2xø6 CAD BOLTS AND NUTS). CAD BOLTS AND NUTS TO AS1897.
4. LETTERS AND NUMBERS: ALL LETTERING TO BE FREEWAY GREEN, REFLECTIVE CLASS 2. BACKGROUND TO BE WHITE REFLECTIVE CLASS 1. LETTERS TO BE 100mm HIGH, SERIES B, MEDIUM SPACING. NUMBERS TO BE 50mm HIGH, SERIES C, NARROW SPACING. ALL TEXT TO AS1744.
5. POSTS SUPPLIED AND INSTALLED BY DEVELOPER.
6. SIGNS TO BE POSITIONED ON THE SIDE OF STREET/ROAD THAT PROVIDES BEST VISIBILITY.
7. CONCRETE N20 IN ACCORDANCE WITH AS1379 AND AS3600.
8. ALL DIMENSIONS IN MILLIMETRES.



SIGN SIZE	FOOTINGS							
	COHESIVE CLAY SOILS				COHESIONLESS SAND SOILS			
	FIRM TO STIFF		VERY STIFF		LOOSE TO MEDIUM		DENSE	
	"D"(mm)	"L"(mm)	"D"(mm)	"L"(mm)	"D"(mm)	"L"(mm)	"D"(mm)	"L"(mm)
A SERIES	300	450	300	450	300	750	300	750
B SERIES	300	700	300	500	300	1000	300	800
C SERIES	300	900	300	600	300	1100	300	900

NOTES:

1. ALL SIGNS TO BE REFLECTORISED CLASS 1 TO AS1743 UNLESS NOTED OTHERWISE.
2. SIZE AND SIGN TYPE AS PER PROJECT DRAWINGS. SPECIAL STANDARDS ARE TO BE PROVIDED AT LARGE SIGNS WHEN INDICATED IN PROJECT DRAWINGS.
3. WHERE SIGNS ARE TO BE ERECTED IN STREETS WHERE FOOTPATHS ARE NOT CONSTRUCTED TO PERMANENT LEVELS LEVELS THE RURAL ROAD TYPE SHALL BE ADOPTED.
4. SIGNS SHALL BE OUT OF ALUMINIUM OR ALUMINIUM ALLOY NOT LESS THAN 2mm THICK TO AS2848.
5. THE DN65 SLEEVE AND SPIKE SHALL ONLY BE USED ON MEDIANS.
6. ALL PIPES TO BE GALVANIZED. STEEL PIPE TO AS1074. GALVANIZING TO AS1650.
7. CONCRETE N20 IN ACCORDANCE WITH AS1379 AND AS3600.
8. HEXAGONAL HEAD BOLTS TO AS1111, NUTS TO AS1112, WASHERS TO AS1237, GALVANIZING TO AS1214.
9. THE FINISHED PLATE SHALL COMPLY IN ALL RESPECTS TO THE REQUIREMENTS OF THE QUEENSLAND MAIN ROADS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES LATEST REVISION.

Scales: NOT TO SCALE

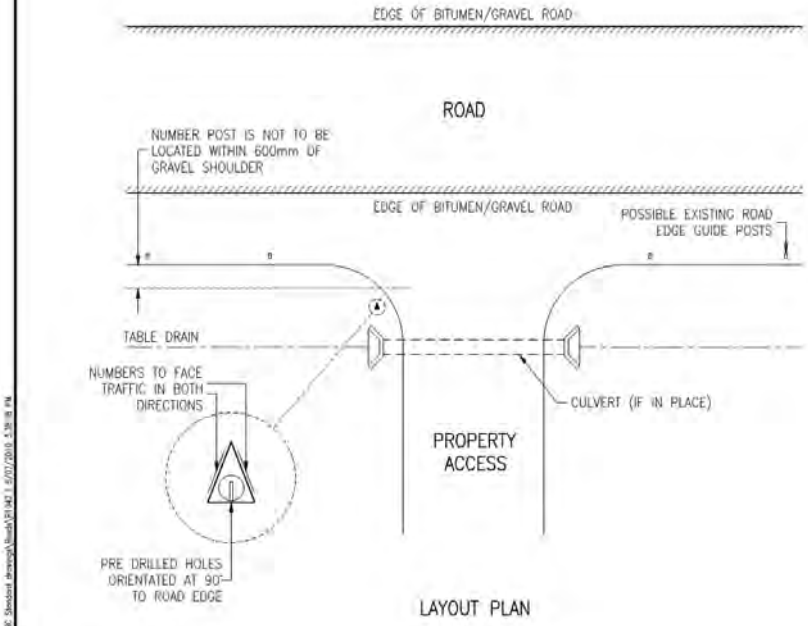
Revisions | Verified | Date
A Original Issue

Quality Certification
Design: Verified:
Drawing: T.D.I. Checked:
Approved by Engineer:
Date: RPEQ:

BUNDABERG REGIONAL COUNCIL

SIGNAGE
Sign - Footings and Locations

Standard Drawing No: **R1041**
Sheet Size: A3
Rev:



LAYOUT PLAN

LOCATION

1. THE NUMBER POST SHALL BE PLACED AT THE PROPERTY ACCESS POINT.
2. IF POSSIBLE, NUMBER POSTS SHOULD BE PLACED BETWEEN 1 AND 2 METRES OUTSIDE THE EDGE OF THE ROAD SHOULDER OR LINE OF GUIDE POSTS.
3. NUMBER POSTS SHOULD BE PLACED AT LEAST 1 METRE ABOVE GROUND FOR MAXIMUM VISIBILITY.
4. CONSIDERATION SHOULD BE GIVEN TO POSITIONING OF THE POST SO IT DOES NOT INTERFERE WITH SLASHER MOWING, MAINTENANCE OF DRAINS AND CULVERTS AND VEHICLES USING THE ACCESS.
5. ALIGN THE NUMBER SO IT IS CLEARLY VISIBLE FOR TRAFFIC TRAVELLING ALONG THE ROAD.
6. POSTS ARE COMMONLY PLACED ADJACENT TO THE PROPERTY'S LETTER BOX.

INSTALLATION

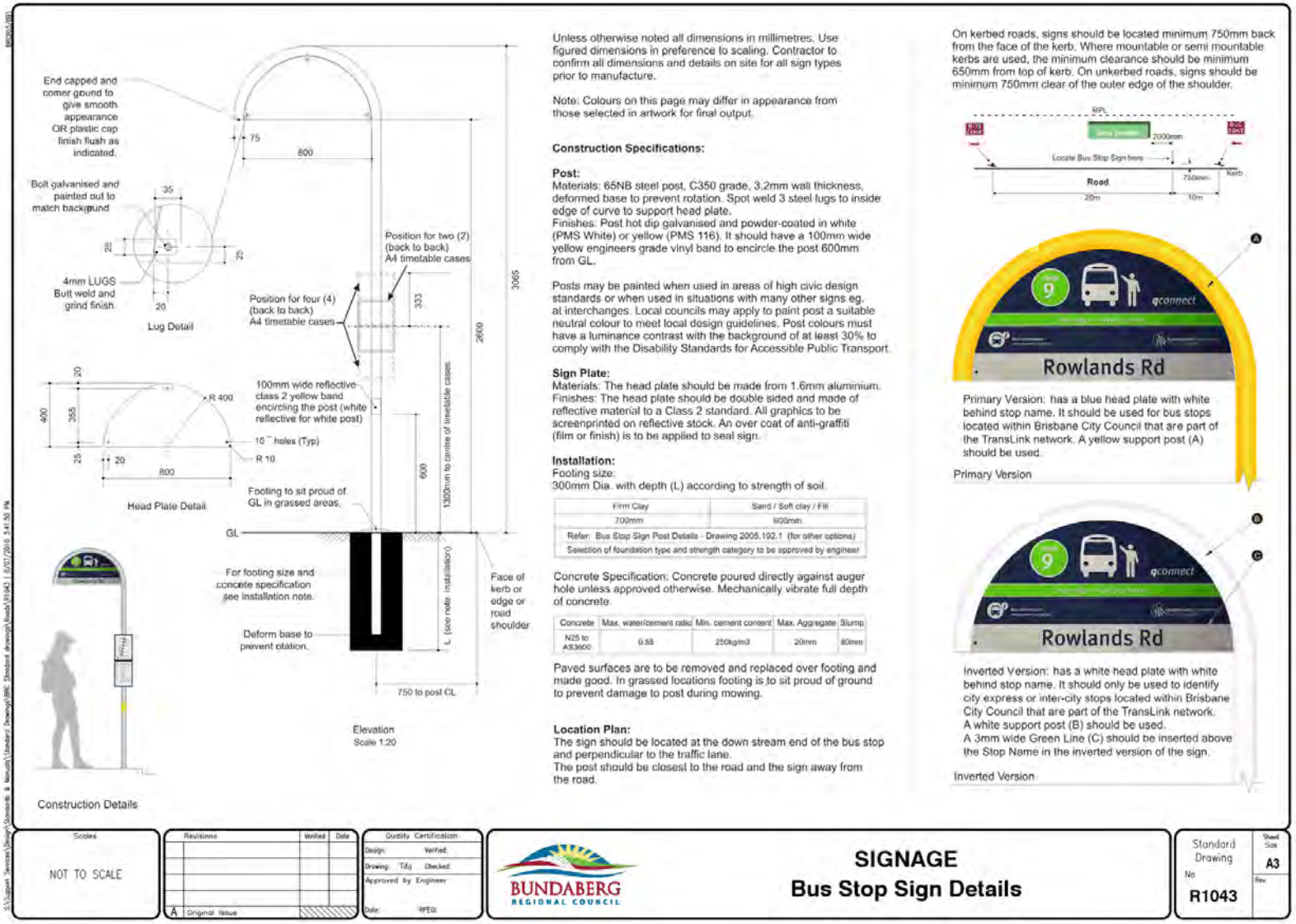
1. THE RURAL ADDRESS POST COMES AS A ROUND GALVANIZED POST, A PLASTIC NUMBER MODULE AND STICK ON NUMBERS.
2. TO INSTALL, DRIVE THE GALVANIZED POST INTO THE GROUND UNTIL IT IS FIRM. ENSURE THAT PRE DRILLED HOLE IN THE POST FACES THE PROPERTY AND IS SQUARE TO THE ROAD.
   *WARNING - CHECK WITH "DIAL BEFORE YOU DIG" (PHONE:1100/www.1100.com.au) BEFORE INSTALLING THE POST.
3. ONCE POST IS INSTALLED PLACE PLASTIC MODULE OVER THE POST AND FIX WITH THE SELF TAPPING SCREW PROVIDED.

Scales	Revisions	Verified	Date	Quality Certification
NOT TO SCALE	A Original Issue			Design: Verified: Drawing: Tdy Checked: Approved by Engineer: Date: RPEQ:

BUNDABERG REGIONAL COUNCIL

SIGNAGE
Location Plan
of Rural Addressing Number Post

Standard Drawing No **R1042** | Sheet Size **A3** | Rev



Unless otherwise noted all dimensions in millimetres. Use figured dimensions in preference to scaling. Contractor to confirm all dimensions and details on site for all sign types prior to manufacture.

Note: Colours on this page may differ in appearance from those selected in artwork for final output.

Construction Specifications:

Post:
Materials: 65NB steel post, C350 grade, 3.2mm wall thickness, deformed base to prevent rotation. Spot weld 3 steel lugs to inside edge of curve to support head plate.
Finishes: Post hot dip galvanised and powder-coated in white (PMS White) or yellow (PMS 116). It should have a 100mm wide yellow engineers grade vinyl band to encircle the post 600mm from GL.

Posts may be painted when used in areas of high civic design standards or when used in situations with many other signs eg. at interchanges. Local councils may apply to paint post a suitable neutral colour to meet local design guidelines. Post colours must have a luminance contrast with the background of at least 30% to comply with the Disability Standards for Accessible Public Transport.

Sign Plate:
Materials: The head plate should be made from 1.6mm aluminium.
Finishes: The head plate should be double sided and made of reflective material to a Class 2 standard. All graphics to be screenprinted on reflective stock. An over coat of anti-graffiti (film or finish) is to be applied to seal sign.

Installation:
Footing size:
300mm Dia. with depth (L) according to strength of soil.

Firm Clay	Sand / Soft clay / Fill
700mm	900mm
Refer: Bus Stop Sign Post Details - Drawing 2005.192.1 (for other options)	
Selection of foundation type and strength category to be approved by engineer	

Concrete Specification: Concrete poured directly against auger hole unless approved otherwise. Mechanically vibrate full depth of concrete.

Concrete	Max. water/cement ratio	Min. cement content	Max. Aggregate	Slump
N25 to AS3600	0.58	250kg/m3	20mm	80mm

Paved surfaces are to be removed and replaced over footing and made good. In grassed locations footing is to sit proud of ground to prevent damage to post during mowing.

Location Plan:
The sign should be located at the down stream end of the bus stop and perpendicular to the traffic lane.
The post should be closest to the road and the sign away from the road.

On kerbed roads, signs should be located minimum 750mm back from the face of the kerb. Where mountable or semi mountable kerbs are used, the minimum clearance should be minimum 650mm from top of kerb. On unkerbed roads, signs should be minimum 750mm clear of the outer edge of the shoulder.

Primary Version: has a blue head plate with white behind stop name. It should be used for bus stops located within Brisbane City Council that are part of the TransLink network. A yellow support post (A) should be used.

Primary Version

Inverted Version: has a white head plate with white behind stop name. It should only be used to identify city express or inter-city stops located within Brisbane City Council that are part of the TransLink network.
A white support post (B) should be used.
A 3mm wide Green Line (C) should be inserted above the Stop Name in the inverted version of the sign.

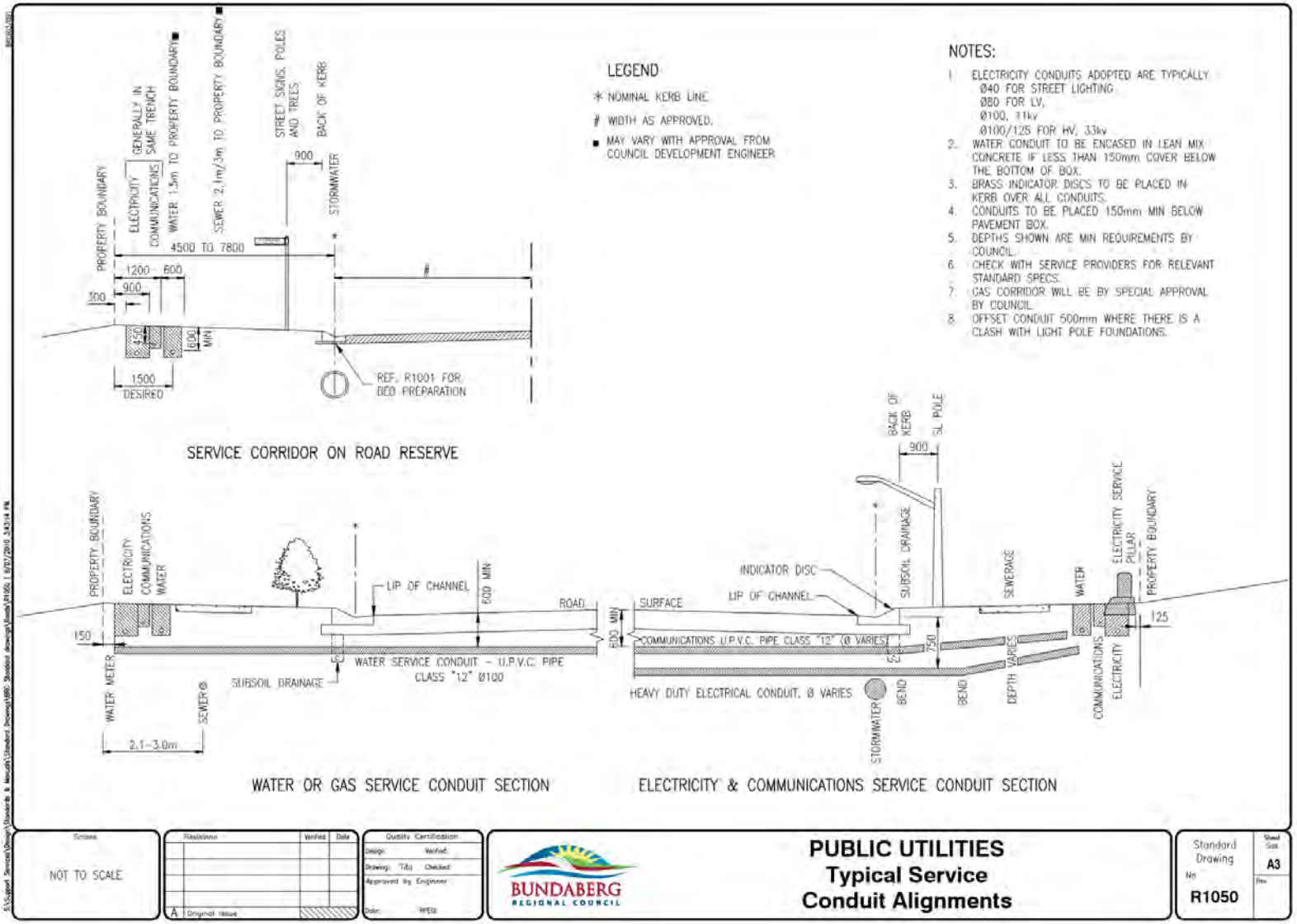
Inverted Version

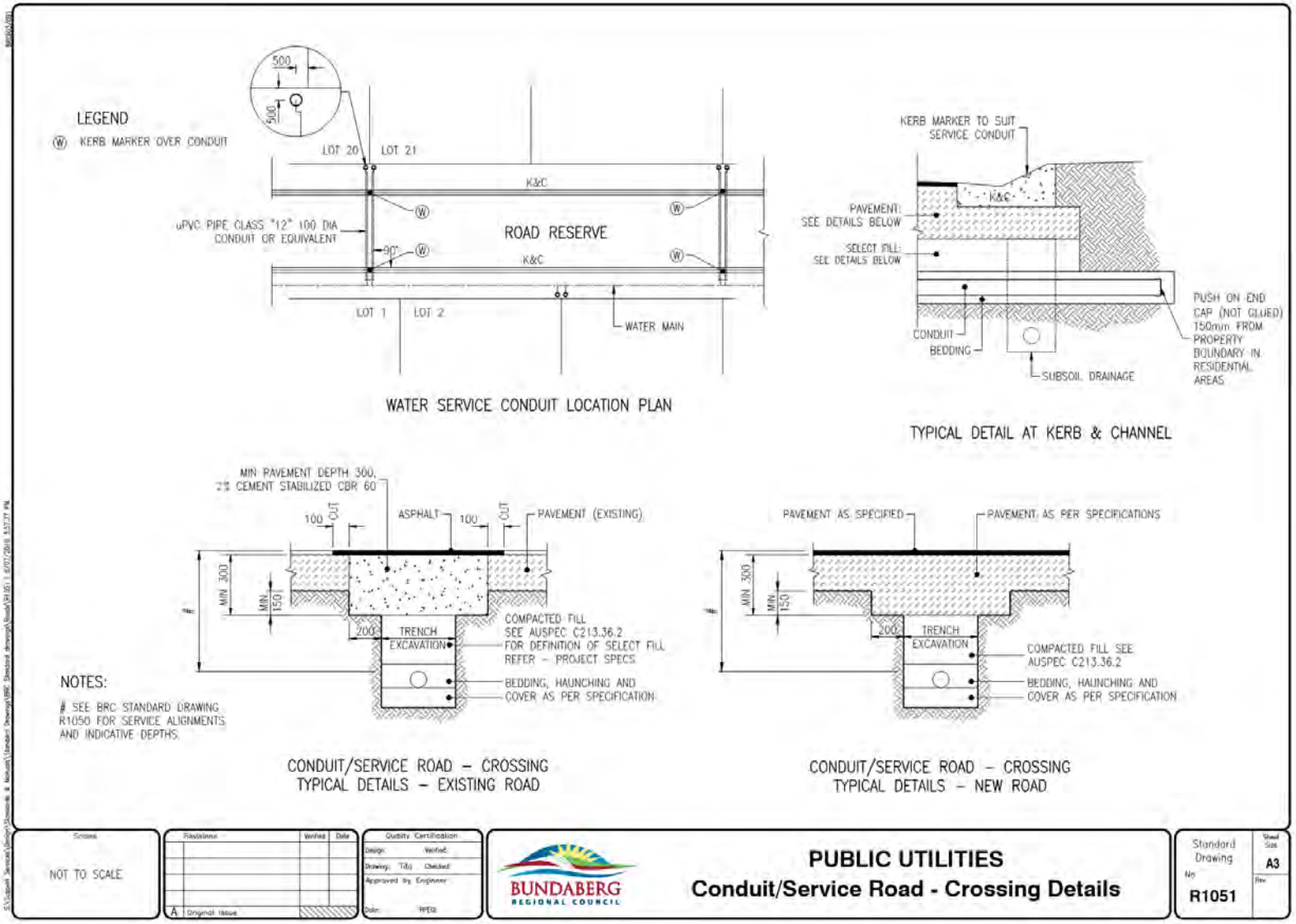
Scales	Revisions	Verified	Date	Quality Certification
NOT TO SCALE	A Original Issue			Design: Verified: Drawing: Tdg Checked: Approved by Engineer Date: RPEQ:

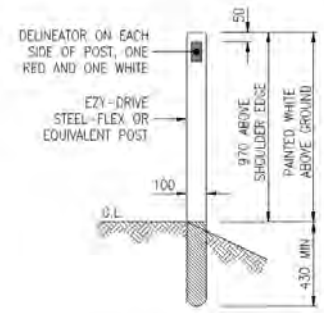
BUNDABERG REGIONAL COUNCIL

SIGNAGE
Bus Stop Sign Details

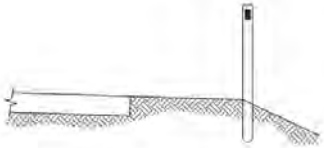
Standard Drawing No **R1043** | Sheet Size **A3** | Rev.


LEGEND
* NOMINAL KERB LINE.
# WIDTH AS APPROVED.
■ MAY VARY WITH APPROVAL FROM COUNCIL DEVELOPMENT ENGINEER.
NOTES:
1. ELECTRICITY CONDUITS ADOPTED ARE TYPICALLY Ø40 FOR STREET LIGHTING, Ø80 FOR LV, Ø100, 11kv Ø100/125 FOR HV, 33kv
2. WATER CONDUIT TO BE ENCASED IN LEAN MIX CONCRETE IF LESS THAN 150mm COVER BELOW THE BOTTOM OF BOX.
3. BRASS INDICATOR DISCS TO BE PLACED IN KERB OVER ALL CONDUITS.
4. CONDUITS TO BE PLACED 150mm MIN BELOW PAVEMENT BOX.
5. DEPTHS SHOWN ARE MIN REQUIREMENTS BY COUNCIL.
6. CHECK WITH SERVICE PROVIDERS FOR RELEVANT STANDARD SPECS.
7. GAS CORRIDOR WILL BE BY SPECIAL APPROVAL BY COUNCIL.
8. OFFSET CONDUIT 500mm WHERE THERE IS A CLASH WITH LIGHT POLE FOUNDATIONS.
PROPERTY BOUNDARY
ELECTRICITY
COMMUNICATIONS
WATER
GENERALLY IN SAME TRENCH
WATER 1.5m TO PROPERTY BOUNDARY
SEWER 2.1m/3m TO PROPERTY BOUNDARY
STREET SIGNS, POLES AND TREES
BACK OF KERB
STORMWATER
900
4500 TO 7800
1200
600
300
450
600 MIN
1500 DESIRED
REF. R1001 FOR BED PREPARATION
SERVICE CORRIDOR ON ROAD RESERVE
LIP OF CHANNEL
600 MIN
ROAD
150
WATER METER
SEWER
SUBSOIL DRAINAGE
WATER SERVICE CONDUIT – U.P.V.C. PIPE CLASS "12" Ø100
2.1–3.0m
WATER OR GAS SERVICE CONDUIT SECTION
BACK OF KERB
SL POLE
INDICATOR DISC
SURFACE
SUBSOIL DRAINAGE
SEWERAGE
WATER
ELECTRICITY SERVICE PILLAR
PROPERTY BOUNDARY
COMMUNICATIONS U.P.V.C. PIPE CLASS "12" (Ø VARIES)
750
125
HEAVY DUTY ELECTRICAL CONDUIT. Ø VARIES
STORMWATER
BEND
BEND
DEPTH VARIES
COMMUNICATIONS
ELECTRICITY
ELECTRICITY & COMMUNICATIONS SERVICE CONDUIT SECTION
NOT TO SCALE
Revisions
Verified
Date
A Original Issue
Quality Certification
Design: Verified:
Drawing: T.D.I. Checked:
Approved by Engineer:
Date: RPEQ:
BUNDABERG REGIONAL COUNCIL
PUBLIC UTILITIES
Typical Service
Conduit Alignments
Standard Drawing No
R1050
Sheet Size
A3
Rev


LEGEND
Ⓦ KERB MARKER OVER CONDUIT
500
500
LOT 20
LOT 21
K&C
uPVC PIPE CLASS "12" 100 DIA CONDUIT OR EQUIVALENT
ROAD RESERVE
90°
K&C
LOT 1
LOT 2
WATER MAIN
WATER SERVICE CONDUIT LOCATION PLAN
KERB MARKER TO SUIT SERVICE CONDUIT
K&C
PAVEMENT: SEE DETAILS BELOW
SELECT FILL: SEE DETAILS BELOW
CONDUIT
BEDDING
SUBSOIL DRAINAGE
PUSH ON END CAP (NOT GLUED) 150mm FROM PROPERTY BOUNDARY IN RESIDENTIAL AREAS
TYPICAL DETAIL AT KERB & CHANNEL
MIN PAVEMENT DEPTH 300, 2% CEMENT STABILIZED CBR 60
100 CUT
ASPHALT
100
CUT
PAVEMENT (EXISTING)
MIN 300
MIN 150
200
TRENCH EXCAVATION
COMPACTED FILL SEE AUSPEC C213.36.2 FOR DEFINITION OF SELECT FILL REFER - PROJECT SPECS
BEDDING, HAUNCHING AND COVER AS PER SPECIFICATION
NOTES:
SEE BRC STANDARD DRAWING R1050 FOR SERVICE ALIGNMENTS AND INDICATIVE DEPTHS.
CONDUIT/SERVICE ROAD - CROSSING TYPICAL DETAILS - EXISTING ROAD
PAVEMENT AS SPECIFIED
PAVEMENT AS PER SPECIFICATIONS
MIN 300
MIN 150
200
TRENCH EXCAVATION
COMPACTED FILL SEE AUSPEC C213.36.2
BEDDING, HAUNCHING AND COVER AS PER SPECIFICATION
CONDUIT/SERVICE ROAD - CROSSING TYPICAL DETAILS - NEW ROAD
Scales
NOT TO SCALE
Revisions
Verified
Date
A Original Issue
Quality Certification
Design: Verified:
Drawing: Tdy Checked:
Approved by Engineer:
Date: RPEQ:
BUNDABERG REGIONAL COUNCIL
PUBLIC UTILITIES
Conduit/Service Road - Crossing Details
Standard Drawing No
R1051
Sheet Size
A3
Rev



STEEL–FLEX GUIDE POST



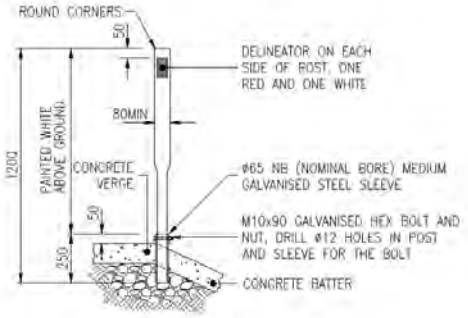
ROADWAY GENERALLY:

1. INSIDE FACE OF POST TO BE SET IN LINE WITH THE SHOULDER EDGE.
2. THE DISTANCE FROM THE PAVEMENT EDGE SHOULD BE UNIFORM.
3. POSTS SHOULD BE SET SO THAT THEIR TOPS ARE ON A SMOOTH GRADE.

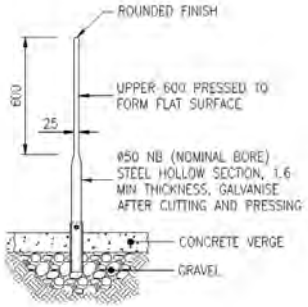
INSTALLATION DETAILS

NOTES:

1. GUIDE POSTS OTHER THAN THOSE SHOWN TO BE APPROVED BY COUNCIL ENGINEER BEFORE USE. GUIDE POSTS TO BE INSTALLED TO MANUFACTURERS SPECIFICATIONS.
2. DELINEATORS SHALL BE THE FOLLOWING RETLECTORISED PANELS WITH THE LONGER AXIS VERTICAL IN EACH CASE. RED DELINEATORS (100x50mm) SHALL BE ON THE LEFT HAND SIDE AND WHITE DELINEATORS (100x25mm) ON THE RIGHT HAND SIDE AS SEEN BY APPROACHING DRIVERS. COMPLYING WITH CLASS 1A MATERIAL AS/NZS1906.1.
3. POST SPACING: WHERE THE LOCATION OF ROAD EDGE GUIDE POSTS IS NOT SPECIFIED IN THE PROJECT DRAWINGS, THEN THE SPACING SHALL BE IN ACCORDANCE WITH MUTCD3.2.4.4.
4. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHER WISE SHOWN.



FRONT VIEW
CONCRETE VERGE/BATTER



SIDE VIEW
CONCRETE VERGE/BATTER

* REFER GENERAL MUTCD NOTES (F)

CURVE RADIUS (m)	SPACING (m)	
	OUTSIDE OF CURVE	INSIDE OF CURVE
< 100	6	12
100–199	10	20
200–299	15	30
300–399	20	40
400–599	30	60
600–799	40	60
800–1199	60	60
1200–2000	90 *	90 *
2000–UP TO STRAIGHTS	150 *	150 *

TABLE (1) GUIDE POST SPACING ON CURVES

POSTS ON INSIDE OF CURVE ARE TO BE LOCATED OPPOSITE A POST ON THE OUTSIDE OF THE CURVE WHERE POSSIBLE.

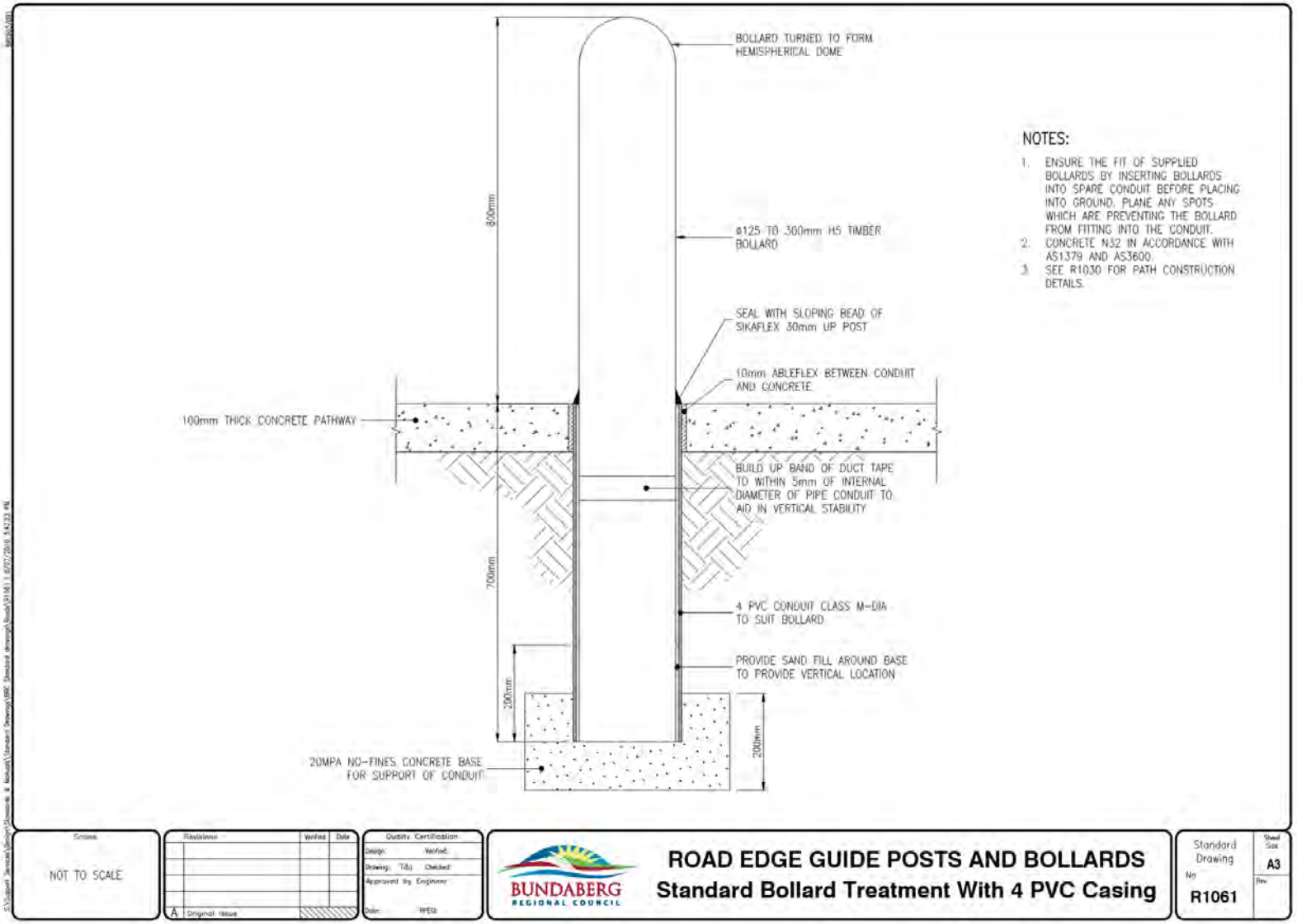
TUBULAR STEEL GUIDE POST

Scales	Revisions	Verified	Date	Quality Certification
NOT TO SCALE	A Original Issue			Design: Verified: Drawing: Title: Checked: Approved by Engineer: Date: RPEQ:

BUNDABERG REGIONAL COUNCIL

ROAD EDGE GUIDE POSTS AND BOLLARDS
Posts Types and Spacings

Standard Drawing No **R1060** | Sheet Size **A3** | Rev


BOLLARD TURNED TO FORM HEMISPHERICAL DOME
800mm
ø125 TO 300mm H5 TIMBER BOLLARD
SEAL WITH SLOPING BEAD OF SIKAFLEX 30mm UP POST
10mm ABLEFLEX BETWEEN CONDUIT AND CONCRETE
100mm THICK CONCRETE PATHWAY
BUILD UP BAND OF DUCT TAPE TO WITHIN 5mm OF INTERNAL DIAMETER OF PIPE CONDUIT TO AID IN VERTICAL STABILITY
700mm
4 PVC CONDUIT CLASS M-DIA TO SUIT BOLLARD
PROVIDE SAND FILL AROUND BASE TO PROVIDE VERTICAL LOCATION
200mm
200mm
20MPA NO-FINES CONCRETE BASE FOR SUPPORT OF CONDUIT
NOTES:
1. ENSURE THE FIT OF SUPPLIED BOLLARDS BY INSERTING BOLLARDS INTO SPARE CONDUIT BEFORE PLACING INTO GROUND. PLANE ANY SPOTS WHICH ARE PREVENTING THE BOLLARD FROM FITTING INTO THE CONDUIT.
2. CONCRETE N32 IN ACCORDANCE WITH AS1379 AND AS3600.
3. SEE R1030 FOR PATH CONSTRUCTION DETAILS.
Scales
NOT TO SCALE
Revisions
Verified
Date
A
Original Issue
Quality Certification
Design:
Verified:
Drawing:
Tidy
Checked:
Approved by Engineer:
Date:
RPEQ
BUNDABERG
REGIONAL COUNCIL
ROAD EDGE GUIDE POSTS AND BOLLARDS
Standard Bollard Treatment With 4 PVC Casing
Standard Drawing No
R1061
Sheet Size
A3
Rev

ROAD FUNCTION

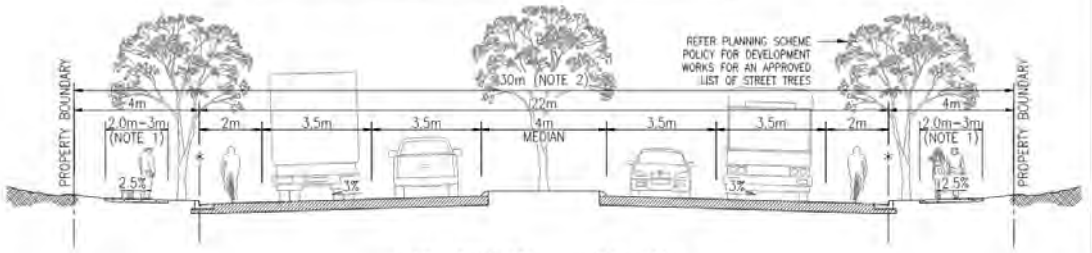
TO PROVIDE A HIGH VOLUME CONNECTION BETWEEN SUBURBS AND HIGHER ORDER ARTERIAL ROADS. DEDICATED LANES REDUCE CONFLICT BETWEEN ROAD USERS AND ALLOW FOR A SAFE AND EFFICIENT ENVIRONMENT. AMENITY IS IMPROVED THROUGH ATTRACTIVE LANDSCAPING AND APPROVED STREET TREES. IDEALLY THERE IS NO DIRECT PROPERTY ACCESS.

LEGEND

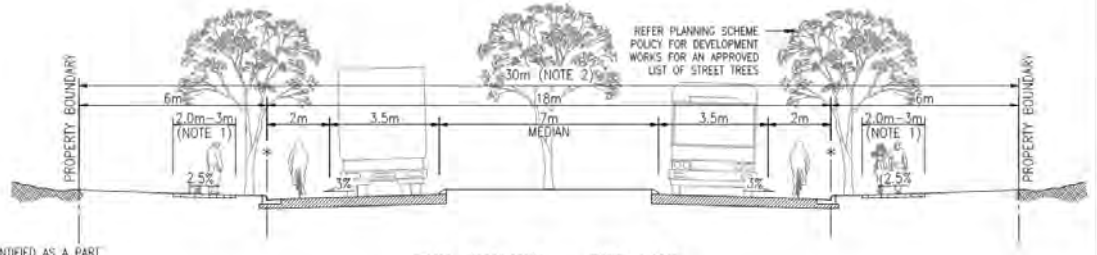
* NOMINAL KERB LINE (REFER BRC STANDARD DRAWING R1020).

PAVEMENT DESIGN IN ACCORDANCE WITH:
- AP-T36-06 PAVEMENT DESIGN FOR LIGHT TRAFFIC – A SUPPLEMENT TO AUSTROADS PAVEMENT DESIGN GUIDE.
- AGPT02-12 GUIDE TO PAVEMENT TECHNOLOGY PART 2: PAVEMENT STRUCTURAL DESIGN.

DESIGN CRITERIA	
LGIP TYPE	TRUNK
PRIORITY USERS	MOTORISTS
NOMINAL AADT	>18000 vpd (FOUR LANE) >10000 & <= 18000 (TWO LANE)
MAXIMUM LOTS/ DWELLINGS	N/A
DESIGN SPEED	70 km/h
DIRECT ACCESS	NO
KERB & CHANNEL	B1
LANE MARKING	YES
ASPHALT SURFACING MIN. DEPTH/ TYPE (NOTE 4)	50mm/DG14
LONGITUDINAL GRADE	MINIMUM 0.3% MAXIMUM 5%
VERTICAL CURVE LENGTH PER 1% CHANGE OF GRADE (K VALUE) REFER "GUIDE TO ROAD DESIGN PART 3: GEOMETRIC DESIGN" (AUSTROADS 2010)	MINIMUM CREST 30m MINIMUM SAG 28m
HORIZONTAL CURVE RADIUS	MINIMUM 240m
SUPERELEVATION	5%
TRAFFIC LOADING	2 X 10^6 ESA



SUB–ARTERIAL – FOUR LANE



SUB–ARTERIAL – TWO LANE

NOTES:

1. REFER "LOCAL GOVERNMENT INFRASTRUCTURE PLAN (LGIP)" TO SEE IF IDENTIFIED AS A PART OF THE OFF-ROAD MULTI-MODAL PATHWAY NETWORK. THE PATH WIDTHS ARE AS FOLLOWS:
   - PRINCIPAL PATHWAY (3m).
   - DISTRIBUTOR PATHWAY (2.5m).
   - COLLECTOR PATHWAY (2.0m).
   - OFF-ROAD REGIONAL RECREATIONAL CYCLEWAY (3m).

   IF NOT IDENTIFIED IN LGIP, A 2.0m PATH IS TO BE PROVIDED ON ONE SIDE OF THE ROAD.
2. ROAD RESERVE WIDTH WILL BE WIDER AT INTERSECTIONS AND MUST BE APPROVED BY COUNCIL'S DEVELOPMENT ENGINEERS.
3. FOR SUB SOIL DRAINAGE DETAILS REFER TO IPWEAQ STANDARDS. ANY "WATER SENSITIVE URBAN DESIGN (WSUD)" SOLUTION IS TO BE IN ACCORDANCE WITH GUIDELINES FROM HEALTHY WATERWAYS AND WATER BY DESIGN.
4. REFER TO DTMR SPECIFICATION "MRTS30 – DENSE GRADED AND OPEN GRADED ASPHALT"

Scale: NOT TO SCALE

Revisions	Verified	Date
A Original Issue		

Quality Certification: Design: ARW Verified: Drawn: TRs Checked: ARW Approved By Engineer: Date: RPEQ:

BUNDABERG REGIONAL COUNCIL

ROAD TYPE CROSS SECTIONS URBAN ROAD - SUB-ARTERIAL

Standard Drawing No: R2001 Sheet Size: A3 Rev: A

ROAD FUNCTION

TO PROVIDE A CONNECTION BETWEEN SUBURBS AND HIGHER ORDER ARTERIAL ROADS. DEDICATED LANES REDUCE CONFLICT BETWEEN ROAD USERS AND ALLOW FOR A SAFE AND EFFICIENT ENVIRONMENT.
RESIDENTIAL AMENITY IS IMPROVED THROUGH DIRECT ACCESS TO PROPERTIES. PATHWAYS ARE PROVIDED ON BOTH SIDES OF THE ROAD TO PROMOTE ACTIVE TRANSPORT OPTIONS. WHERE THE ROAD CORRIDOR IS CONSTRAINED TO 20m (I.E., INFILL AREAS) LANE WIDTHS CAN BE REDUCED TO MINIMUM ACCEPTABLE STANDARDS.

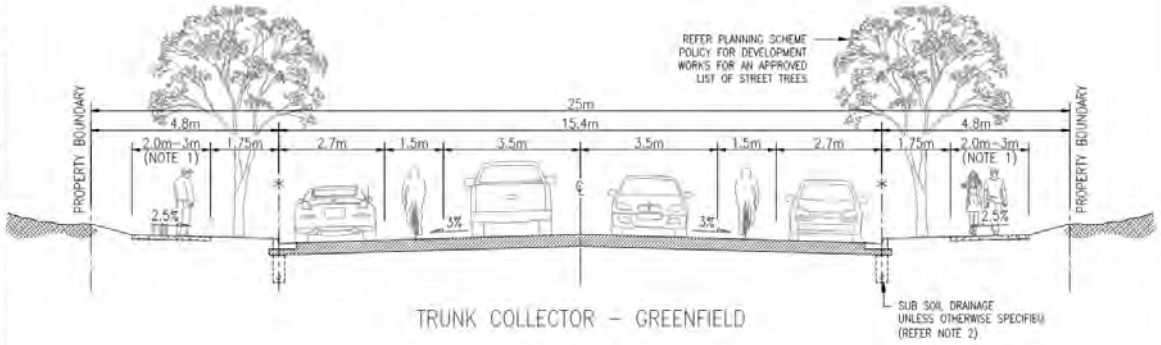
LEGEND

* NOMINAL KERB LINE
(REFER BRC STANDARD DRAWING R1020).

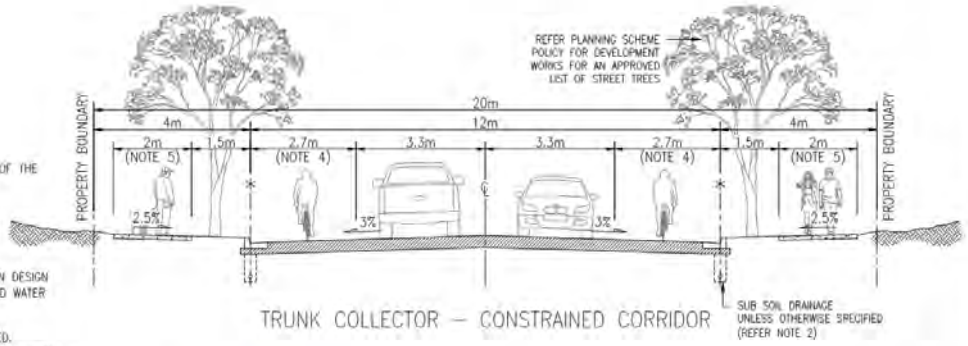
PAVEMENT DESIGN IN ACCORDANCE WITH:
- AP-T36-06 PAVEMENT DESIGN FOR LIGHT TRAFFIC – A SUPPLEMENT TO AUSTROADS PAVEMENT DESIGN GUIDE.
- AGPT02-12 GUIDE TO PAVEMENT TECHNOLOGY PART 2: PAVEMENT STRUCTURAL DESIGN.

DESIGN CRITERIA

LGIP TYPE	TRUNK
PRIORITY USERS	MOTORISTS & CYCLISTS
NOMINAL AADT	>3000 & <=10000 vpd
MAXIMUM LOTS/ DWELLINGS	1000
DESIGN SPEED	60 km/h
DIRECT ACCESS	YES
KERB & CHANNEL	B1
LANE MARKING	YES
ASPHALT SURFACING MIN. DEPTH/ TYPE (NOTE 4)	30mm/DG10
LONGITUDINAL GRADE	MINIMUM 0.3% MAXIMUM 5%
VERTICAL CURVE LENGTH PER 1% CHANGE OF GRADE (K VALUE) REFER "GUIDE TO ROAD DESIGN PART 3: GEOMETRIC DESIGN" (AUSTROADS 2010)	MINIMUM CREST 12m MINIMUM SAG 16m
HORIZONTAL CURVE RADIUS	MINIMUM 98m
SUPERELEVATION	5%
TRAFFIC LOADING	1 X 10^6 ESA



TRUNK COLLECTOR – GREENFIELD



TRUNK COLLECTOR – CONSTRAINED CORRIDOR

NOTES:

1. REFER "LOCAL GOVERNMENT INFRASTRUCTURE PLAN (LGIP)" TO SEE IF IDENTIFIED AS A PART OF THE OFF-ROAD MULTI-MODAL PATHWAY NETWORK. THE PATH WIDTHS ARE AS FOLLOWS:
   - PRINCIPAL PATHWAY (3m).
   - DISTRIBUTOR PATHWAY (2.5m).
   - COLLECTOR PATHWAY (2.0m).
   - OFF-ROAD REGIONAL RECREATIONAL CYCLEWAY (3m).

   IF NOT IDENTIFIED IN LGIP, A 2.0m PATH IS TO BE PROVIDED ON ONE SIDE OF THE ROAD.
2. FOR SUB SOIL DRAINAGE DETAILS REFER TO IPWEAQ STANDARDS. ANY "WATER SENSITIVE URBAN DESIGN (WSUD)" SOLUTION IS TO BE IN ACCORDANCE WITH GUIDELINES FROM HEALTHY WATERWAYS AND WATER BY DESIGN.
3. REFER TO DTMR SPECIFICATION "MRTS30 – DENSE GRADED AND OPEN GRADED ASPHALT"
4. PARKING IS PERMITTED IN MARKED BICYCLE LANE UNLESS OTHERWISE MARKED OR SIGN POSTED.
5. FOR "CONSTRAINED CORRIDOR", A PATHWAY WIDTH OF 2.0m IS REQUIRED DESPITE WHAT MAY BE SHOWN IN LGIP. IF NOT IDENTIFIED IN LGIP, A 2.0m PATH IS TO BE PROVIDED ON ONE SIDE OF THE ROAD.

Scales	Revisions	Verified	Date
NOT TO SCALE	A Original Issue		

Quality Certification: Design: Verified: Drawn: TRs Checked: AW Approved By Engineer: Date: RPEQ:

BUNDABERG REGIONAL COUNCIL

ROAD TYPE CROSS SECTIONS
URBAN ROAD - TRUNK COLLECTOR

Standard Drawing No: R2002 | Sheet Size: A3 | Rev: A

ROAD FUNCTION

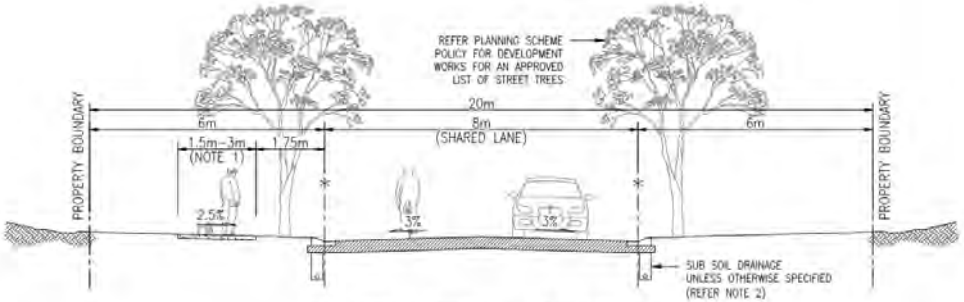
TO PROVIDE A CONNECTION BETWEEN RESIDENTIAL ACCESS STREETS AND HIGHER ORDER TRAFFIC CARRYING ROADS.
IN LOWER DENSITY AREAS WHERE ON-STREET PARKING DEMAND IS EXPECTED TO BE LOW, LANES ARE UNMARKED AND CYCLISTS, AND MOTORISTS SHARE THE AVAILABLE SPACE WITH INTERMITTENT PARKED CARS (I.E., OCCASIONALLY VEHICLES TRAVELING IN OPPOSITE DIRECTIONS WILL HAVE TO GIVE WAY TO ONCOMING VEHICLES).
IN HIGHER DENSITY AREAS INDENTED PARKING BAYS WILL BE REQUIRED TO CATER FOR A GREATER FLOW ON TRAFFIC.

LEGEND

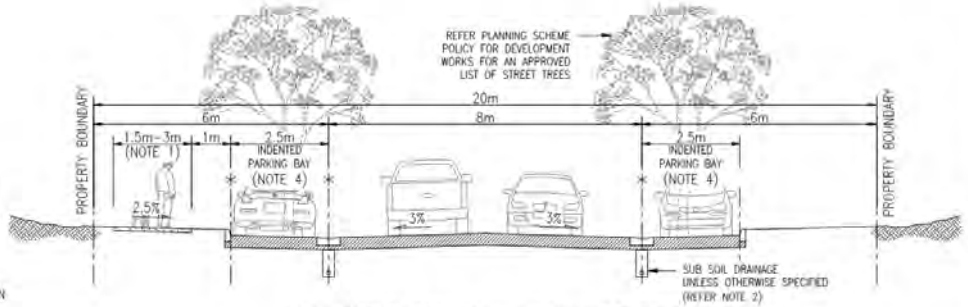
* NOMINAL KERB LINE (REFER BRC STANDARD DRAWING R1020).

PAVEMENT DESIGN IN ACCORDANCE WITH:
- AP-T36-06 PAVEMENT DESIGN FOR LIGHT TRAFFIC – A SUPPLEMENT TO AUSTROADS PAVEMENT DESIGN GUIDE.
- AGPT02-12 GUIDE TO PAVEMENT TECHNOLOGY PART 2: PAVEMENT STRUCTURAL DESIGN.

DESIGN CRITERIA	
LGIP TYPE	NON-TRUNK
PRIORITY USERS	ALL USERS EQUAL PRIORITY
NOMINAL AADT	>750 & <=3000 vpd
MAXIMUM LOTS/ DWELLINGS	300
DESIGN SPEED	50 km/h
DIRECT ACCESS	YES
KERB & CHANNEL	M3 (LOW DENSITY) INV1 & B2 (HIGH DENSITY)
LANE MARKING	NIL
ASPHALT SURFACING MIN. DEPTH/ TYPE (NOTE 4)	30mm/DG10
LONGITUDINAL GRADE	MINIMUM 0.3% MAXIMUM 10%
VERTICAL CURVE LENGTH PER 1% CHANGE OF GRADE (K VALUE) REFER "GUIDE TO ROAD DESIGN PART 3: GEOMETRIC DESIGN" (AUSTROADS 2010)	MINIMUM CREST 3.5m MINIMUM SAG 7m
HORIZONTAL CURVE RADIUS	MINIMUM 42m
SUPERELEVATION	NIL
TRAFFIC LOADING	3 X 10^5 ESA



COLLECTOR STREET – LOW DENSITY



COLLECTOR STREET – MEDIUM DENSITY

NOTES:

1. REFER "LOCAL GOVERNMENT INFRASTRUCTURE PLAN (LGIP)" TO SEE IF IDENTIFIED AS A PART OF THE OFF-ROAD MULTI-MODAL PATHWAY NETWORK. THE PATH WIDTHS ARE AS FOLLOWS:
   - PRINCIPAL PATHWAY (3m).
   - DISTRIBUTOR PATHWAY (2.5m).
   - COLLECTOR PATHWAY (2.0m).
   - OFF-ROAD REGIONAL RECREATIONAL CYCLEWAY (3m).

   IF NOT IDENTIFIED IN LGIP, A 1.5m PATH IS TO BE PROVIDED ON ONE SIDE OF THE ROAD.
2. FOR SUB SOIL DRAINAGE DETAILS REFER TO IPWEAQ STANDARDS. ANY "WATER SENSITIVE URBAN DESIGN (WSUD)" SOLUTION IS TO BE IN ACCORDANCE WITH GUIDELINES FROM HEALTHY WATERWAYS AND WATER BY DESIGN.
3. REFER TO DTMR SPECIFICATION "MRTS30 – DENSE GRADED AND OPEN GRADED ASPHALT".
4. INDENTED PARKING BAY TO BE DESIGNED IN ACCORDANCE WITH DTMR TN-138 AND MUST BE APPROVED BY COUNCIL'S DEVELOPMENT ENGINEERS.

Scale: NOT TO SCALE

Revisions	Verified	Date
A Original Issue		

Quality Certification — Design: Verified: Drawn: TRs Checked: AW Approved By Engineer: Date: RPEQ:

BUNDABERG REGIONAL COUNCIL

ROAD TYPE CROSS SECTIONS URBAN ROAD - COLLECTOR STREET

Standard Drawing No: R2003 Sheet Size: A3 Rev: A

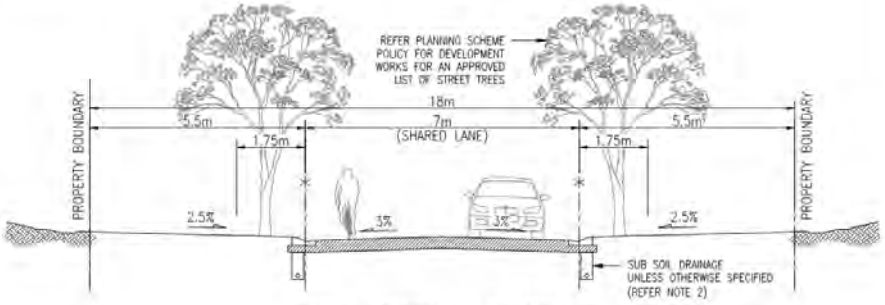
ROAD FUNCTION

TO PROVIDE DIRECT ACCESS TO ADJOINING RESIDENTIAL PROPERTIES.
IN LOWER DENSITY AREAS WHERE ON-STREET PARKING DEMAND IS EXPECTED TO BE LOW, LANES ARE UNMARKED, AND CYCLISTS AND MOTORISTS SHARE THE AVAILABLE SPACE WITH INTERMITTENT PARKED CARS (I.E., OCCASIONALLY VEHICLES TRAVELLING IN OPPOSITE DIRECTIONS WILL HAVE TO GIVE WAY TO ONCOMING VEHICLES).
IN HIGHER DENSITY AREAS INDENTED PARKING BAYS WILL BE REQUIRED TO CATER FOR A GREATER FLOW OF TRAFFIC.

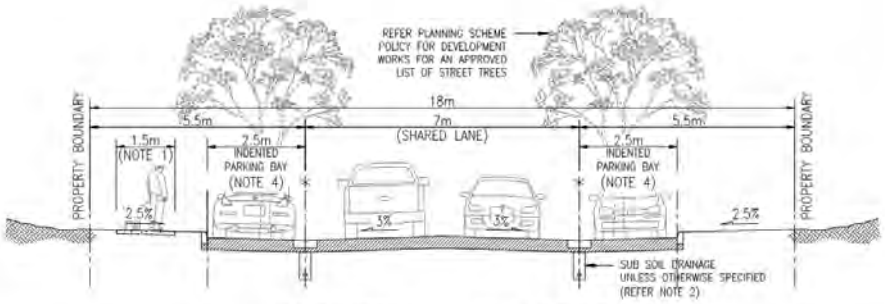
LEGEND

- NOMINAL KERB LINE (REFER BRC STANDARD DRAWING R1020).
- PAVEMENT DESIGN IN ACCORDANCE WITH:
  - AP-T36-06 PAVEMENT DESIGN FOR LIGHT TRAFFIC – A SUPPLEMENT TO AUSTROADS PAVEMENT DESIGN GUIDE.
  - AGPT02-12 GUIDE TO PAVEMENT TECHNOLOGY PART 2: PAVEMENT STRUCTURAL DESIGN.

DESIGN CRITERIA	
LGIP TYPE	NON-TRUNK
PRIORITY USERS	ALL USERS EQUAL PRIORITY
NOMINAL AADT	>300 & <=750 vpd
MAXIMUM LOTS/ DWELLINGS	75
DESIGN SPEED	40 km/h
DIRECT ACCESS	YES
KERB & CHANNEL	M3 (LOW DENSITY) INV1 & B2 (HIGH DENSITY)
LANE MARKING	NIL
ASPHALT SURFACING MIN. DEPTH/ TYPE (NOTE 4)	25mm/DG7
LONGITUDINAL GRADE	MINIMUM 0.3% MAXIMUM 10%
VERTICAL CURVE LENGTH PER 1% CHANGE OF GRADE (K VALUE) REFER "GUIDE TO ROAD DESIGN PART 3: GEOMETRIC DESIGN" (AUSTROADS 2010)	MINIMUM CREST 3.5m MINIMUM SAG 7m
HORIZONTAL CURVE RADIUS	MINIMUM 24m
SUPERELEVATION	NIL
TRAFFIC LOADING	6 X 10^4 ESA



ACCESS STREET – LOW DENSITY



ACCESS STREET – MEDIUM DENSITY

NOTES:

1. 1.5m WIDE FOOTPATH IS REQUIRED ON ONE SIDE OF THE STREET, IT WILL GENERALLY BE LOCATED ON THE NORTHERN OR WESTERN SIDE OF THE ROAD.
2. FOR SUB SOIL DRAINAGE DETAILS REFER TO IPWEAQ STANDARDS. ANY "WATER SENSITIVE URBAN DESIGN (WSUD)" SOLUTION IS TO BE IN ACCORDANCE WITH GUIDELINES FROM HEALTHY WATERWAYS AND WATER BY DESIGN.
3. REFER TO DTMR SPECIFICATION "MRTS30 – DENSE GRADED AND OPEN GRADED ASPHALT".
4. INDENTED PARKING BAY TO BE DESIGNED IN ACCORDANCE WITH DTMR TN-138 AND MUST BE APPROVED BY COUNCIL'S DEVELOPMENT ENGINEERS.

Scales: NOT TO SCALE

Revisions	Verified	Date
A Original Issue		

Quality Certification — Design: Verified: Drawn: TRs Checked: AW Approved By Engineer: Date: RPEQ:

BUNDABERG REGIONAL COUNCIL

ROAD TYPE CROSS SECTIONS
URBAN ROAD - ACCESS STREET

Standard Drawing No: R2004 Rev: A Sheet Size: A3

ROAD FUNCTION

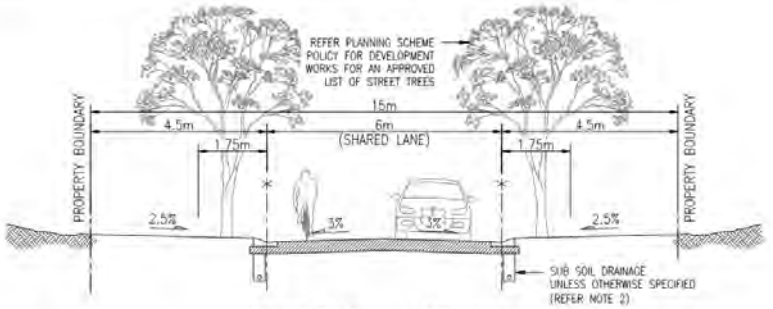
TO PROVIDE DIRECT ACCESS TO ADJOINING RESIDENTIAL PROPERTIES.
CYCLISTS AND MOTORISTS SHARE A 5m LANE. THE STREET IS DESIGNED AS A SLOW SPEED ENVIRONMENT AND OCCASIONALLY VEHICLES TRAVELLING IN OPPOSITE DIRECTIONS WILL HAVE TO GIVE WAY TO ONCOMING VEHICLES.
IN LOW DENSITY AREAS, CARS MAY PARK PARTLY IN THE 5m (SHARED LANE).
IN HIGHER DENSITY AREAS, INTERMITTENT INDENTED PARKING BAYS WILL BE REQUIRED ON ONE OR ALTERNATING SIDES OF THE STREET TO CATER FOR A GREATER PARKING DEMAND.

LEGEND

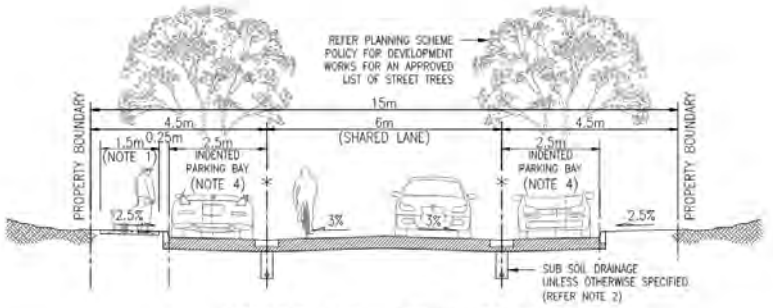
* NOMINAL KERB LINE
(REFER BRC STANDARD DRAWING R1020).

PAVEMENT DESIGN IN ACCORDANCE WITH:
- AP-T36-06 PAVEMENT DESIGN FOR LIGHT TRAFFIC – A SUPPLEMENT TO AUSTROADS PAVEMENT DESIGN GUIDE.
- AGPT02-12 GUIDE TO PAVEMENT TECHNOLOGY PART 2: PAVEMENT STRUCTURAL DESIGN.

DESIGN CRITERIA	
LGIP TYPE	NON-TRUNK
PRIORITY USERS	PEDESTRIANS AND CYCLISTS
NOMINAL AADT	<=300 vpd
MAXIMUM LOTS/ DWELLINGS	30
DESIGN SPEED	40 km/h
DIRECT ACCESS	YES
KERB & CHANNEL	M3 (LOW DENSITY) INV1 & B2 (HIGH DENSITY)
LANE MARKING	NIL
ASPHALT SURFACING MIN. DEPTH/ TYPE (NOTE 4)	25mm/DG7
LONGITUDINAL GRADE	MINIMUM 0.3% MAXIMUM 12%
VERTICAL CURVE LENGTH PER 1% CHANGE OF GRADE (K VALUE) REFER "GUIDE TO ROAD DESIGN PART 3: GEOMETRIC DESIGN" (AUSTROADS 2010)	MINIMUM CREST 3.5m MINIMUM SAG 7m
HORIZONTAL CURVE RADIUS	MINIMUM 24m
SUPERELEVATION	NIL
TRAFFIC LOADING	6 X 10^4 ESA



ACCESS PLACE – LOW DENSITY



ACCESS PLACE – MEDIUM DENSITY

NOTES:

1. 1.5m WIDE FOOTPATH IS REQUIRED ON ONE SIDE OF THE STREET, IT WILL GENERALLY BE LOCATED ON THE NORTHERN OR WESTERN SIDE OF THE ROAD.
2. FOR SUB SOIL DRAINAGE DETAILS REFER TO IPWEAQ STANDARDS. ANY "WATER SENSITIVE URBAN DESIGN (WSUD)" SOLUTION IS TO BE IN ACCORDANCE WITH GUIDELINES FROM HEALTHY WATERWAYS AND WATER BY DESIGN.
3. REFER TO DTMR SPECIFICATION "MRTS30 – DENSE GRADED AND OPEN GRADED ASPHALT".
4. INDENTED PARKING BAY TO BE DESIGNED IN ACCORDANCE WITH DTMR TN-138 AND MUST BE APPROVED BY COUNCIL'S DEVELOPMENT ENGINEERS.

Scales: NOT TO SCALE

Revisions	Verified	Date
A Original Issue		

Quality Certification
Design: AW Verified:
Drawn: TRs Checked:
Approved By Engineer: Date:
RPEQ

BUNDABERG REGIONAL COUNCIL

ROAD TYPE CROSS SECTIONS URBAN ROAD - ACCESS PLACE

Standard Drawing No: R2005 Sheet Size: A3 Rev:

ROAD FUNCTION

– TO PROVIDE ACCESS TO PROPERTIES AND BUSINESSES WITHIN THE CBD AND COMMERCIAL CENTRES. A SLOW SPEED MIXED TRAFFIC LANE SERVES BOTH MOTORISTS AND CYCLISTS ALIKE. THE STREET IS DESIGNED WITH AMPLE PEDESTRIAN CROSSINGS TO FACILITATE A VIBRANT COMMERCIAL SPACE. FOR CBD ACCESS STREETS NO STANDARD CROSS SECTION IS DEFINED. A TRAFFIC ASSESSMENT WOULD BE REQUIRED TO DETERMINE THE MOST SUITABLE DESIGN.

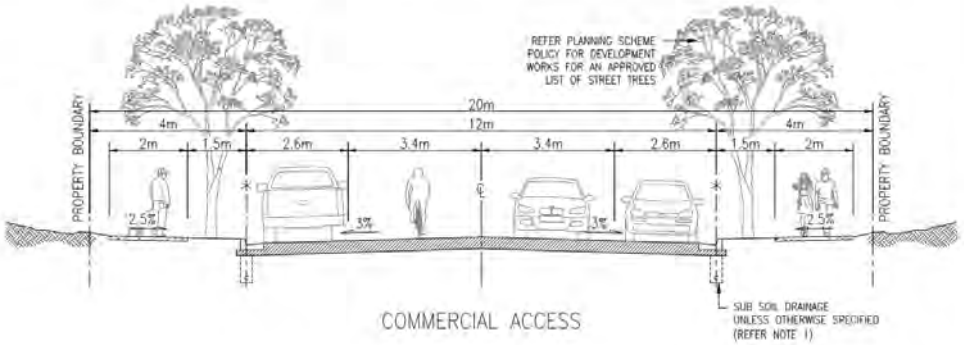
LEGEND

* NOMINAL KERB LINE (REFER BRC STANDARD DRAWING R1020).

PAVEMENT DESIGN IN ACCORDANCE WITH:
- AP-T36-06 PAVEMENT DESIGN FOR LIGHT TRAFFIC – A SUPPLEMENT TO AUSTROADS PAVEMENT DESIGN GUIDE.
- AGPT02-12 GUIDE TO PAVEMENT TECHNOLOGY PART 2: PAVEMENT STRUCTURAL DESIGN.

DESIGN CRITERIA

	CBD ACCESS	COMMERCIAL ACCESS
LGIP TYPE	NON-TRUNK	NON-TRUNK
PRIORITY USERS	PEDESTRIANS AND MOTORISTS	PEDESTRIANS AND MOTORISTS
NOMINAL AADT	TRAFFIC STUDY REQ.	TRAFFIC STUDY REQ.
MAXIMUM LOTS/ DWELLINGS	N/A	300
DESIGN SPEED	40 km/h	50 km/h
DIRECT ACCESS	NOT PERMITTED	NOT PERMITTED
KERB & CHANNEL	B1	B1
LANE MARKING	YES	YES
ASPHALT SURFACING MIN. DEPTH/ TYPE (NOTE 4)	50mm/DG14	50mm/DG14
LONGITUDINAL GRADE	MINIMUM 0.3% MAXIMUM 5%	MINIMUM 0.3% MAXIMUM 10%
VERTICAL CURVE LENGTH PER 1% CHANGE OF GRADE (K VALUE) REFER "GUIDE TO ROAD DESIGN PART 3: GEOMETRIC DESIGN" (AUSTROADS 2010)	MINIMUM CREST 3.5m MINIMUM SAG 7m	MINIMUM CREST 7m MINIMUM SAG 11m
HORIZONTAL CURVE RADIUS	MINIMUM 42m	MINIMUM 66m
SUPERELEVATION	NIL	NIL
TRAFFIC LOADING	5 X 10^5 ESA	5 X 10^5 ESA



COMMERCIAL ACCESS

"CROSS SECTION TO BE DETERMINED FROM TRAFFIC STUDY"

CBD ACCESS

NOTES:

1. FOR SUB SOIL DRAINAGE DETAILS REFER TO IPWEAQ STANDARDS. ANY "WATER SENSITIVE URBAN DESIGN (WSUD)" SOLUTION IS TO BE IN ACCORDANCE WITH GUIDELINES FROM HEALTHY WATERWAYS AND WATER BY DESIGN.
2. REFER TO DTMR SPECIFICATION "MRTS30 – DENSE GRADED AND OPEN GRADED ASPHALT".

Scale: NOT TO SCALE

Revisions	Verified	Date
A Original Issue		

Quality Certification: Design: AW Verified: Drawn: TRs Checked: Approved By Engineer: Date: RPEQ:

BUNDABERG REGIONAL COUNCIL

ROAD TYPE CROSS SECTIONS
URBAN ROAD - CBD / COMMERCIAL ACCESS

Standard Drawing No: R2006 Sheet Size: A3 Rev:

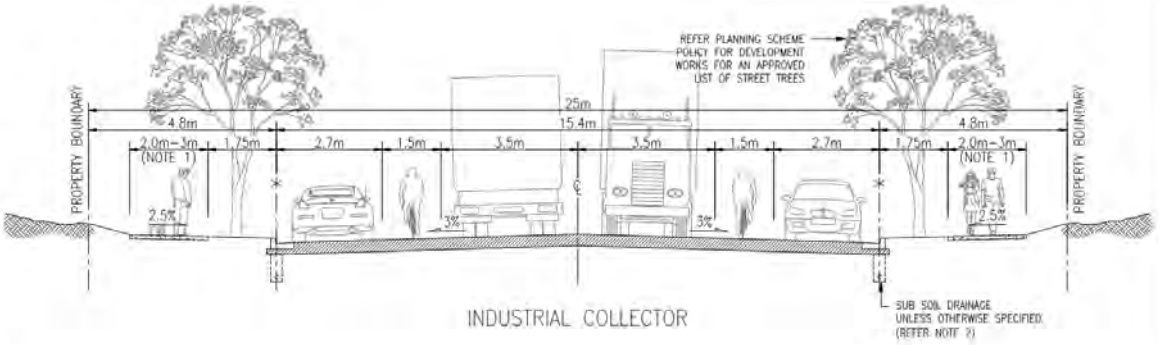
ROAD FUNCTION

TO PROVIDE A CONNECTION BETWEEN INDUSTRIAL ACCESS AND HIGHER ORDER FREIGHT ROUTES. THIS ROAD IS DESIGNED TO CARRY HEAVY VEHICLES AS WELL AS PROVIDE A SAFE ENVIRONMENT FOR PEDESTRIANS AND CYCLISTS.

LEGEND

- ✳ NOMINAL KERB LINE (REFER BRC STANDARD DRAWING R1020).
- PAVEMENT DESIGN IN ACCORDANCE WITH:
  - AP-T36-06 PAVEMENT DESIGN FOR LIGHT TRAFFIC – A SUPPLEMENT TO AUSTROADS PAVEMENT DESIGN GUIDE.
  - AGPT02-12 GUIDE TO PAVEMENT TECHNOLOGY PART 2: PAVEMENT STRUCTURAL DESIGN.

DESIGN CRITERIA	
LGIP TYPE	TRUNK
PRIORITY USERS	HEAVY VEHICLES
NOMINAL ADT	>750 & <= 3000 vpd
MAXIMUM LOTS/ DWELLINGS	300
DESIGN SPEED	60 km/h
DIRECT ACCESS	YES
KERB & CHANNEL	B1
LANE MARKING	YES
ASPHALT SURFACING MIN. DEPTH/ TYPE (NOTE 4)	50mm/DG14
LONGITUDINAL GRADE	MINIMUM 0.3% MAXIMUM 5%
VERTICAL CURVE LENGTH PER 1% CHANGE OF GRADE (K VALUE) REFER "GUIDE TO ROAD DESIGN PART 3: GEOMETRIC DESIGN" (AUSTROADS 2010)	MINIMUM CREST 7m MINIMUM SAG 11m
HORIZONTAL CURVE RADIUS	MINIMUM 56m
SUPERELEVATION	5%
TRAFFIC LOADING	5 X 10^6 ESA



NOTES:

1. REFER "LOCAL GOVERNMENT INFRASTRUCTURE PLAN (LGIP)" TO SEE IF IDENTIFIED AS A PART OF THE OFF-ROAD MULTI-MODAL PATHWAY NETWORK. THE PATH WIDTHS ARE AS FOLLOWS:
   - PRINCIPAL PATHWAY (3m).
   - DISTRIBUTOR PATHWAY (2.5m).
   - COLLECTOR PATHWAY (2.0m).
   - OFF-ROAD REGIONAL RECREATIONAL CYCLEWAY (3m).

   IF NOT IDENTIFIED IN LGIP, A 2.0m PATH IS TO BE PROVIDED ON ONE SIDE OF THE ROAD.
2. FOR SUB SOIL DRAINAGE DETAILS REFER TO IPWEAQ STANDARDS. ANY "WATER SENSITIVE URBAN DESIGN (WSUD)" SOLUTION IS TO BE IN ACCORDANCE WITH GUIDELINES FROM HEALTHY WATERWAYS AND WATER BY DESIGN.
3. REFER TO DTMR SPECIFICATION "MRTS30 – DENSE GRADED AND OPEN GRADED ASPHALT"

Scales	Revisions	Verified	Date
NOT TO SCALE	A Original Issue		

Quality Certification — Design: AW — Verified: — Drawn: TRs — Checked: — Approved By Engineer: — Date: — RPEQ:

BUNDABERG REGIONAL COUNCIL

ROAD TYPE CROSS SECTIONS URBAN ROAD - INDUSTRIAL COLLECTOR

Standard Drawing — Sheet Size: A3 — No.: R2007 — Rev.:

ROAD FUNCTION

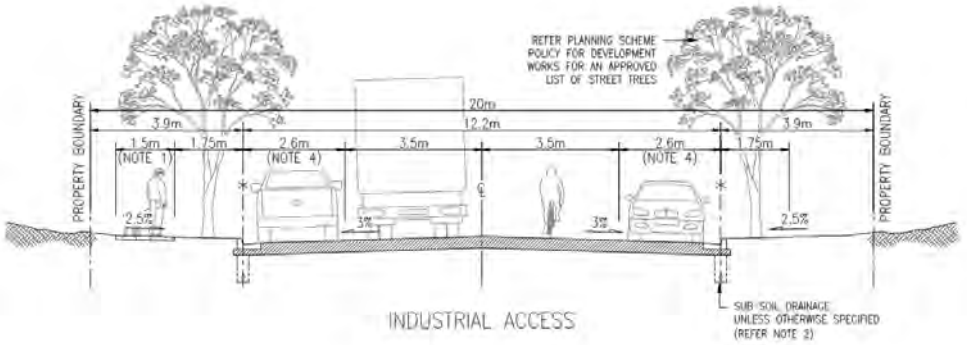
TO PROVIDE DIRECT ACCESS FOR HEAVY VEHICLES TO INDUSTRIAL PROPERTIES. A SLOW SPEED MIXED TRAFFIC LANE SERVES BOTH HEAVY VEHICLES AND CYCLISTS ALIKE. HOWEVER, CYCLING DEMAND IS EXPECTED TO BE LOW AND LIMITED TO COMMUTER USE.

LEGEND

* NOMINAL KERB LINE (REFER BRC STANDARD DRAWING R1020).

PAVEMENT DESIGN IN ACCORDANCE WITH:
- AP-T36-06 PAVEMENT DESIGN FOR LIGHT TRAFFIC – A SUPPLEMENT TO AUSTROADS PAVEMENT DESIGN GUIDE.
- AGPT02-12 GUIDE TO PAVEMENT TECHNOLOGY PART 2: PAVEMENT STRUCTURAL DESIGN.

DESIGN CRITERIA	
LGIP TYPE	NON-TRUNK
PRIORITY USERS	HEAVY VEHICLES
NOMINAL AADT	<750 vpd
MAXIMUM LOTS/ DWELLINGS	75
DESIGN SPEED	40 km/h
DIRECT ACCESS	YES
KERB & CHANNEL	B1
LANE MARKING	YES
ASPHALT SURFACING MIN. DEPTH/ TYPE (NOTE 4)	50mm/DG14
LONGITUDINAL GRADE	MINIMUM 0.3% MAXIMUM 5%
VERTICAL CURVE LENGTH PER 1% CHANGE OF GRADE (K VALUE) REFER "GUIDE TO ROAD DESIGN PART 3: GEOMETRIC DESIGN" (AUSTROADS 2010)	MINIMUM CREST 3.5m MINIMUM SAG 7m
HORIZONTAL CURVE RADIOS	MINIMUM 42m
SUPERELEVATION	NIL
TRAFFIC LOADING	5 X 10^6 ESA



INDUSTRIAL ACCESS

NOTES:

1. 1.5m WIDE FOOTPATH IS REQUIRED ON ONE SIDE OF THE STREET, IT WILL GENERALLY BE LOCATED ON THE NORTHERN OR WESTERN SIDE OF THE ROAD.
2. FOR SUB SOIL DRAINAGE DETAILS REFER TO IPWEAQ STANDARDS. ANY "WATER SENSITIVE URBAN DESIGN (WSUD)" SOLUTION IS TO BE IN ACCORDANCE WITH GUIDELINES FROM HEALTHY WATERWAYS AND WATER BY DESIGN.
3. REFER TO DTMR SPECIFICATION "MRTS30 – DENSE GRADED AND OPEN GRADED ASPHALT"
4. IF CYCLING DEMAND IS EXPECTED TO BE HIGH, THE PARKING LANES IS TO BE UTILISED AS MARKED BICYCLE LANE.

Scale: NOT TO SCALE

Revisions	Verified	Date
A Original Issue		

Quality Certification — Design: AW — Verified: — Drawn: TRs — Checked: — Approved By Engineer: — Date: — RPEQ:

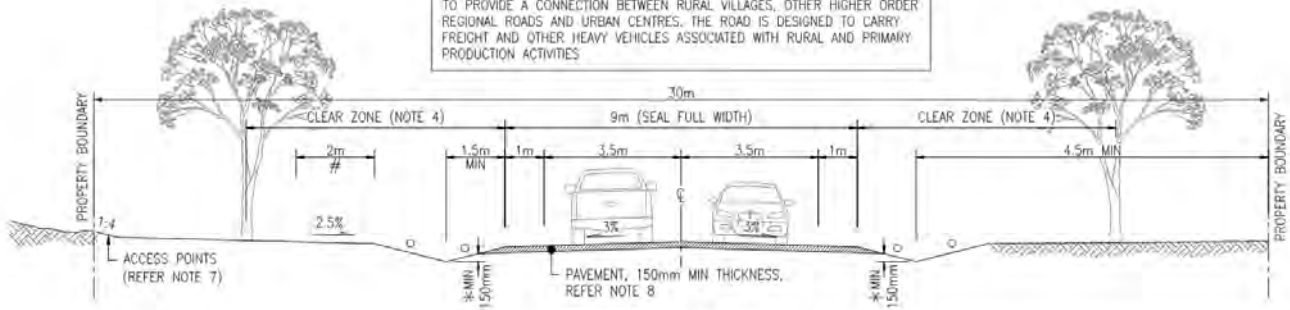
BUNDABERG REGIONAL COUNCIL

ROAD TYPE CROSS SECTIONS URBAN ROAD - INDUSTRIAL ACCESS

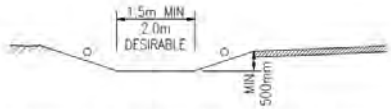
Standard Drawing — Sheet Size: A3 — No.: R2008 — Rev.:

ROAD FUNCTION

TO PROVIDE A CONNECTION BETWEEN RURAL VILLAGES, OTHER HIGHER ORDER REGIONAL ROADS AND URBAN CENTRES. THE ROAD IS DESIGNED TO CARRY FREIGHT AND OTHER HEAVY VEHICLES ASSOCIATED WITH RURAL AND PRIMARY PRODUCTION ACTIVITIES



PRINCIPAL RURAL ROAD



ALTERNATIVE FLAT BOTTOM TABLE DRAIN

DESIGN CRITERIA	
LGIP TYPE	TRUNK
PRIORITY USERS	MOTORISTS
NOMINAL AADT	>1000 vpd
MAXIMUM LOTS/ DWELLINGS	N/A
DESIGN SPEED	100 km/h
DIRECT ACCESS	YES
LANE MARKING	YES (NOTE 9)
ROAD SURFACING	PRIME AND 2 COAT SEAL (NOTE 13)
LONGITUDINAL GRADE	MINIMUM 0.3% MAXIMUM 10%
VERTICAL CURVE LENGTH PER 1% CHANGE OF GRADE (K VALUE) REFER "GUIDE TO ROAD DESIGN PART 3: GEOMETRIC DESIGN" (AUSTROADS 2010)	MINIMUM CREST 61m MINIMUM SAG 61m
HORIZONTAL CURVE RADIUS	MINIMUM 463m
SUPERELEVATION	5%
TRAFFIC LOADING	1 X 10^6 ESA

LEGEND

- o EARTH BATTER–CUT/FILL – ROCK BATTER–CUT
- # BERM FOR SERVICES WHERE SPECIFIED.
- * 150mm BELOW UNDERSIDE OF PAVEMENT.
- PAVEMENT DESIGN IN ACCORDANCE WITH "AUSTROADS – GUIDE TO PAVEMENT TECHNOLOGY" OR "AUSTROADS PAVEMENT DESIGN – A GUIDE TO THE STRUCTURAL DESIGN OF ROAD PAVEMENTS".

NOTES:

1. TABLE DRAINS STEEPER THAN 5% LONGITUDINAL GRADE (1:20) SHOULD HAVE EROSION PROTECTION MEASURES INSTALLED.
2. CUT AND FILL BATTER SLOPES MAY BE VARIED ON SITE TO ENSURE LONG TERM STABILITY OF BATTERS:
   ROCK BATTER – CUT 1 IN 0.5
   EARTH BATTER – CUT/ FILL:
   - ≤ 0.5m DEEP 1 IN 6
   - 0.5m – 1.0m DEEP 1 IN 4
   - 1.0m – 2.0m DEEP 1 IN 3
   - > 2.0m DEEP 1 IN 2

   NOTE:
   - BATTER SLOPES SHOWN ARE TYPICAL AND MAY NEED TO BE VARIED TO SUIT SITE CONDITIONS.
   - SLOPES TO BE APPROVED BY COUNCIL ENGINEER.
   - FOR FILL SLOPES STEEPER THAN 1 IN 4, SAFETY BARRIERS TO BE CONSTRUCTED IN ACCORDANCE WITH AUSTROADS "GUIDE TO ROAD DESIGN–PART 6: ROADSIDE DESIGN, SAFETY AND BARRIERS".
3. MINIMUM LONGITUDINAL SLOPE OF TABLE DRAIN INVERTS SHALL BE 0.3% (1 IN 333) UNLESS APPROVED BY COUNCIL ENGINEER.
4. FLOODWAYS SHALL BE CONSTRUCTED WITH CROSS ROAD DRAINAGE.
5. UNSEALED ROADS SHALL BE DESIGNED USING PARAMETERS SET OUT IN AUSTROADS "UNSEALED ROADS MANUAL" UNLESS DIRECTED BY COUNCIL ENGINEER.
6. SEALED ROADS SHALL BE DESIGNED AS PER REQUIREMENTS OF AUSTROADS "GUIDE TO ROAD DESIGN – PART 3: GEOMETRIC DESIGN".
7. ONE ACCESS POINT TO BE CONSTRUCTED TO EACH LOT IN ACCORDANCE WITH STANDARD DRAWINGS R1012 & R1013.
8. PAVEMENT DESIGN AND SEAL TO BE SUBMITTED FOR APPROVAL BY COUNCIL ENGINEER FOR EACH APPLICATION OF OPERATIONAL WORKS.
9. LINEMARKING – CENTRE & EDGE LINE AS SET OUT IN MUTCD.
10. TABLE DRAIN MAY BE VARIED FROM "V" DRAINS TO FLAT BOTTOM WITH MIN. WIDTH OF 1.0m, 2.0m DESIRABLE & SIDE SLOPES OF 1 IN 4 AS DIRECTED BY COUNCILS ENGINEER.
11. REFER TO MUTCD FOR PAVEMENT MARKING & EDGE MARKER INSTALLATIONS.
12. LOCAL ROADS OF REGIONAL SIGNIFICANCE (LRRS) ARE NOT COVERED BY THE ABOVE TABLE. CONSULT WITH COUNCIL ENGINEER.
13. IN ACCORDANCE WITH MRS11 AND PLANNING SCHEME POLICY FOR DEVELOPMENT WORKS.
14. REFER GUIDE TO ROAD DESIGN – PART 6: ROADSIDE DESIGN, SAFETY AND BARRIERS.

Scale: NOT TO SCALE

Revisions	Verified	Date
A Original Issue		

Quality Certification: Design: AW Verified: Drawn: TRs Checked: Approved By Engineer: Date: RPEQ:

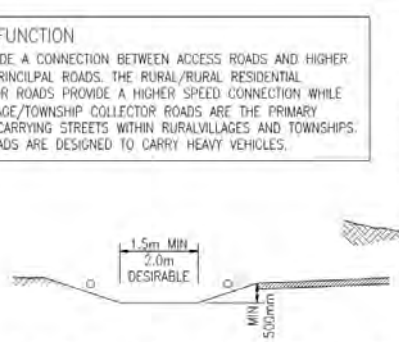
BUNDABERG REGIONAL COUNCIL

ROAD TYPE CROSS SECTIONS
RURAL ROAD - PRINCIPAL RURAL ROAD

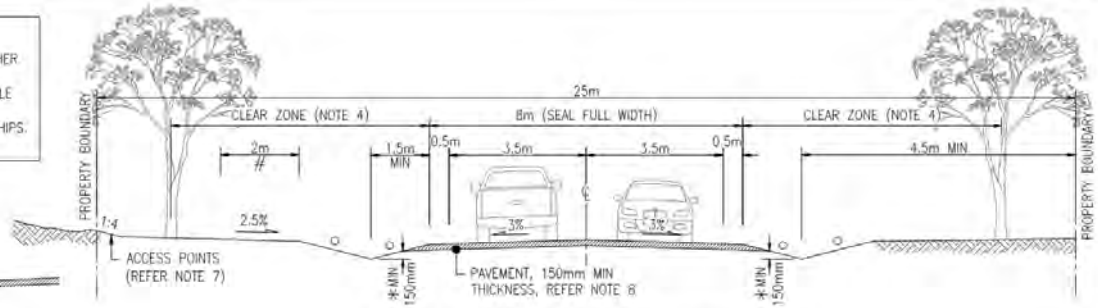
Standard Drawing No: R3001 Sheet Size: A3 Rev:

ROAD FUNCTION

TO PROVIDE A CONNECTION BETWEEN ACCESS ROADS AND HIGHER ORDER PRINCILPAL ROADS. THE RURAL/RURAL RESIDENTIAL COLLECTOR ROADS PROVIDE A HIGHER SPEED CONNECTION WHILE THE VILLAGE/TOWNSHIP COLLECTOR ROADS ARE THE PRIMARY TRAFFIC CARRYING STREETS WITHIN RURALVILLAGES AND TOWNSHIPS. BOTH ROADS ARE DESIGNED TO CARRY HEAVY VEHICLES.



ALTERNATIVE FLAT BOTTOM TABLE DRAIN



RURAL/ RURAL RESIDENTIAL COLLECTOR ROAD
AND VILLAGE/ TOWNSHIP COLLECTOR ROAD

DESIGN CRITERIA

ROAD TYPE	RURAL/ RURAL RESIDENTIAL COLLECTOR ROAD	VILLAGE/ TOWNSHIP COLLECTOR ROAD
LGIP TYPE	TRUNK	TRUNK
PRIORITY USERS	MOTORISTS	MOTORISTS
NOMINAL AADT	>250 <=1000 vpd	>250 <=1000 vpd
MAXIMUM LOTS/ DWELLINGS	<= 100	<= 300
DESIGN SPEED	100 km/h	60 km/h
DIRECT ACCESS	YES	YES
LANE MARKING	YES (NOTE 9)	YES (NOTE 9)
ROAD SURFACING.	PRIME AND 2 COAT SEAL (NOTE 13)	PRIME AND 2 COAT SEAL (NOTE 13)
LONGITUDINAL GRADE	MINIMUM 0.3% MAXIMUM 10%	MINIMUM 0.3% MAXIMUM 12%
VERTICAL CURVE LENGTH PER 1% CHANGE OF GRADE (K VALUE) REFER "GUIDE TO ROAD DESIGN PART 3: GEOMETRIC DESIGN" (AUSTROADS 2010)	MINIMUM CREST 61m MINIMUM SAG 61m	MINIMUM CREST 12m MINIMUM SAG 16m
HORIZONTAL CURVE RADIUS	MINIMUM 463m	MINIMUM 98m
SUPERELEVATION	5%	5%
TRAFFIC LOADING	5 X 10^5 ESA	3 X 10^5 ESA

LEGEND

- o EARTH BATTER-CUT/FILL - ROCK BATTER-CUT.
- # BERM FOR SERVICES WHERE SPECIFIED.
- * 150mm BELOW UNDERSIDE OF PAVEMENT.
- PAVEMENT DESIGN IN ACCORDANCE WITH "AUSTROADS – GUIDE TO PAVEMENT TECHNOLOGY" OR "AUSTROADS PAVEMENT DESIGN – A GUIDE TO THE STRUCTURAL DESIGN OF ROAD PAVEMENTS".

NOTES:

1. TABLE DRAINS STEEPER THAN 5% LONGITUDINAL GRADE (1:20) SHOULD HAVE EROSION PROTECTION MEASURES INSTALLED.
2. CUT AND FILL BATTER SLOPES MAY BE VARIED ON SITE TO ENSURE LONG TERM STABILITY OF BATTERS:
   ROCK BATTER - CUT 1 IN 0.5
   EARTH BATTER – CUT/ FILL:
   - ≤ 0.5m DEEP 1 IN 6
   - 0.5m – 1.0m DEEP 1 IN 4
   - 1.0m – 2.0m DEEP 1 IN 3
   - > 2.0m DEEP 1 IN 2

   NOTE:
   - BATTER SLOPES SHOWN ARE TYPICAL AND MAY NEED TO BE VARIED TO SUIT SITE CONDITIONS.
   - SLOPES TO BE APPROVED BY COUNCIL ENGINEER.
   - FOR FILL SLOPES STEEPER THAN 1 IN 4, SAFETY BARRIERS TO BE CONSTRUCTED IN ACCORDANCE WITH AUSTROADS "GUIDE TO ROAD DESIGN–PART 6: ROADSIDE DESIGN, SAFETY AND BARRIERS."
3. MINIMUM LONGITUDINAL SLOPE OF TABLE DRAIN INVERTS SHALL BE 0.3% (1 IN 333) UNLESS APPROVED BY COUNCIL ENGINEER.
4. FLOODWAYS SHALL BE CONSTRUCTED WITH CROSS ROAD DRAINAGE.
5. UNSEALED ROADS SHALL BE DESIGNED USING PARAMETERS SET OUT IN AUSTROADS "UNSEALED ROADS MANUAL" UNLESS DIRECTED BY COUNCIL ENGINEER.
6. SEALED ROADS SHALL BE DESIGNED AS PER REQUIREMENTS OF AUSTROADS "GUIDE TO ROAD DESIGN – PART 3: GEOMETRIC DESIGN".
7. ONE ACCESS POINT TO BE CONSTRUCTED TO EACH LOT IN ACCORDANCE WITH STANDARD DRAWINGS R1012 & R1013.
8. PAVEMENT DESIGN AND SEAL TO BE SUBMITTED FOR APPROVAL BY COUNCIL ENGINEER FOR EACH APPLICATION OF OPERATIONAL WORKS.
9. LINEMARKING – CENTRE & EDGE LINE AS SET OUT IN MUTCD.
10. TABLE DRAIN MAY BE VARIED FROM "V" DRAINS TO FLAT BOTTOM WITH MIN WIDTH OF 1.0m, 2.0m DESIRABLE & SIDE SLOPES OF 1 IN 4 AS DIRECTED BY COUNCILS ENGINEER.
11. REFER TO MUTCD FOR PAVEMENT MARKING & EDGE MARKER INSTALLATIONS.
12. LOCAL ROADS OF REGIONAL SIGNIFICANCE (LRRS) ARE NOT COVERED BY THE ABOVE TABLE. CONSULT WITH COUNCIL ENGINEER.
13. IN ACCORDANCE WITH MRS11 AND PLANNING SCHEME POLICY FOR DEVELOPMENT WORKS.
14. REFER GUIDE TO ROAD DESIGN – PART 6: ROADSIDE DESIGN, SAFETY AND BARRIERS.

Scale: NOT TO SCALE

Revisions	Verified	Date
A Original Issue		

Quality Certification — Design: AW Verified: — Drawn: TRs Checked: — Approved By Engineer: Date: — RPEQ

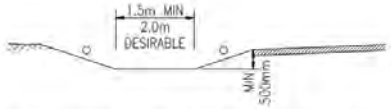
BUNDABERG REGIONAL COUNCIL

ROAD TYPE CROSS SECTIONS
RURAL ROAD - COLLECTOR ROADS

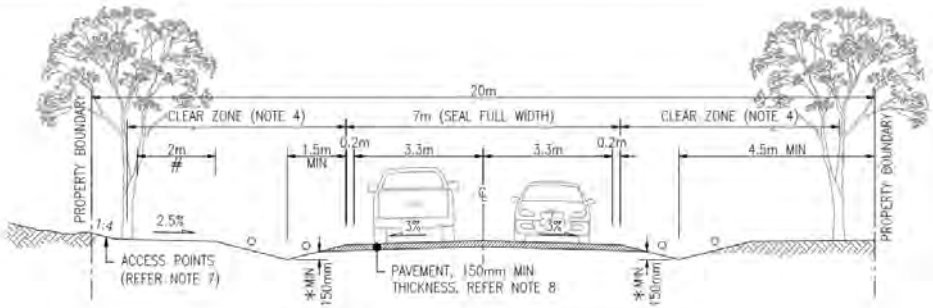
Standard Drawing — Sheet Size: A3 — No.: R3002 — Rev.:

ROAD FUNCTION

TO PROVIDE DIRECT ACCESS TO PROPERTIES IN RURAL, RUAL RESIDENTIAL VILLAGES AND TOWNSHIPS. FOR VILLAGE/TOWNSHIPS ACCESS ROADS CYCLISTS AND MOTORISTS SHARE THE AVAILABLE SPACE IN A LOW SPEED ENVIRONMENT.



ALTERNATIVE FLAT BOTTOM TABLE DRAIN



RURAL/ RURAL RESIDENTIAL ACCESS ROAD
AND VILLAGE/ TOWNSHIP ACCESS ROAD

DESIGN CRITERIA

ROAD TYPE	RURAL/ RURAL RESIDENTIAL ACCESS ROAD	VILLAGE/ TOWNSHIP ACCESS ROAD
LGIP TYPE	NON-TRUNK	NON-TRUNK
PRIORITY USERS	MOTORISTS	CYCLISTS AND MOTORISTS
NOMINAL AADT	<=250 vpd	<=250 vpd
MAXIMUM LOTS/ DWELLINGS	<= 35	<= 35
DESIGN SPEED	80 km/h	50 km/h
DIRECT ACCESS	YES	YES
LANE MARKING	YES (NOTE 9)	YES (NOTE 9)
ROAD SURFACING.	PRIME AND 2 COAT SEAL (NOTE 13)	PRIME AND 2 COAT SEAL (NOTE 13)
LONGITUDINAL GRADE	MINIMUM 0.3% MAXIMUM 12%	MINIMUM 0.3% MAXIMUM 12%
VERTICAL CURVE LENGTH PER 1% CHANGE OF GRADE (K VALUE) REFER "GUIDE TO ROAD DESIGN PART 3: GEOMETRIC DESIGN" (AUSTROADS 2010)	MINIMUM CREST 30m MINIMUM SAG 28m	MINIMUM CREST 7m MINIMUM SAG 11m
HORIZONTAL CURVE RADIUS	MINIMUM 240m	MINIMUM 56m
SUPERELEVATION	5%	NIL
TRAFFIC LOADING	3 X 10^5 ESA	3 X 10^5 ESA

LEGEND

- o EARTH BATTER-CUT/FILL - ROCK BATTER-CUT.
- # BERM FOR SERVICES WHERE SPECIFIED.
- * 150mm BELOW UNDERSIDE OF PAVEMENT.
- PAVEMENT DESIGN IN ACCORDANCE WITH "AUSTROADS – GUIDE TO PAVEMENT TECHNOLOGY" OR "AUSTROADS PAVEMENT DESIGN – A GUIDE TO THE STRUCTURAL DESIGN OF ROAD PAVEMENTS".

NOTES:

1. TABLE DRAINS STEEPER THAN 5% LONGITUDINAL GRADE (1:20) SHOULD HAVE EROSION PROTECTION MEASURES INSTALLED.
2. CUT AND FILL BATTER SLOPES MAY BE VARIED ON SITE TO ENSURE LONG TERM STABILITY OF BATTERS:
   ROCK BATTER - CUT 1 IN 0.5
   EARTH BATTER – CUT/ FILL:

≤ 0.5m DEEP	1 IN 6
0.5m – 1.0m DEEP	1 IN 4
1.0m – 2.0m DEEP	1 IN 3
> 2.0m DEEP	1 IN 2

NOTE:
- BATTER SLOPES SHOWN ARE TYPICAL AND MAY NEED TO BE VARIED TO SUIT SITE CONDITIONS.
- SLOPES TO BE APPROVED BY COUNCIL ENGINEER.
- FOR FILL SLOPES STEEPER THAN 1 IN 4, SAFETY BARRIERS TO BE CONSTRUCTED IN ACCORDANCE WITH AUSTROADS "GUIDE TO ROAD DESIGN-PART 6: ROADSIDE DESIGN, SAFETY AND BARRIERS."

3. MINIMUM LONGITUDINAL SLOPE OF TABLE DRAIN INVERTS SHALL BE 0.3% (1 IN 333) UNLESS APPROVED BY COUNCIL ENGINEER.
4. FLOODWAYS SHALL BE CONSTRUCTED WITH CROSS ROAD DRAINAGE.
5. UNSEALED ROADS SHALL BE DESIGNED USING PARAMETERS SET OUT IN AUSTROADS "UNSEALED ROADS MANUAL" UNLESS DIRECTED BY COUNCIL ENGINEER.
6. SEALED ROADS SHALL BE DESIGNED AS PER REQUIREMENTS OF AUSTROADS "GUIDE TO ROAD DESIGN – PART 3: GEOMETRIC DESIGN".
7. ONE ACCESS POINT TO BE CONSTRUCTED TO EACH LOT IN ACCORDANCE WITH STANDARD DRAWINGS R1012 & R1013.
8. PAVEMENT DESIGN AND SEAL TO BE SUBMITTED FOR APPROVAL BY COUNCIL ENGINEER FOR EACH APPLICATION OF OPERATIONAL WORKS.
9. LINEMARKING – CENTRE & EDGE LINE AS SET OUT IN MUTCD.
10. TABLE DRAIN MAY BE VARIED FROM "V" DRAINS TO FLAT BOTTOM WITH MIN WIDTH OF 1.0m, 2.0m DESIRABLE & SIDE SLOPES OF 1 IN 4 AS DIRECTED BY COUNCILS ENGINEER.
11. REFER TO MUTCD FOR PAVEMENT MARKING & EDGE MARKER INSTALLATIONS.
12. LOCAL ROADS OF REGIONAL SIGNIFICANCE (LRRS) ARE NOT COVERED BY THE ABOVE TABLE. CONSULT WITH COUNCIL ENGINEER.
13. IN ACCORDANCE WITH MRS11 AND PLANNING SCHEME POLICY FOR DEVELOPMENT WORKS.
14. REFER GUIDE TO ROAD DESIGN – PART 6: ROADSIDE DESIGN, SAFETY AND BARRIERS.

Scale	Revisions	Verified	Date	Quality Certification		
NOT TO SCALE	A Original Issue			Design: AW	Verified:	
				Drawn: TBa	Checked:	
				Approved By Engineer:	Date:	

BUNDABERG REGIONAL COUNCIL

ROAD TYPE CROSS SECTIONS
RURAL ROAD - ACCESS ROADS

Standard Drawing | Sheet Size A3 | No: R3003 | Rev:

ROAD FUNCTION
TO PROVIDE A RURAL LOW TRAFFIC VOLUME CONNECTION RURAL/RURAL RESIDENTIAL PROPEERTIES AND HIGHER ORDER SEALED ROADS.

DESIGN CRITERIA

ROAD TYPE	UNSEALED MINOR RURAL ROAD	UNSEALED LOCAL ACCESS ROAD	UNSEALED RURAL TRACK
LGIP TYPE	NON-TRUNK	NON-TRUNK	NON-TRUNK
PRIORITY USERS	MOTORISTS	MOTORISTS	MOTORISTS
NOMINAL AADT	>50 <=150 vpd	>10 <=50 vpd	<=10 vpd
MAXIMUM LOTS/ DWELLINGS	>7 <=20	>2 <=7	<2
DESIGN SPEED	80 km/h	60 km/h	60 km/h
DIRECT ACCESS	YES	YES	YES

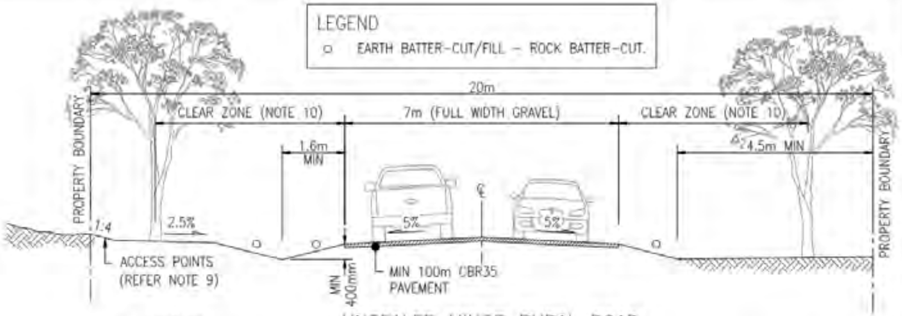
ALTERNATIVE FLAT BOTTOM TABLE DRAIN

NOTES:

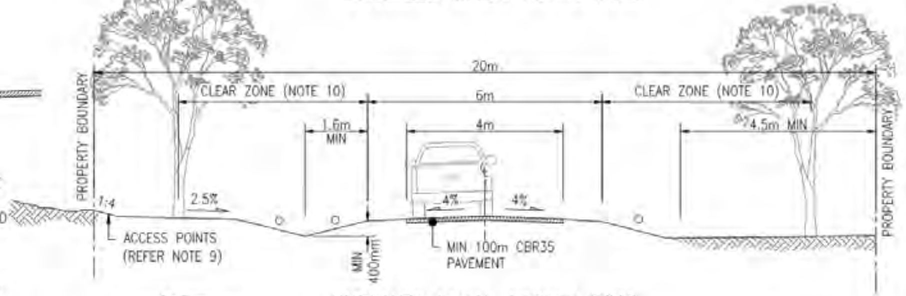
1. UNSEALED ROADS ARE FOR NON-COMMERCIAL USE ONLY AND ARE ONLY TO BE USED WHERE APPROVAL HAS BEEN GIVEN BY COUNCIL ENGINEER.
2. UNSEALED ROADS SHALL BE DESIGNED USING PARAMETERS SET OUT IN AUSTROADS "UNSEALED ROADS MANUAL" UNLESS DIRECTED BY COUNCIL ENGINEER.
3. TABLE DRAINS STEEPER THAN 5% LONGITUDINAL GRADE (1:20) SHOULD HAVE EROSION PROTECTION MEASURES INSTALLED.
4. MINIMUM LONGITUDINAL SLOPE OF TABLE DRAIN INVERTS SHALL BE 0.3% (1 IN 333) UNLESS APPROVED BY COUNCIL ENGINEER.
5. CUT AND FILL BATTER SLOPES GENERALLY TO BE 1 IN 4 BUT MAY BE VARIED ON SITE TO ENSURE LONG TERM STABILITY OF BATTERS:
   ROCK BATTER-CUT 1 IN 0.5
   EARTH BATTER-CUT/FILL:
   ≤ 0.5m DEEP 1 IN 6
   0.5m-1.0m DEEP 1 IN 4
   1.0m-2.0m DEEP 1 IN 3

   NOTE:
   - BATTER SLOPES SHOWN ARE TYPICAL AND MAY NEED TO BE VARIED TO SUIT SITE CONDITIONS.
   - FINAL BATTER SLOPES TO BE APPROVED BY COUNCIL ENGINEER.
6. TABLE DRAINS TO BE TURNED OUT AS DIRECTED TO RETURN FLOWS TO OVERLAND FLOW PATHS.
7. TABLE DRAIN MAY BE VARIED FROM "V" DRAINS TO FLAT BOTTOM WITH MIN WIDTH OF 1m MIN, 2m DESIRABLE & SIDE SLOPES AS PER NOTE 5.
8. FLOODWAYS SHALL BE CONSTRUCTED WITH CROSS ROAD DRAINAGE.
9. ACCESS POINT TO BE CONSTRUCTED TO EACH LOT IN ACCORDANCE WITH STANDARD DRAWINGS R1012 & R1013 (UNSEALED).
10. REFER GUIDE TO ROAD DESIGN - PART 6: ROADSIDE SAFETY AND BARRIERS.

LEGEND
○ EARTH BATTER-CUT/FILL - ROCK BATTER-CUT.



UNSEALED MINOR RURAL ROAD



UNSEALED LOCAL ACCESS ROAD

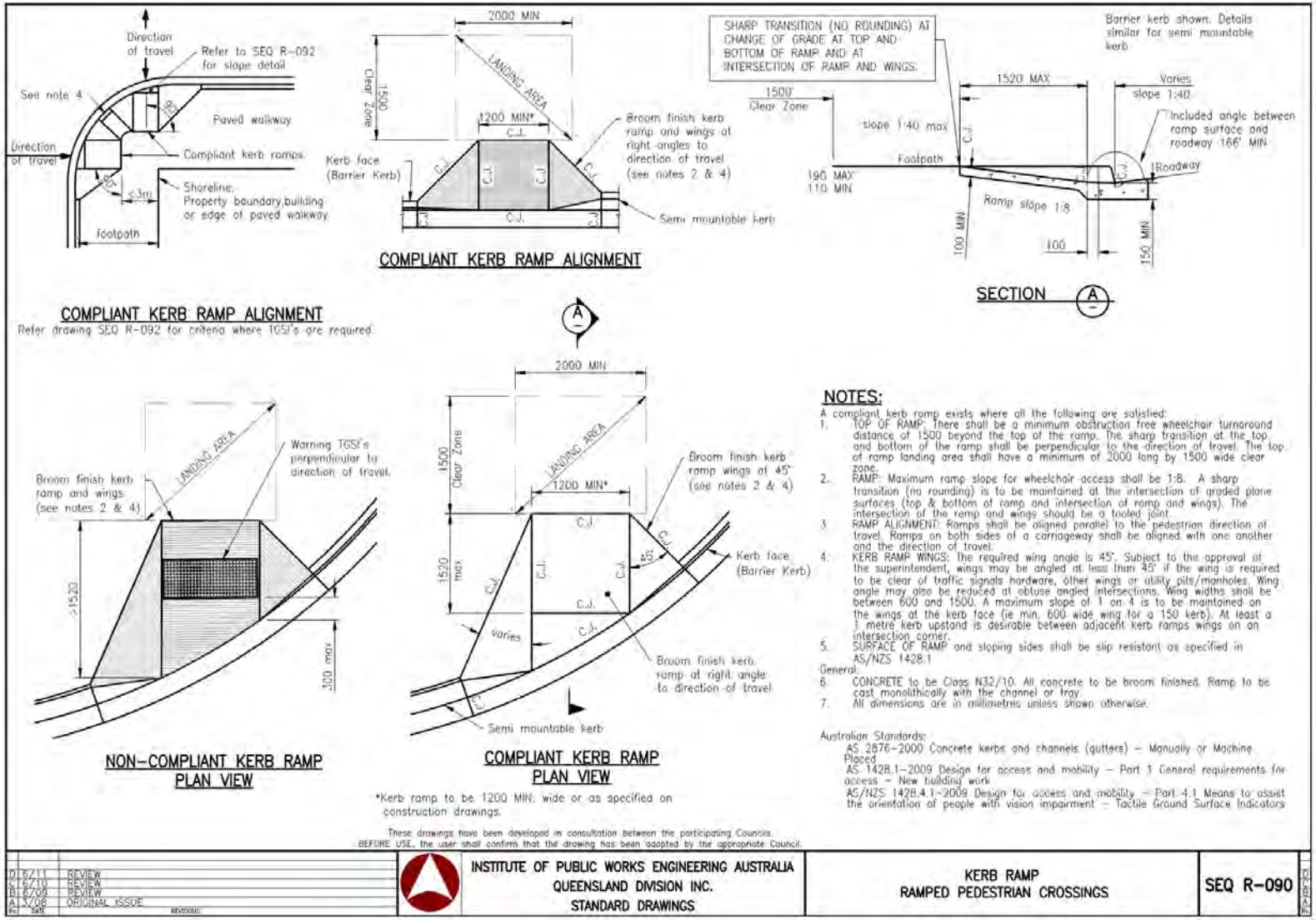
UNSEALED RURAL TRACK

Scale	Revisions	Verified	Date	Quality Certification
NOT TO SCALE	A Original Issue			Design: AW Verified: / Drawn: Tils Checked: / Approved By Engineer: Date: RPEQ:

BUNDABERG REGIONAL COUNCIL

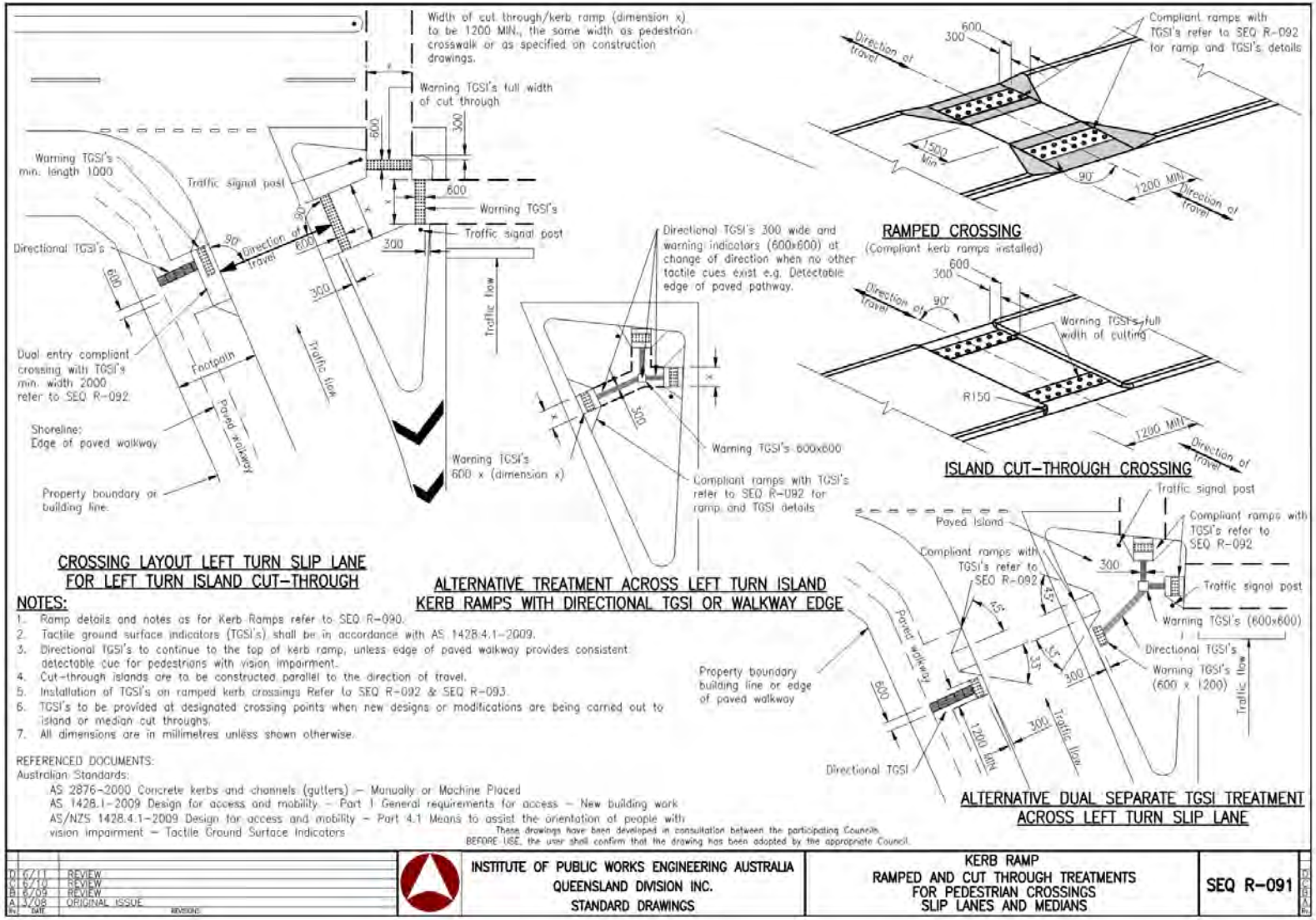
ROAD TYPE CROSS SECTIONS
RURAL ROAD - UNSEALED ROADS

Standard Drawing No: R3004 | Sheet Size: A3 | Rev:


Direction of travel
Refer to SEQ R-092 for slope detail
See note 4
Paved walkway
Compliant kerb ramps
Direction of travel
Shoreline: Property boundary,building or edge of paved walkway
footpath
2000 MIN
1500 Clear Zone
LANDING AREA
1200 MIN*
C.J.
Broom finish kerb ramp and wings at right angles to direction of travel (see notes 2 & 4)
Kerb face (Barrier Kerb)
Semi mountable kerb
COMPLIANT KERB RAMP ALIGNMENT
SHARP TRANSITION (NO ROUNDING) AT CHANGE OF GRADE AT TOP AND BOTTOM OF RAMP AND AT INTERSECTION OF RAMP AND WINGS.
Barrier kerb shown. Details similar for semi mountable kerb
1500 Clear Zone
1520 MAX
Varies slope 1:40
slope 1:40 max
Included angle between ramp surface and roadway 166° MIN
Footpath
Roadway
190 MAX 110 MIN
Ramp slope 1:8
100 MIN
100
150 MIN
SECTION A
COMPLIANT KERB RAMP ALIGNMENT
Refer drawing SEQ R-092 for criteria where TGSI's are required.
Broom finish kerb ramp and wings (see notes 2 & 4)
LANDING AREA
Warning TGSI's perpendicular to direction of travel.
1520
300 max
NON-COMPLIANT KERB RAMP PLAN VIEW
2000 MIN
1500 Clear Zone
LANDING AREA
1200 MIN*
Broom finish kerb ramp wings at 45° (see notes 2 & 4)
1520 max
45°
Kerb face (Barrier Kerb)
Varies
Broom finish kerb ramp at right angle to direction of travel
Semi mountable kerb
COMPLIANT KERB RAMP PLAN VIEW
*Kerb ramp to be 1200 MIN. wide or as specified on construction drawings.
NOTES:
A compliant kerb ramp exists where all the following are satisfied:
1. TOP OF RAMP: There shall be a minimum obstruction free wheelchair turnaround distance of 1500 beyond the top of the ramp. The sharp transition at the top and bottom of the ramp shall be perpendicular to the direction of travel. The top of ramp landing area shall have a minimum of 2000 long by 1500 wide clear zone.
2. RAMP: Maximum ramp slope for wheelchair access shall be 1:8. A sharp transition (no rounding) is to be maintained at the intersection of graded plane surfaces (top & bottom of ramp and intersection of ramp and wings). The intersection of the ramp and wings should be a tooled joint.
3. RAMP ALIGNMENT: Ramps shall be aligned parallel to the pedestrian direction of travel. Ramps on both sides of a carriageway shall be aligned with one another and the direction of travel.
4. KERB RAMP WINGS: The required wing angle is 45°. Subject to the approval of the superintendent, wings may be angled at less than 45° if the wing is required to be clear of traffic signals hardware, other wings or utility pits/manholes. Wing angle may also be reduced at obtuse angled intersections. Wing widths shall be between 600 and 1500. A maximum slope of 1 on 4 is to be maintained on the wings at the kerb face (ie min. 600 wide wing for a 150 kerb). At least a 1 metre kerb upstand is desirable between adjacent kerb ramps wings on an intersection corner.
5. SURFACE OF RAMP and sloping sides shall be slip resistant as specified in AS/NZS 1428.1

General:
6. CONCRETE to be Class N32/10. All concrete to be broom finished. Ramp to be cast monolithically with the channel or tray.
7. All dimensions are in millimetres unless shown otherwise.

Australian Standards:
AS 2876-2000 Concrete kerbs and channels (gutters) – Manually or Machine Placed
AS 1428.1-2009 Design for access and mobility – Part 1 General requirements for access – New building work
AS/NZS 1428.4.1-2009 Design for access and mobility – Part 4.1 Means to assist the orientation of people with vision impairment – Tactile Ground Surface Indicators
These drawings have been developed in consultation between the participating Councils. BEFORE USE, the user shall confirm that the drawing has been adopted by the appropriate Council.
D 16/11 REVIEW
C 16/10 REVIEW
B 16/09 REVIEW
A 13/08 ORIGINAL ISSUE
REVISIONS
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.
STANDARD DRAWINGS
KERB RAMP
RAMPED PEDESTRIAN CROSSINGS
SEQ R-090



NOTES:

1. Ramp details and notes as for Kerb Ramps refer to SEQ R-090.
2. Tactile ground surface indicators (TGSI's) shall be in accordance with AS 1428.4.1-2009.
3. Directional TGSI's to continue to the top of kerb ramp, unless edge of paved walkway provides consistent detectable cue for pedestrians with vision impairment.
4. Cut-through islands are to be constructed parallel to the direction of travel.
5. Installation of TGSI's on ramped kerb crossings Refer to SEQ R-092 & SEQ R-093.
6. TGSI's to be provided at designated crossing points when new designs or modifications are being carried out to island or median cut throughs.
7. All dimensions are in millimetres unless shown otherwise.

REFERENCED DOCUMENTS:
Australian Standards:
AS 2876-2000 Concrete kerbs and channels (gutters) – Manually or Machine Placed
AS 1428.1-2009 Design for access and mobility – Part 1 General requirements for access – New building work
AS/NZS 1428.4.1-2009 Design for access and mobility – Part 4.1 Means to assist the orientation of people with vision impairment – Tactile Ground Surface Indicators

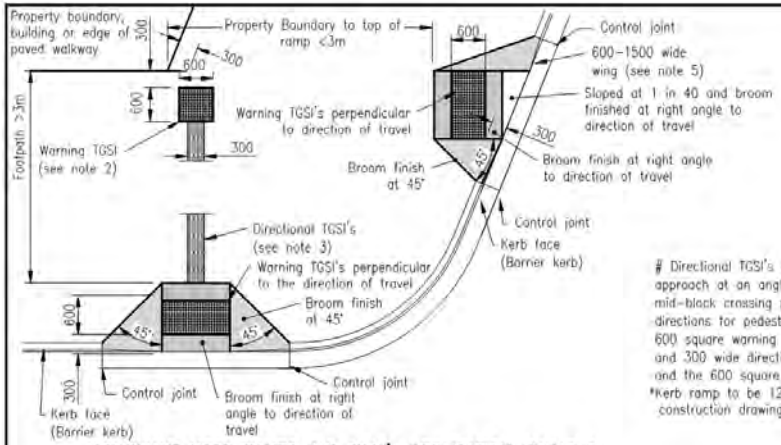
These drawings have been developed in consultation between the participating Councils. BEFORE USE, the user shall confirm that the drawing has been adopted by the appropriate Council.

REVISIONS		
D	6/11	REVIEW
C	6/10	REVIEW
B	6/09	REVIEW
A	3/08	ORIGINAL ISSUE

INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.
STANDARD DRAWINGS

KERB RAMP
RAMPED AND CUT THROUGH TREATMENTS
FOR PEDESTRIAN CROSSINGS
SLIP LANES AND MEDIANS

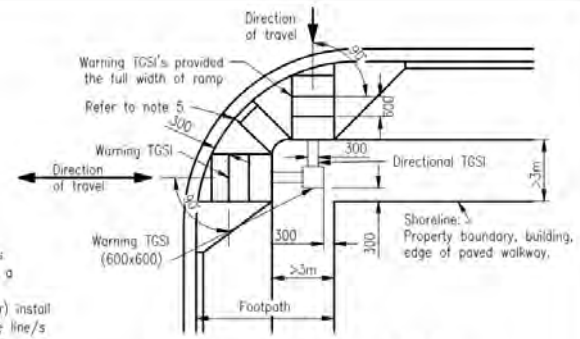
SEQ R-091



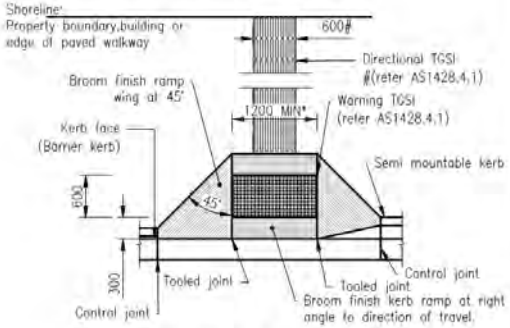
COMPLIANT KERB RAMPS AND TGSI's APPLICATION EXAMPLE PLAN VIEW

Directional TGSI's are 600 wide where pedestrians approach at an angle to the path of travel (eg at a mid-block crossing point). If there is a choice of directions for pedestrians (eg on intersection corner) install 600 square warning TGSI's pad 300 from the shore line/s and 300 wide directional TGSI's between top of kerb ramp and the 600 square warning TGSI's pad.

*Kerb ramp to be 1200 MIN. wide or as specified on construction drawings



COMPLIANT KERB RAMP ALIGNMENT – incl. TGSI's



COMPLIANT MID BLOCK KERB RAMP – incl. TGSI's

GUIDELINES

GUIDELINES For the installation of Tactile Ground Surface Indicators (TGSI) for pedestrians with a vision impairment at ramped kerb crossings (kerb ramps):

A. Warning and directional TGSI's shall conform with AS/NZS 1428.4.1 – 2009 Design for Access and Mobility – Part 4: Tactile Indicators.

B. Tactile indicators shall have 30% minimum luminance contrast to the surrounding surfaces, and be of contrasting colour, preferably safety yellow (Golden Yellow Y14 or Sunflower Y15 – AS2700). Luminance contrast shall be achieved in all conditions (eg wet/dry, day/night). Tactile indicators and their base shall be slip resistant. Refer AS/NZS 1428.4.1-2009 for luminance contrast and slip resistance requirements.

C. Warning TGSI's shall be installed (dimensions in brackets are warning TGSI dimensions):
   a) to warn pedestrians with a vision impairment of hazards.
   b) 300 from any hazard e.g. roadway (600 deep x full width of kerb ramp, path of travel or cut through median/island)
   c) perpendicular to the direction of travel.
   d) at the intersection of 2 (or more) directional indicator strips to indicate a change of direction (600 x 600).
   e) When kerb ramp gradient is shallower than 1:8.5.

D. Directional TGSI's shall be installed (dimensions in brackets are directional TGSI dimensions):
   a) to give directional guidance to pedestrians with a vision impairment in the absence of normally available cues.
   b) along the centreline of the direction of travel.
   d) at mid-block kerb ramps or street crossings to direct pedestrians with a vision impairment to the crossing point (600 x property boundary to top of kerb ramp).
   e) between a warning indicator pad indicating a choice of directions and the top of kerb ramps where 2 pedestrian crossings exist on a corner of an intersection.

E. The installation of TGSI should be prioritised as follows:
   a) NO TGSI's REQUIRED when all criteria at Note G are satisfied;
   b) Multiple entry kerb ramp treatment installed (Dual entry or Dual separate). Multiple entry kerb ramps must only be installed when there is sufficient space on both sides of the crossing (see AS/NZS 1428.4.1-2009 for details of multiple entry treatments);
   c) Warning TGSI on the face of a compliant kerb ramp.

F. If a warning TGSI treatment is installed, a warning TGSI treatment must be installed on the other side of the crossing.

G. TGSI's are not required at a crossing point if:
   a) a compliant kerb ramp is installed refer to SEQ R-090.
   b) the top of ramp is within 3 metres of the end of the shore line (property boundary, building line or edge of paved walkway), and
   c) the ramp is in direct continuous accessible path of travel from the shore line (property line, building line or paved walkway) orientated in terms of normally available cues.
   In these situations, a colour treatment of the full width and length of the face of the ramp may assist pedestrians with a vision impairment.

H. Examples of normally available cues that aid people with a vision impairment are:
   a) sharp transitions in grade between surfaces eg top and bottom of a 1 on 8 kerb ramp; change in grade between ramp and ramp wings;
   b) audio tactile push buttons, refer MUTCD Parts 10 and 14 for location and orientation of pedestrian push buttons. Note, an audio-tactile push button alone is an insufficient cue for a pedestrian with a vision impairment to find the crossing point.
   c) a detectable edge of a paved walkway or cut through island.

NOTES:

1. For details of compliant kerb ramps refer to SEQ R-090 and SEQ R-091.
2. Warning indicators required adjacent to shoreline (property boundary) to indicate change/choice of direction.
3. Directional indicators are required from the warning indicator pad to the top of the kerb ramps.
4. Warning indicators are required on the kerb ramp to warn of the hazard (the road/traffic). Can be omitted if kerb ramp is in accordance with AS. 1428.1-2009 & < 3 metres from the building line.
5. Kerb ramp wings may be angled at less than 45° if required to be clear of signals hardware, other kerb ramps or utility pits/manholes. Kerb ramp wings may also be reduced at obtuse angled intersections, wings shall have a width between 600mm and 1500mm. A maximum of 1:4 slope on kerb ramp wings should be maintained (600mm wide wing for a 150mm kerb). A 1m kerb upstand is desirable between adjacent ramp wings (which may necessitate reduced wing angles).
6. All Dimensions are in millimetres unless shown otherwise.

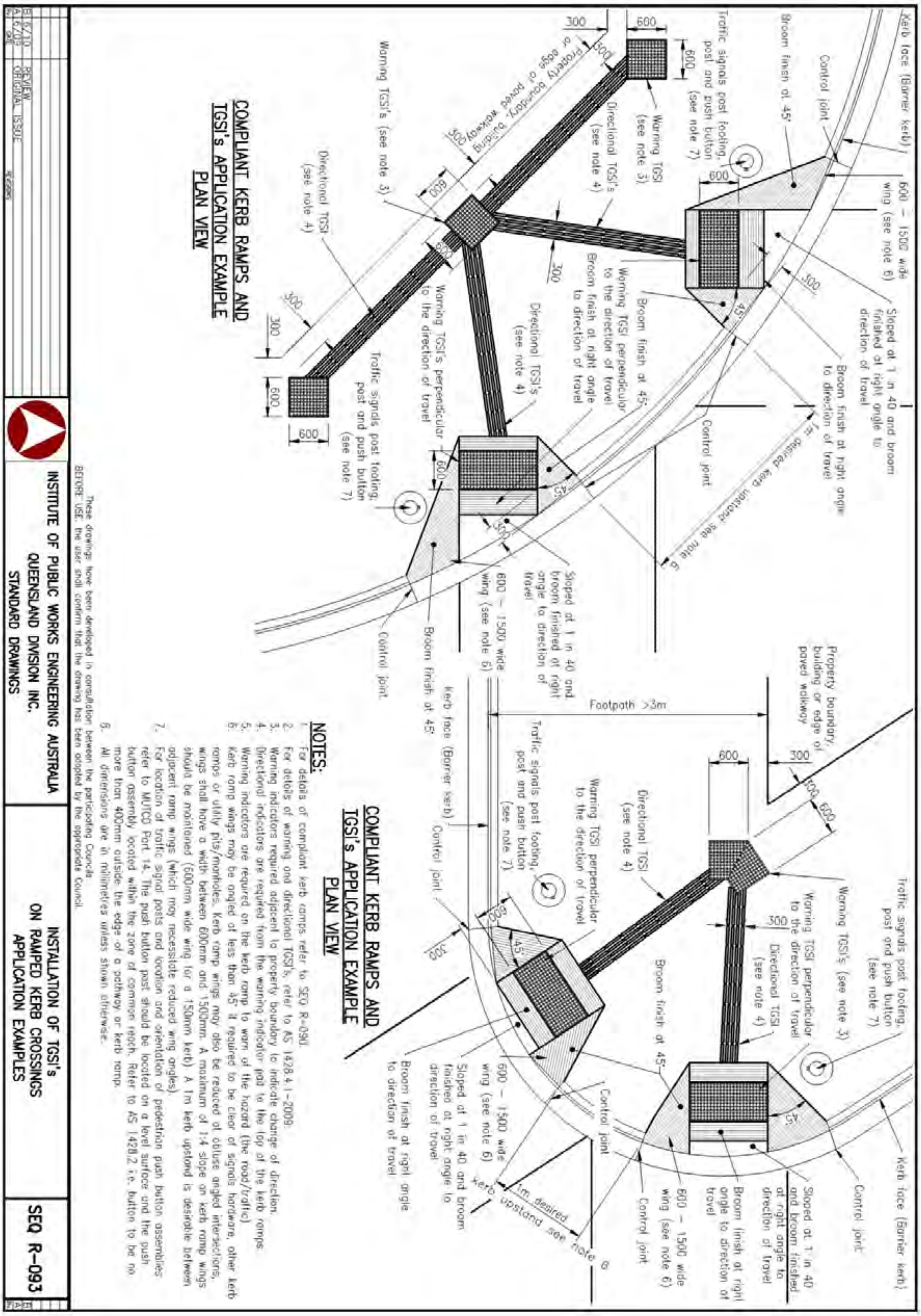
These drawings have been developed in consultation between the participating Councils.
BEFORE USE, the user shall confirm that the drawing has been adopted by the appropriate Council.

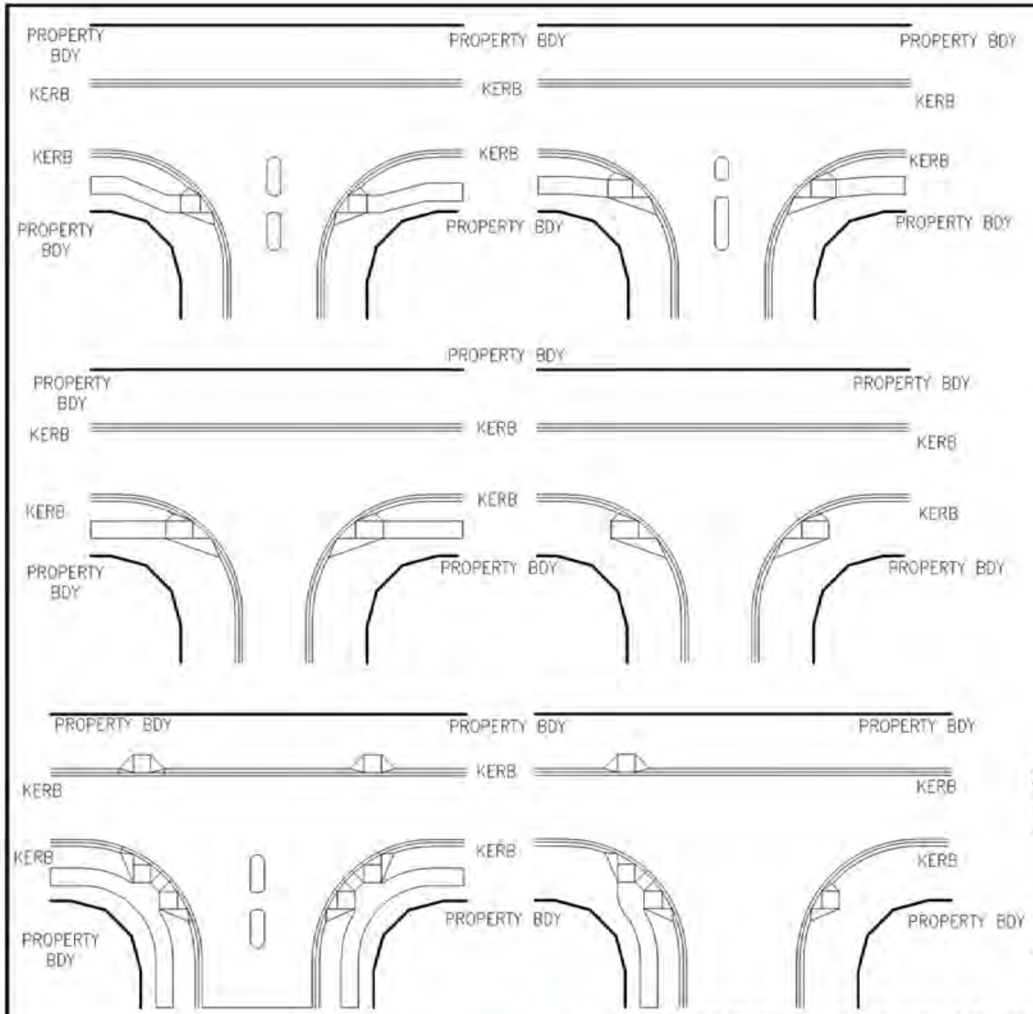
REV	DATE	REVISION
C	6/11	REVIEW
B	6/10	REVIEW
A	6/09	ORIGINAL ISSUE

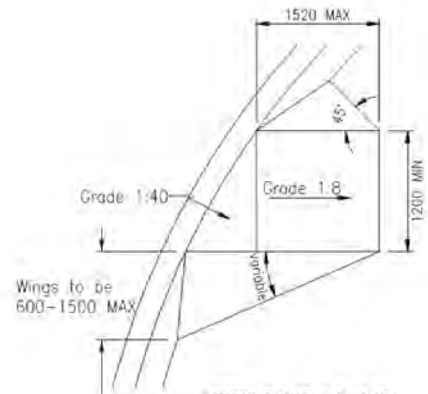
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.
STANDARD DRAWINGS

INSTALLATION OF TGSI's ON RAMPED KERB CROSSINGS

SEQ R-092


Kerb face (Barrier kerb)
600 – 1500 wide wing (see note 6)
Sloped at 1 in 40 and broom finished at right angle to direction of travel
Broom finish at right angle to direction of travel
Control joint
Broom finish at 45°
Traffic signals post footing, post and push button (see note 7)
Warning TGSI (see note 3)
Directional TGSI's (see note 4)
Property boundary, building or edge of paved walkway
Broom finish at 45°
Warning TGSI perpendicular to the direction of travel
Broom finish at right angle to direction of travel
Directional TGSI's (see note 4)
Warning TGSI's perpendicular to the direction of travel
Warning TGSI's (see note 3)
Directional TGSI (see note 4)
1m desired kerb upstand see note 8
Footpath >3m
COMPLIANT KERB RAMPS AND TGSI's APPLICATION EXAMPLE PLAN VIEW
Warning TGSI's (see note 3)
Directional TGSI (see note 4)
Sloped at 1 in 40 and broom finished at right angle to direction of travel
COMPLIANT KERB RAMPS AND TGSI's APPLICATION EXAMPLE PLAN VIEW
NOTES:
1. For details of compliant kerb ramps refer to SEQ R-090.
2. For details of warning and directional TGSI's, refer to AS 1428.4.1-2009.
3. Warning indicators required adjacent to property boundary to indicate change of direction.
4. Directional indicators are required from the warning indicator pad to the top of the kerb ramps.
5. Warning indicators are required on the kerb ramp to warn of the hazard (the road/traffic).
6. Kerb ramp wings may be angled at less than 45° if required to be clear of signals hardware, other kerb ramps or utility pits/manholes. Kerb ramp wings may also be reduced at obtuse angled intersections, wings shall have a width between 600mm and 1500mm. A maximum of 1:4 slope on kerb ramp wings should be maintained (600mm wide wing for a 150mm kerb). A 1m kerb upstand is desirable between adjacent ramp wings (which may necessitate reduced wing angles).
7. For location of traffic signal posts and location and orientation of pedestrian push button assemblies refer to MUTCD Part 14. The push button post should be located on a level surface and the push button assembly located within the zone of common reach. Refer to AS 1428.2 i.e. button to be no more than 400mm outside the edge of a pathway or kerb ramp.
8. All dimensions are in millimetres unless shown otherwise.
These drawings have been developed in consultation between the participating Councils.
BEFORE USE, the user shall confirm that the drawing has been adopted by the appropriate Council.
B 6/10 REVIEW
A 6/09 ORIGINAL ISSUE
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.
STANDARD DRAWINGS
INSTALLATION OF TGSI's ON RAMPED KERB CROSSINGS APPLICATION EXAMPLES
SEQ R-093





KERB RAMP LAYOUT

KERB RAMPS MUST ALWAYS ALIGN WITH THE OPPOSITE KERB RAMP & MEDIAN/ISLAND CUT THROUGHS

NOTES:

1. For details of compliant kerb ramps refer to SEQ R–090.
2. For details of warning and directional TGSI's, refer to AS1428.4.1–2009
3. Kerb ramp wings may be angled at less than 45° if required to be clear of signals hardware, other kerb ramps or utility pits/manholes. Kerb ramp wings may also be reduced at obtuse angled intersections, wings shall have a width between 600mm and 1500mm. A maximum of 1:4 slope on kerb ramp wings should be maintained (600mm wide wing for a 150mm kerb). A 1m kerb upstand is desirable between adjacent ramp wings (which may necessitate reduced wing angles).
4. All dimensions are in millimetres unless shown otherwise.

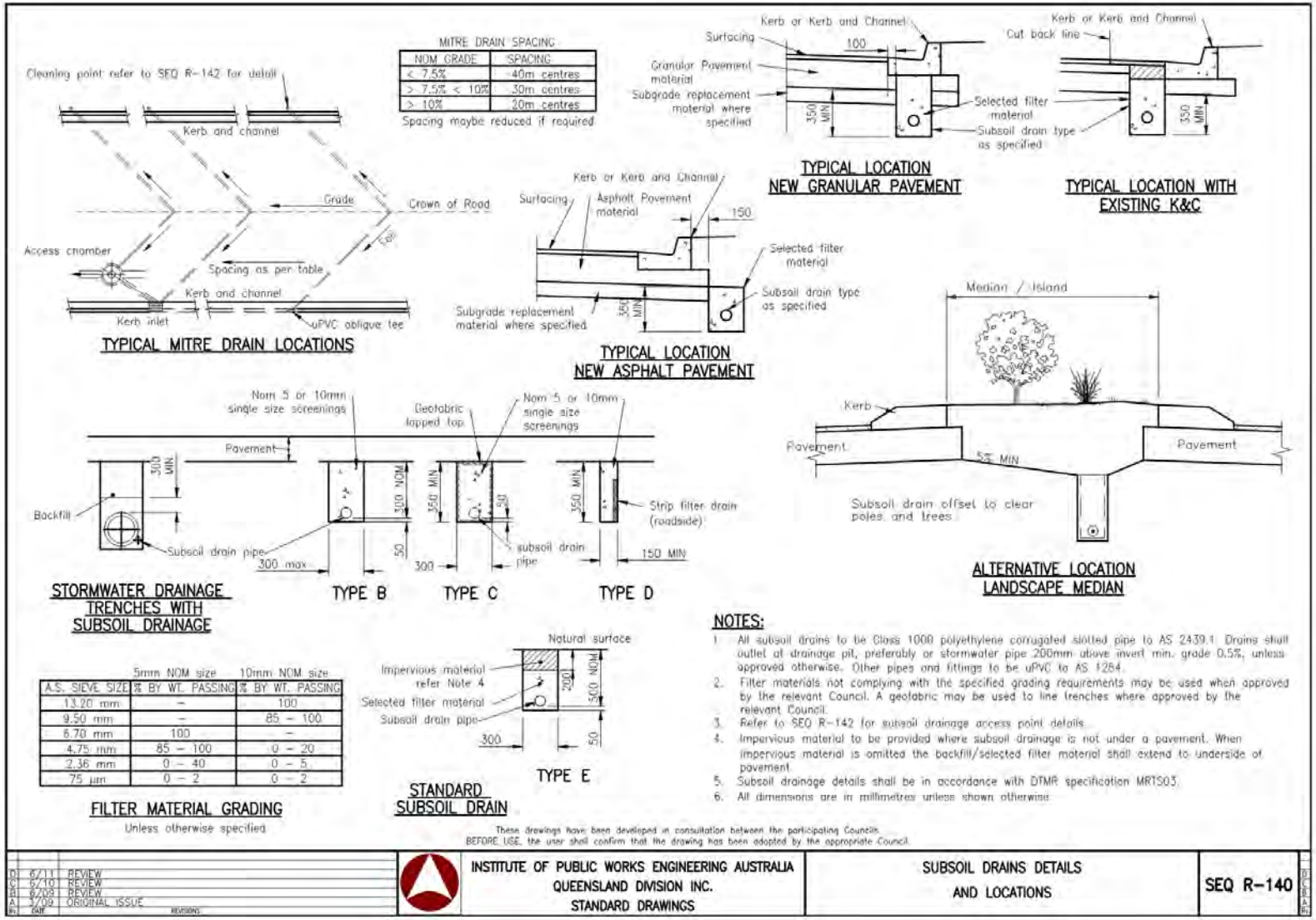
These drawings have been developed in consultation between the participating Councils. BEFORE USE, the user shall confirm that the drawing has been adopted by the appropriate Council.

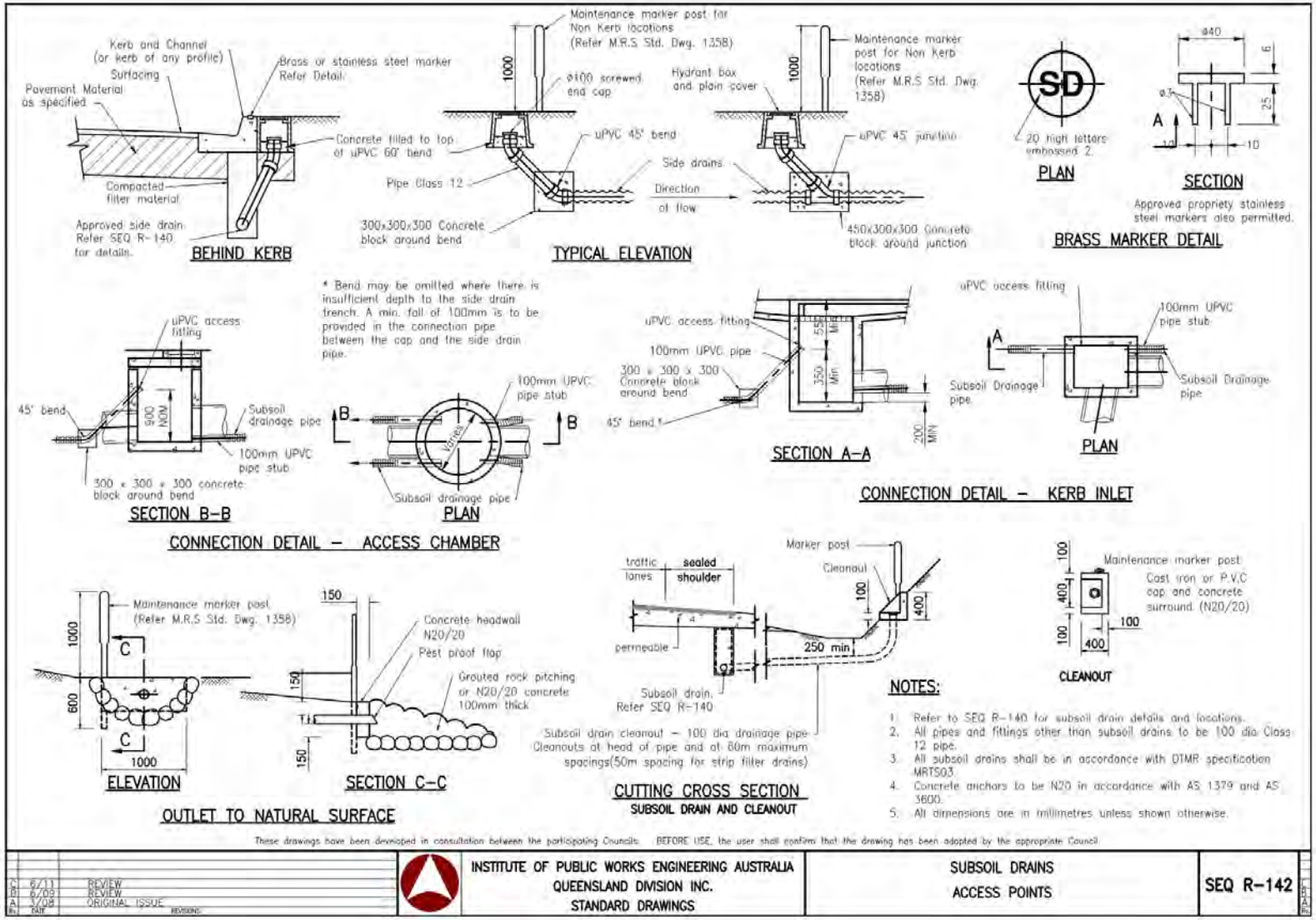
B	6/10	REVIEW
A	6/09	ORIGINAL ISSUE

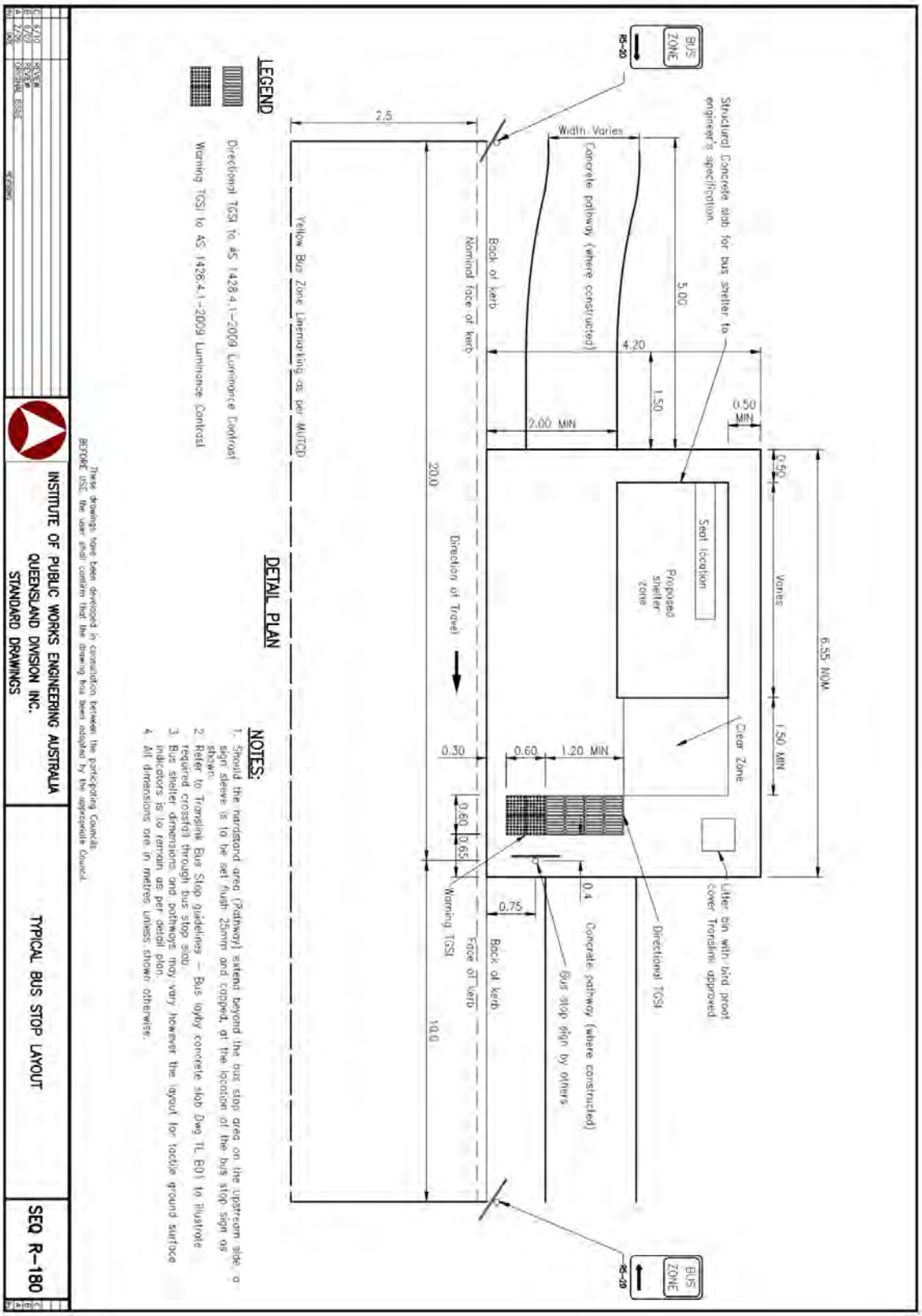
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.
STANDARD DRAWINGS

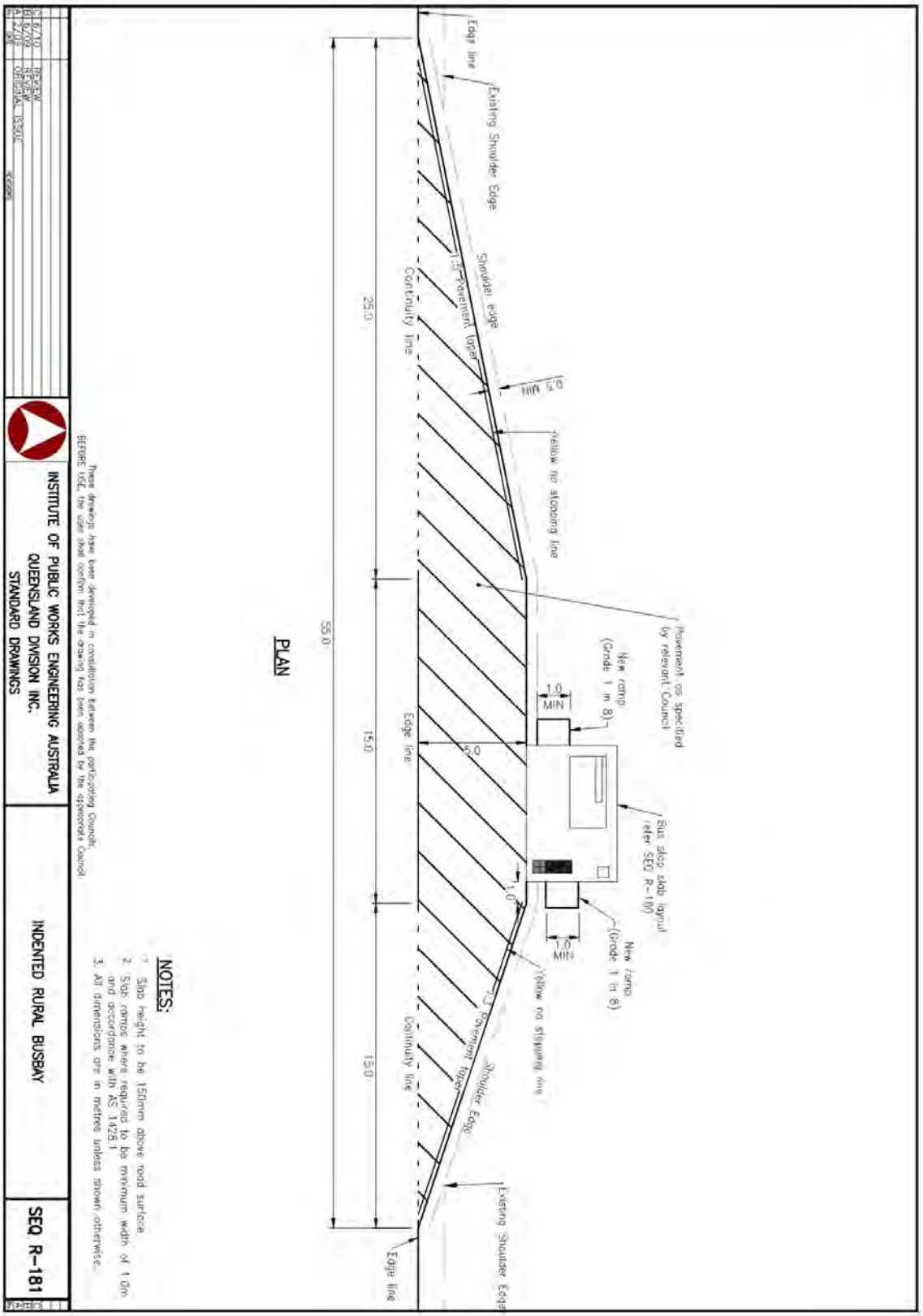
KERB RAMP
LOCATIONS AND CONFIGURATIONS

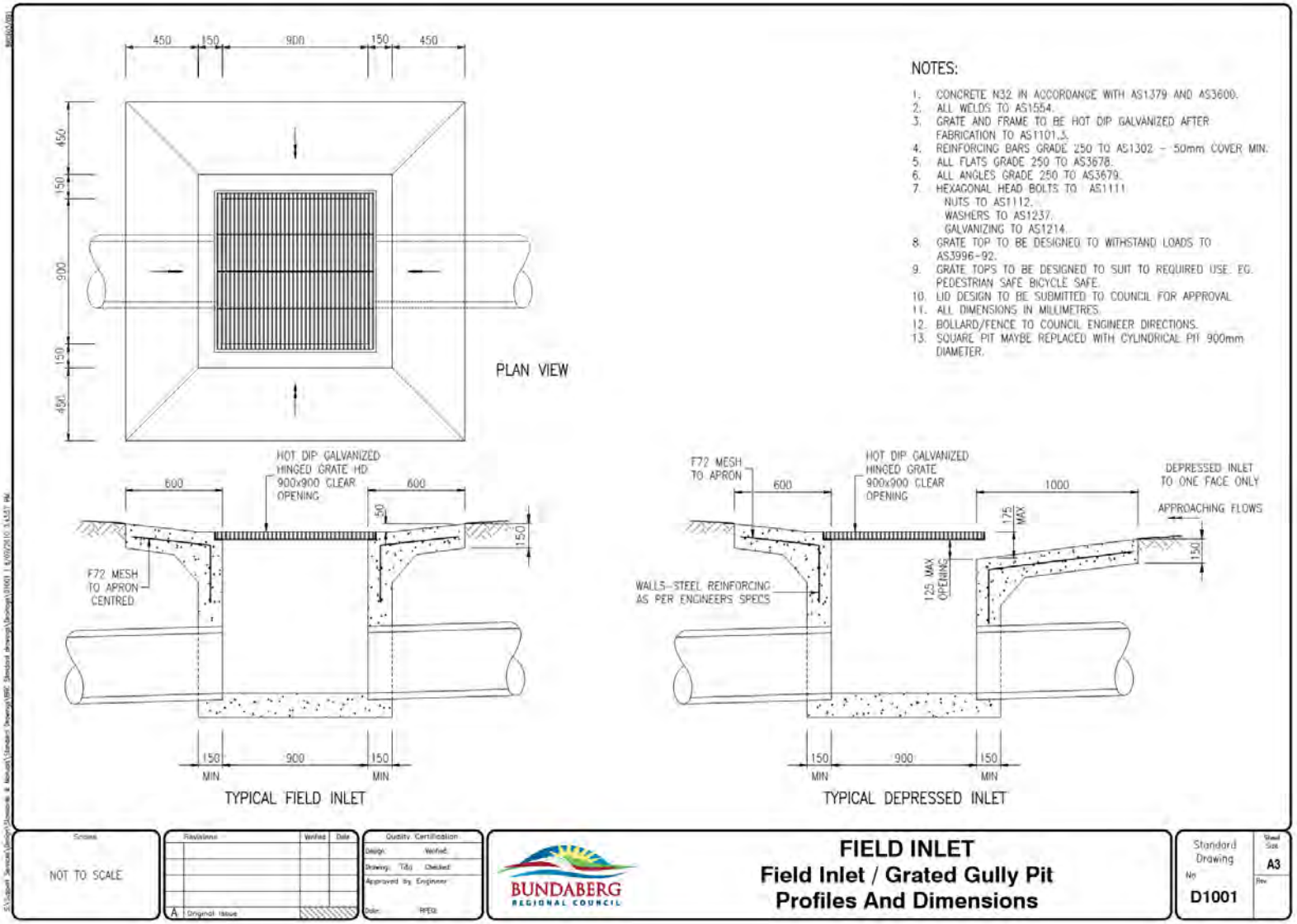
SEQ R–094

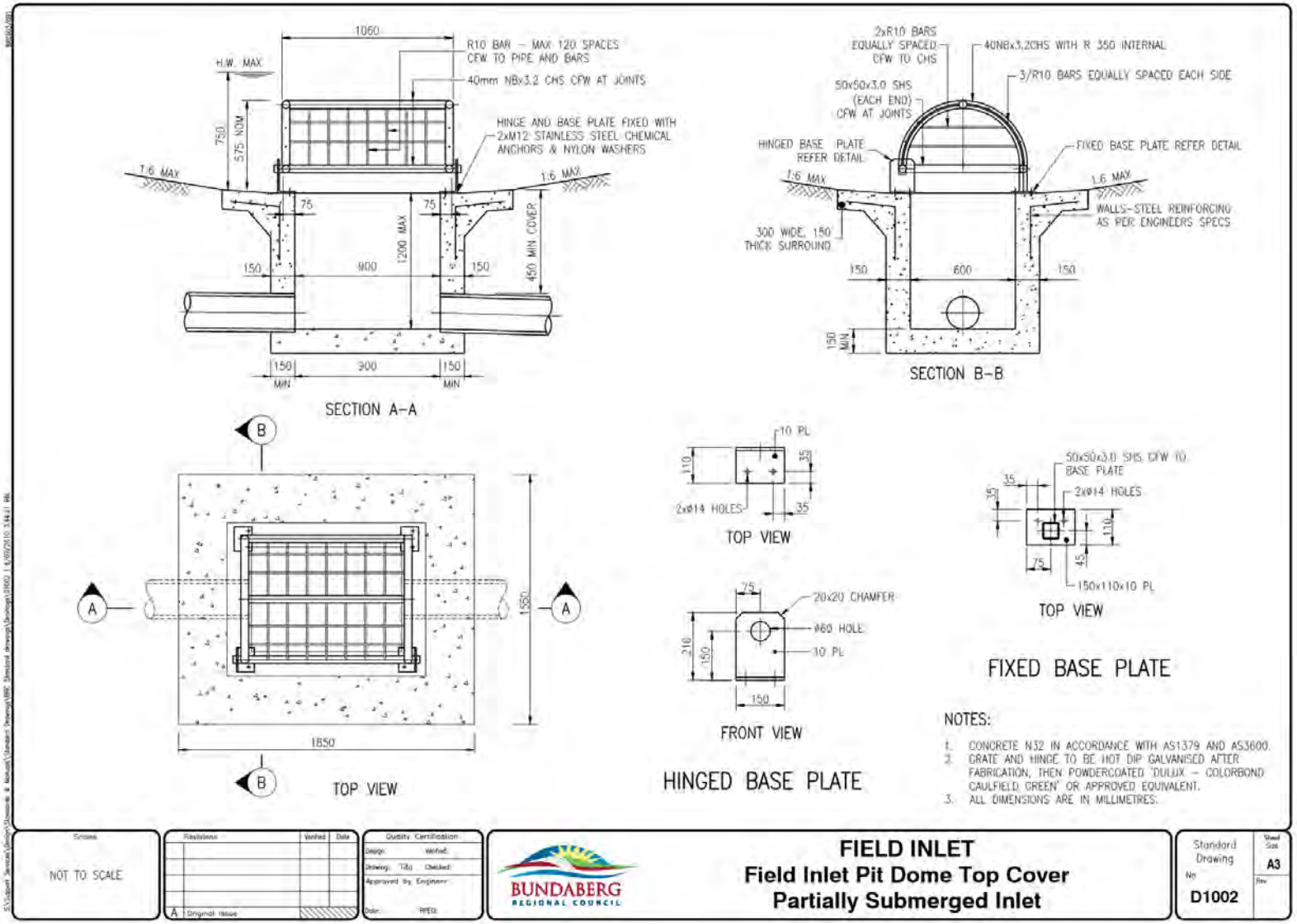

MITRE DRAIN SPACING
NOM GRADE | SPACING
< 7.5% | 40m centres
> 7.5% < 10% | 30m centres
> 10% | 20m centres
Spacing maybe reduced if required
Cleaning point refer to SEQ R-142 for detail
Kerb and channel
Grade
Crown of Road
Access chamber
Spacing as per table
Kerb and channel
Kerb inlet
uPVC oblique tee
TYPICAL MITRE DRAIN LOCATIONS
Kerb or Kerb and Channel
Surfacing
Granular Pavement material
Subgrade replacement material where specified
100
350 MIN
Selected filter material
Subsoil drain type as specified
TYPICAL LOCATION NEW GRANULAR PAVEMENT
Kerb or Kerb and Channel
Cut back line
350 MIN
TYPICAL LOCATION WITH EXISTING K&C
Kerb or Kerb and Channel
Surfacing
Asphalt Pavement material
150
Selected filter material
Subsoil drain type as specified
Subgrade replacement material where specified
350 MIN
TYPICAL LOCATION NEW ASPHALT PAVEMENT
Median / Island
Kerb
Pavement
5% MIN
Pavement
Subsoil drain offset to clear poles and trees
ALTERNATIVE LOCATION LANDSCAPE MEDIAN
Nom 5 or 10mm single size screenings
Pavement
300 MIN
Backfill
Subsoil drain pipe
300 max
300 NOM
50
Geotabric lapped top
Nom 5 or 10mm single size screenings
350 MIN
300
50
subsoil drain pipe
350 MIN
Strip filter drain (roadside)
150 MIN
STORMWATER DRAINAGE TRENCHES WITH SUBSOIL DRAINAGE
TYPE B
TYPE C
TYPE D
5mm NOM size | 10mm NOM size
A.S. SIEVE SIZE | % BY WT. PASSING | % BY WT. PASSING
13.20 mm | – | 100
9.50 mm | – | 85 – 100
6.70 mm | 100 | –
4.75 mm | 85 – 100 | 0 – 20
2.36 mm | 0 – 40 | 0 – 5
75 µm | 0 – 2 | 0 – 2
FILTER MATERIAL GRADING
Unless otherwise specified
Natural surface
Impervious material refer Note 4
Selected filter material
Subsoil drain pipe
200
350 NOM
300
50
TYPE E
STANDARD SUBSOIL DRAIN
NOTES:
1. All subsoil drains to be Class 1000 polyethylene corrugated slotted pipe to AS 2439.1. Drains shall outlet at drainage pit, preferably or stormwater pipe 200mm above invert min. grade 0.5%, unless approved otherwise. Other pipes and fittings to be uPVC to AS 1254.
2. Filter materials not complying with the specified grading requirements may be used when approved by the relevant Council. A geotabric may be used to line trenches where approved by the relevant Council.
3. Refer to SEQ R-142 for subsoil drainage access point details.
4. Impervious material to be provided where subsoil drainage is not under a pavement. When impervious material is omitted the backfill/selected filter material shall extend to underside of pavement.
5. Subsoil drainage details shall be in accordance with DTMR specification MRTS03.
6. All dimensions are in millimetres unless shown otherwise.
These drawings have been developed in consultation between the participating Councils.
BEFORE USE, the user shall confirm that the drawing has been adopted by the appropriate Council.
D 6/11 REVIEW
C 6/10 REVIEW
B 6/09 REVIEW
A 3/09 ORIGINAL ISSUE
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.
STANDARD DRAWINGS
SUBSOIL DRAINS DETAILS AND LOCATIONS
SEQ R-140

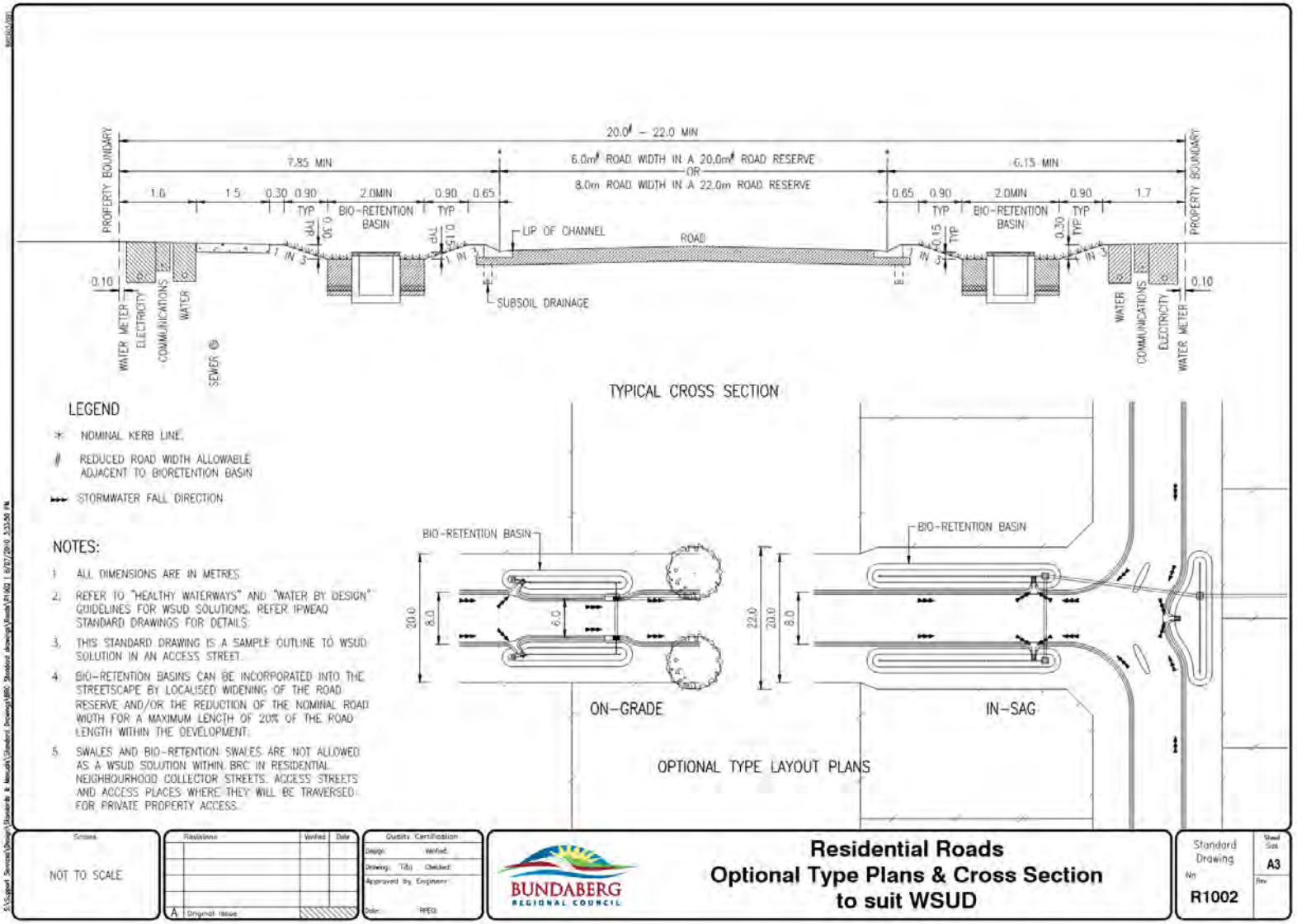

Kerb and Channel (or kerb of any profile)
Surfacing
Pavement Material as specified
Brass or stainless steel marker Refer Detail
Concrete filled to top of uPVC 60° bend
Compacted filter material
Approved side drain Refer SEQ R-140 for details.
BEHIND KERB
Maintenance marker post for Non Kerb locations (Refer M.R.S. Std. Dwg. 1358)
1000
Ø100 screwed end cap
uPVC 45° bend
Pipe Class 12
Direction of flow
300x300x300 Concrete block around bend
Hydrant box and plain cover
Maintenance marker post for Non Kerb locations (Refer M.R.S. Std. Dwg. 1358)
uPVC 45° junction
Side drains
450x300x300 Concrete block around junction
TYPICAL ELEVATION
SD
20 high letters embossed 2.
PLAN
Ø40
6
Ø3
A
25
10
SECTION
Approved propriety stainless steel markers also permitted.
BRASS MARKER DETAIL
* Bend may be omitted where there is insufficient depth to the side drain trench. A min. fall of 100mm is to be provided in the connection pipe between the cap and the side drain pipe.
uPVC access fitting
45° bend
Ø90 NOM
Subsoil drainage pipe
100mm UPVC pipe stub
300 x 300 x 300 concrete block around bend
SECTION B-B
100mm UPVC pipe stub
Weep
B
Subsoil drainage pipe
PLAN
CONNECTION DETAIL – ACCESS CHAMBER
uPVC access fitting
100mm UPVC pipe
300 x 300 x 300 Concrete block around bend
45° bend
550 MIN
350 Min
200 MIN
SECTION A-A
uPVC access fitting
100mm UPVC pipe stub
A
Subsoil Drainage pipe
Subsoil Drainage pipe
PLAN
CONNECTION DETAIL – KERB INLET
Maintenance marker post (Refer M.R.S. Std. Dwg. 1358)
1000
C
600
C
1000
ELEVATION
150
Concrete headwall N20/20
Pest proof flap
Grouted rock pitching or N20/20 concrete 100mm thick
150
150
SECTION C-C
OUTLET TO NATURAL SURFACE
traffic lanes
sealed shoulder
Marker post
Cleanout
100
400
permeable
250 min
Subsoil drain. Refer SEQ R-140
Subsoil drain cleanout – 100 dia drainage pipe Cleanouts at head of pipe and at 80m maximum spacings(50m spacing for strip filter drains)
CUTTING CROSS SECTION
SUBSOIL DRAIN AND CLEANOUT
100
Maintenance marker post Cast iron or P.V.C cap and concrete surround. (N20/20)
400
100
100
400
CLEANOUT
NOTES:
1. Refer to SEQ R-140 for subsoil drain details and locations.
2. All pipes and fittings other than subsoil drains to be 100 dia Class 12 pipe.
3. All subsoil drains shall be in accordance with DTMR specification MRTS03.
4. Concrete anchors to be N20 in accordance with AS 1379 and AS 3600.
5. All dimensions are in millimetres unless shown otherwise.
These drawings have been developed in consultation between the participating Councils. BEFORE USE, the user shall confirm that the drawing has been adopted by the appropriate Council.
C 6/11 REVIEW
B 6/09 REVIEW
A 1/04 ORIGINAL ISSUE
No. DATE REVISIONS
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.
STANDARD DRAWINGS
SUBSOIL DRAINS
ACCESS POINTS
SEQ R-142

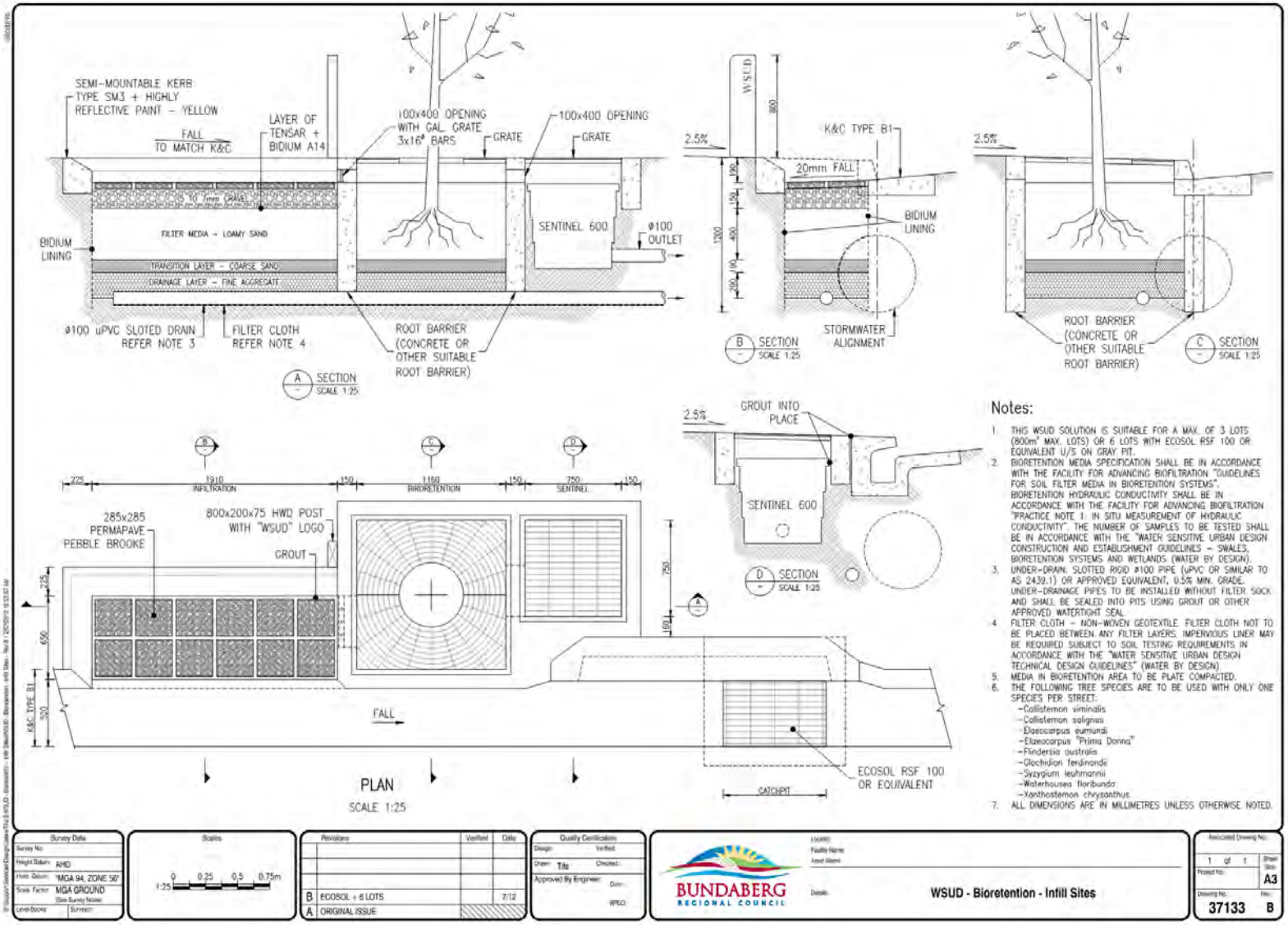

BUS ZONE
R5-20
Structural Concrete slab for bus shelter to engineer's specification.
Width Varies
Concrete pathway (where constructed)
5.00
4.20
1.50
2.00 MIN
0.50 MIN
Back of kerb
Nominal face of kerb
Yellow Bus Zone Linemarking as per MUTCD
2.5
20.0
Seat location
Proposed shelter zone
Clear Zone
Varies
1.50 MIN
6.55 NOM
0.50
0.30
0.60
1.20 MIN
0.60
0.60
0.65
Direction of Travel
Warning TGSI
Face of kerb
10.0
0.75
0.4
Concrete pathway (where constructed)
Bus stop sign by others
Back of kerb
Directional TGSI
Litter bin with bird proof cover Translink approved
LEGEND
Directional TGSI to AS 1428.4.1-2009 Luminance Contrast
Warning TGSI to AS 1428.4.1-2009 Luminance Contrast
DETAIL PLAN
NOTES:
1. Should the hardstand area (Pathway) extend beyond the bus stop area on the upstream side, a sign sleeve is to be set flush 25mm and capped, at the location of the bus stop sign as shown.
2. Refer to Translink Bus Stop guidelines – Bus layby concrete slab Dwg TL B01 to illustrate required crossfall through bus stop slab.
3. Bus shelter dimensions and pathways may vary however the layout for tactile ground surface indicators is to remain as per detail plan.
4. All dimensions are in metres unless shown otherwise.
These drawings have been developed in consultation between the participating Councils.
BEFORE USE the user shall confirm that the drawing has been adopted by the appropriate Council.
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.
STANDARD DRAWINGS
TYPICAL BUS STOP LAYOUT
SEQ R-180

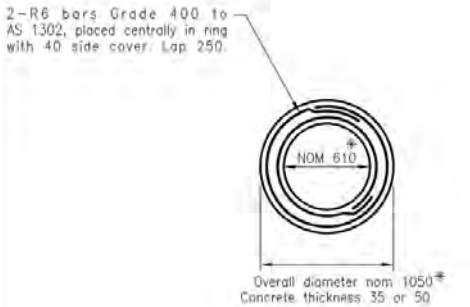

Edge line
Existing Shoulder Edge
Shoulder edge
1.5 Pavement taper
Continuity line
MIN
Yellow no stopping line
Pavement as specified by relevant Council
New ramp (Grade 1 in 8)
1.0 MIN
Bus stop slab layout refer SEQ R-180
New ramp (Grade 1 in 8)
1.0 MIN
Yellow no stopping line
1.5 Pavement taper
Shoulder Edge
Continuity line
Existing Shoulder Edge
Edge line
25.0
15.0
15.0
55.0
PLAN
NOTES:
1. Slab height to be 150mm above road surface.
2. Slab ramps where required to be minimum width of 1.0m and accordance with AS 1428.1
3. All dimensions are in metres unless shown otherwise.
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.
STANDARD DRAWINGS
INDENTED RURAL BUSBAY
SEQ R-181
C 6/10 REVIEW
B 6/09 REVIEW
A 2/08 ORIGINAL ISSUE
These drawings have been developed in consultation between the participating Councils. BEFORE USE, the user shall confirm that the drawing has been accepted by the appropriate Council


450
150
900
150
450
PLAN VIEW
NOTES:
1. CONCRETE N32 IN ACCORDANCE WITH AS1379 AND AS3600.
2. ALL WELDS TO AS1554.
3. GRATE AND FRAME TO BE HOT DIP GALVANIZED AFTER FABRICATION TO AS1101.3.
4. REINFORCING BARS GRADE 250 TO AS1302 - 50mm COVER MIN.
5. ALL FLATS GRADE 250 TO AS3678.
6. ALL ANGLES GRADE 250 TO AS3679.
7. HEXAGONAL HEAD BOLTS TO AS1111
NUTS TO AS1112.
WASHERS TO AS1237.
GALVANIZING TO AS1214.
8. GRATE TOP TO BE DESIGNED TO WITHSTAND LOADS TO AS3996-92.
9. GRATE TOPS TO BE DESIGNED TO SUIT TO REQUIRED USE. EG. PEDESTRIAN SAFE BICYCLE SAFE.
10. LID DESIGN TO BE SUBMITTED TO COUNCIL FOR APPROVAL.
11. ALL DIMENSIONS IN MILLIMETRES.
12. BOLLARD/FENCE TO COUNCIL ENGINEER DIRECTIONS.
13. SQUARE PIT MAYBE REPLACED WITH CYLINDRICAL PIT 900mm DIAMETER.
HOT DIP GALVANIZED HINGED GRATE HD 900x900 CLEAR OPENING
600
600
50
150
F72 MESH TO APRON CENTRED
150 MIN
900
150 MIN
TYPICAL FIELD INLET
F72 MESH TO APRON
HOT DIP GALVANIZED HINGED GRATE 900x900 CLEAR OPENING
600
1000
DEPRESSED INLET TO ONE FACE ONLY
APPROACHING FLOWS
175 MAX
125 MAX OPENING
150
WALLS-STEEL REINFORCING AS PER ENGINEERS SPECS
150 MIN
900
150 MIN
TYPICAL DEPRESSED INLET
Scales
NOT TO SCALE
Revisions
Verified
Date
A Original Issue
Quality Certification
Design: Verified:
Drawing: T.O.I. Checked:
Approved by Engineer:
Date: RPEQ:
BUNDABERG REGIONAL COUNCIL
FIELD INLET
Field Inlet / Grated Gully Pit
Profiles And Dimensions
Standard Drawing No
D1001
Sheet Size
A3
Rev


1060
R10 BAR – MAX 120 SPACES CFW TO PIPE AND BARS
40mm NBx3.2 CHS CFW AT JOINTS
HINGE AND BASE PLATE FIXED WITH 2xM12 STAINLESS STEEL CHEMICAL ANCHORS & NYLON WASHERS
H.W. MAX
750
575 NOM
1:6 MAX
1:6 MAX
75
75
1200 MAX
450 MIN COVER
150
900
150
150 MIN
900
150 MIN
SECTION A–A
2xR10 BARS EQUALLY SPACED CFW TO CHS
40NBx3.2CHS WITH R 350 INTERNAL
3/R10 BARS EQUALLY SPACED EACH SIDE
50x50x3.0 SHS (EACH END) CFW AT JOINTS
HINGED BASE PLATE REFER DETAIL
FIXED BASE PLATE REFER DETAIL
1:6 MAX
1:6 MAX
WALLS–STEEL REINFORCING AS PER ENGINEERS SPECS
300 WIDE, 150 THICK SURROUND
150
600
150
190 MIN
SECTION B–B
B
A
A
1550
1850
B
TOP VIEW
10 PL
110
35
35
2xØ14 HOLES
TOP VIEW
75
20x20 CHAMFER
Ø60 HOLE
10 PL
210
150
150
FRONT VIEW
HINGED BASE PLATE
50x50x3.0 SHS CFW TO BASE PLATE
35
35
2xØ14 HOLES
110
75
45
150x110x10 PL
TOP VIEW
FIXED BASE PLATE
NOTES:
1. CONCRETE N32 IN ACCORDANCE WITH AS1379 AND AS3600.
2. GRATE AND HINGE TO BE HOT DIP GALVANISED AFTER FABRICATION, THEN POWDERCOATED 'DULUX – COLORBOND CAULFIELD GREEN' OR APPROVED EQUIVALENT.
3. ALL DIMENSIONS ARE IN MILLIMETRES.
Scales
NOT TO SCALE
Revisions
Verified
Date
A Original Issue
Quality Certification
Design: Verified:
Drawing: Tdo Checked:
Approved by Engineer:
Date: RPEQ:
BUNDABERG REGIONAL COUNCIL
FIELD INLET
Field Inlet Pit Dome Top Cover
Partially Submerged Inlet
Standard Drawing No
D1002
Sheet Size
A3
Rev

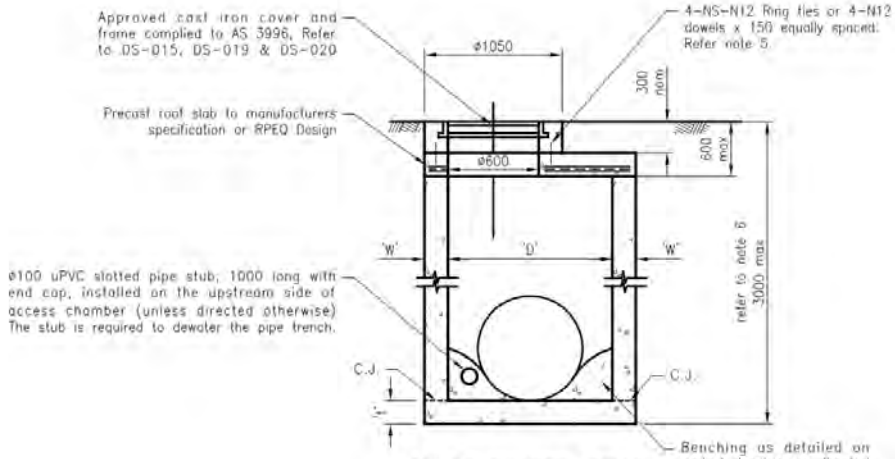

20.0 – 22.0 MIN
7.95 MIN
6.0m ROAD WIDTH IN A 20.0m ROAD RESERVE
OR
8.0m ROAD WIDTH IN A 22.0m ROAD RESERVE
6.15 MIN
PROPERTY BOUNDARY
1.0
1.5
0.30
0.90
2.0MIN
BIO-RETENTION BASIN
0.65
1.7
TYP
LIP OF CHANNEL
ROAD
SUBSOIL DRAINAGE
1 IN 3
0.10
WATER METER
ELECTRICITY
COMMUNICATIONS
WATER
SEWER
TYPICAL CROSS SECTION
LEGEND
NOMINAL KERB LINE.
REDUCED ROAD WIDTH ALLOWABLE ADJACENT TO BIORETENTION BASIN
STORMWATER FALL DIRECTION
NOTES:
1. ALL DIMENSIONS ARE IN METRES.
2. REFER TO "HEALTHY WATERWAYS" AND "WATER BY DESIGN" GUIDELINES FOR WSUD SOLUTIONS. REFER IPWEAQ STANDARD DRAWINGS FOR DETAILS.
3. THIS STANDARD DRAWING IS A SAMPLE OUTLINE TO WSUD SOLUTION IN AN ACCESS STREET.
4. BIO-RETENTION BASINS CAN BE INCORPORATED INTO THE STREETSCAPE BY LOCALISED WIDENING OF THE ROAD RESERVE AND/OR THE REDUCTION OF THE NOMINAL ROAD WIDTH FOR A MAXIMUM LENGTH OF 20% OF THE ROAD LENGTH WITHIN THE DEVELOPMENT.
5. SWALES AND BIO-RETENTION SWALES ARE NOT ALLOWED AS A WSUD SOLUTION WITHIN BRC IN RESIDENTIAL NEIGHBOURHOOD COLLECTOR STREETS, ACCESS STREETS AND ACCESS PLACES WHERE THEY WILL BE TRAVERSED FOR PRIVATE PROPERTY ACCESS.
BIO-RETENTION BASIN
20.0
8.0
6.0
22.0
ON-GRADE
IN-SAG
OPTIONAL TYPE LAYOUT PLANS
Scales
NOT TO SCALE
Revisions
Verified
Date
A Original Issue
Quality Certification
Design: Verified:
Drawing: Title: Checked:
Approved by Engineer:
Date: RPEQ:
BUNDABERG REGIONAL COUNCIL
Residential Roads
Optional Type Plans & Cross Section
to suit WSUD
Standard Drawing No
R1002
Sheet Size
A3
Rev


SEMI-MOUNTABLE KERB TYPE SM3 + HIGHLY REFLECTIVE PAINT - YELLOW
FALL TO MATCH K&C
LAYER OF TENSAR + BIDIUM A14
100x400 OPENING WITH GAL. GRATE 3x16 BARS
GRATE
100x400 OPENING
GRATE
SENTINEL 600
Ø100 OUTLET
BIDIUM LINING
FILTER MEDIA - LOAMY SAND
TRANSITION LAYER - COARSE SAND
DRAINAGE LAYER - FINE AGGREGATE
Ø100 uPVC SLOTED DRAIN REFER NOTE 3
FILTER CLOTH REFER NOTE 4
ROOT BARRIER (CONCRETE OR OTHER SUITABLE ROOT BARRIER)
A SECTION SCALE 1:25
WSUD
800
2.5%
K&C TYPE B1
20mm FALL
BIDIUM LINING
STORMWATER ALIGNMENT
B SECTION SCALE 1:25
2.5%
ROOT BARRIER (CONCRETE OR OTHER SUITABLE ROOT BARRIER)
C SECTION SCALE 1:25
GROUT INTO PLACE
2.5%
SENTINEL 600
D SECTION SCALE 1:25
225
1310 INFILTRATION
150
1160 BIORETENTION
150
750 SENTINEL
150
285x285 PERMAPAVE PEBBLE BROOKE
800x200x75 HWD POST WITH "WSUD" LOGO
GROUT
225
650
520
K&C TYPE B1
750
160
FALL
ECOSOL RSF 100 OR EQUIVALENT
CATCHPIT
PLAN
SCALE 1:25
Notes:
1. THIS WSUD SOLUTION IS SUITABLE FOR A MAX. OF 3 LOTS (800m² MAX. LOTS) OR 6 LOTS WITH ECOSOL RSF 100 OR EQUIVALENT U/S ON GRAY PIT.
2. BIORETENTION MEDIA SPECIFICATION SHALL BE IN ACCORDANCE WITH THE FACILITY FOR ADVANCING BIOFILTRATION "GUIDELINES FOR SOIL FILTER MEDIA IN BIORETENTION SYSTEMS". BIORETENTION HYDRAULIC CONDUCTIVITY SHALL BE IN ACCORDANCE WITH THE FACILITY FOR ADVANCING BIOFILTRATION "PRACTICE NOTE 1: IN SITU MEASUREMENT OF HYDRAULIC CONDUCTIVITY". THE NUMBER OF SAMPLES TO BE TESTED SHALL BE IN ACCORDANCE WITH THE "WATER SENSITIVE URBAN DESIGN CONSTRUCTION AND ESTABLISHMENT GUIDELINES - SWALES, BIORETENTION SYSTEMS AND WETLANDS (WATER BY DESIGN).
3. UNDER-DRAIN: SLOTTED RIGID Ø100 PIPE (uPVC OR SIMILAR TO AS 2439.1) OR APPROVED EQUIVALENT, 0.5% MIN. GRADE. UNDER-DRAINAGE PIPES TO BE INSTALLED WITHOUT FILTER SOCK AND SHALL BE SEALED INTO PITS USING GROUT OR OTHER APPROVED WATERTIGHT SEAL.
4. FILTER CLOTH - NON-WOVEN GEOTEXTILE. FILTER CLOTH NOT TO BE PLACED BETWEEN ANY FILTER LAYERS. IMPERVIOUS LINER MAY BE REQUIRED SUBJECT TO SOIL TESTING REQUIREMENTS IN ACCORDANCE WITH THE "WATER SENSITIVE URBAN DESIGN TECHNICAL DESIGN GUIDELINES" (WATER BY DESIGN).
5. MEDIA IN BIORETENTION AREA TO BE PLATE COMPACTED.
6. THE FOLLOWING TREE SPECIES ARE TO BE USED WITH ONLY ONE SPECIES PER STREET:
- Callistemon viminalis
- Callistemon salignus
- Elaeocarpus eumundi
- Elaeocarpus "Prima Donna"
- Flindersia australis
- Glochidion ferdinandi
- Syzygium leuhmannii
- Waterhousea floribunda
- Xanthostemon chrysanthus
7. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.
Survey Data
Survey No:
Height Datum: AHD
Horiz. Datum: "MGA 94, ZONE 56"
Scale Factor: MGA GROUND
Level Books:
Surveyor:
Scales
0 0.25 0.5 0.75m
1:25
Revisions
B ECOSOL + 6 LOTS 7/12
A ORIGINAL ISSUE
Quality Certification
Design: Verified:
Drawn: Tits Checked:
Approved By Engineer: Date:
RPEQ:
BUNDABERG REGIONAL COUNCIL
Facility Name:
Asset Name:
Details: WSUD - Bioretention - Infill Sites
Associated Drawing No.:
1 of 1
Project No.:
Sheet Size: A3
Drawing No.: 37133
Rev: B



ROOF RING PLAN

For use in raising covers and frames of existing access chambers
* Size to suit existing access chamber



ACCESS CHAMBER DETAILS SECTION

DIMENSION

Access chamber DIA 'D'	FLOOR THICKNESS 't'		Wall thickness 'W'	Roof/Floor slab DIA
	INLET	OUTLET		
1050	175	150	150	1350
1200	250	225	225	1650
1350	250	225	225	1800
1500	250	225	225	1950
1800	250	225	250	2300
2100	275	250	275	2650

NOTES:

1. Concrete: Benching N25, Structural N40 (precast), N32 (Cast insitu) in accordance with AS1379 and AS 3600.
2. Access chambers which are proprietary items are required to be designed and certified to AS 3996-1992. Access covers subject to road traffic shall be of Class D design, where Minimum Ultimate Limit State Design Load = 210kN. Access covers subject to pedestrian traffic and occasional vehicle load shall be of Class C design, where Minimum Ultimate Limit State Design Load =150kN. (Ref: AS 3996-1992 and Austroads Bridge Design Code 1992).
3. Cover and frame, gray cast iron, Grade > T220 to AS 1830.
4. Refer Project Drawings for size and level of culverts, chamber cover level and setout point details.
5. Precast manhole top slabs are to be supplied with four (4) factory installed ring ties or alternately dowel bars may be accepted, subject to approval from the relevant Council.
6. Manholes deeper than 3000 require individual design and certification.
7. All dimensions are in millimetres unless shown otherwise.

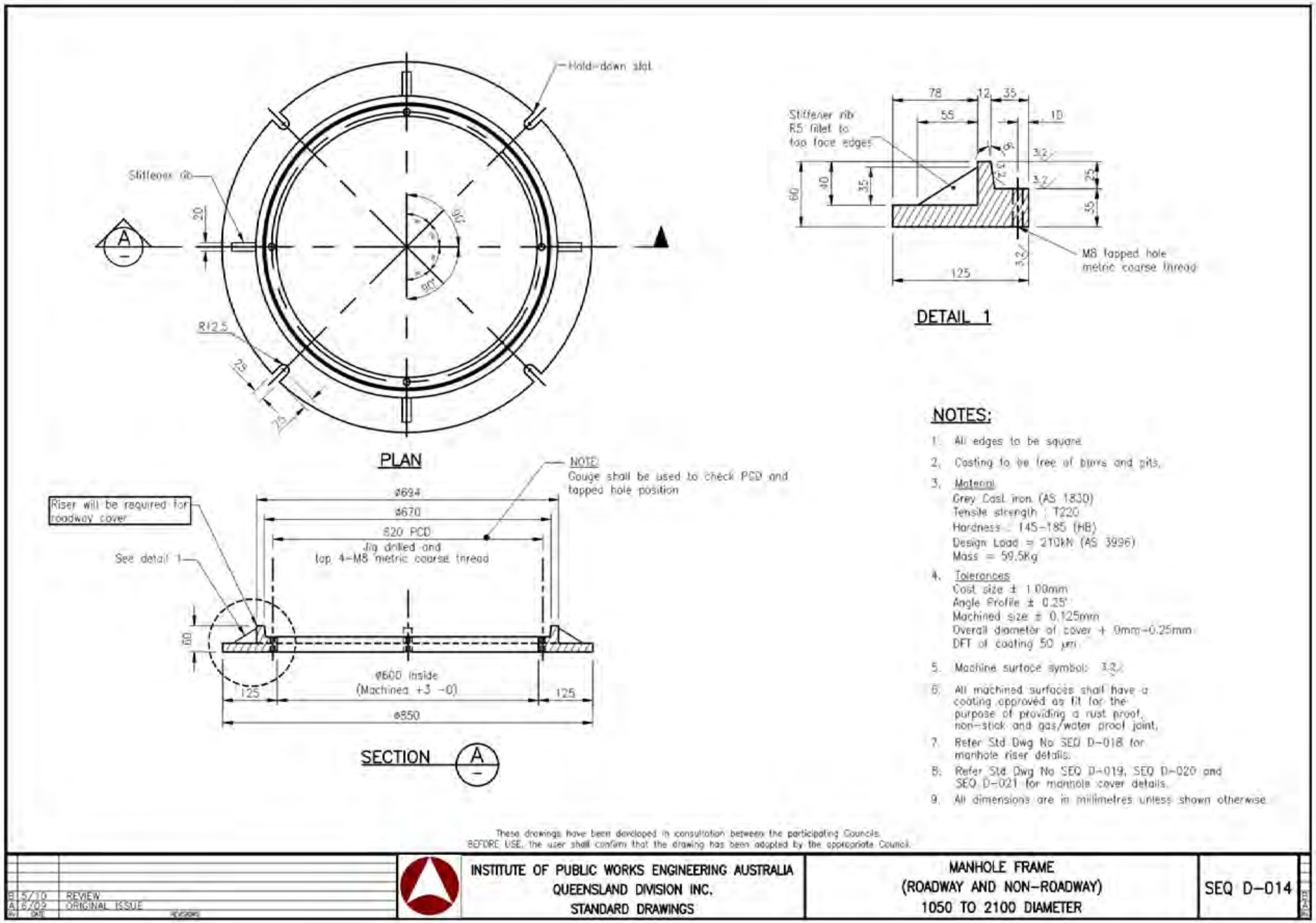
These drawings have been developed in consultation between the participating Councils.
BEFORE USE, the user shall confirm that the drawing has been adopted by the appropriate Council.

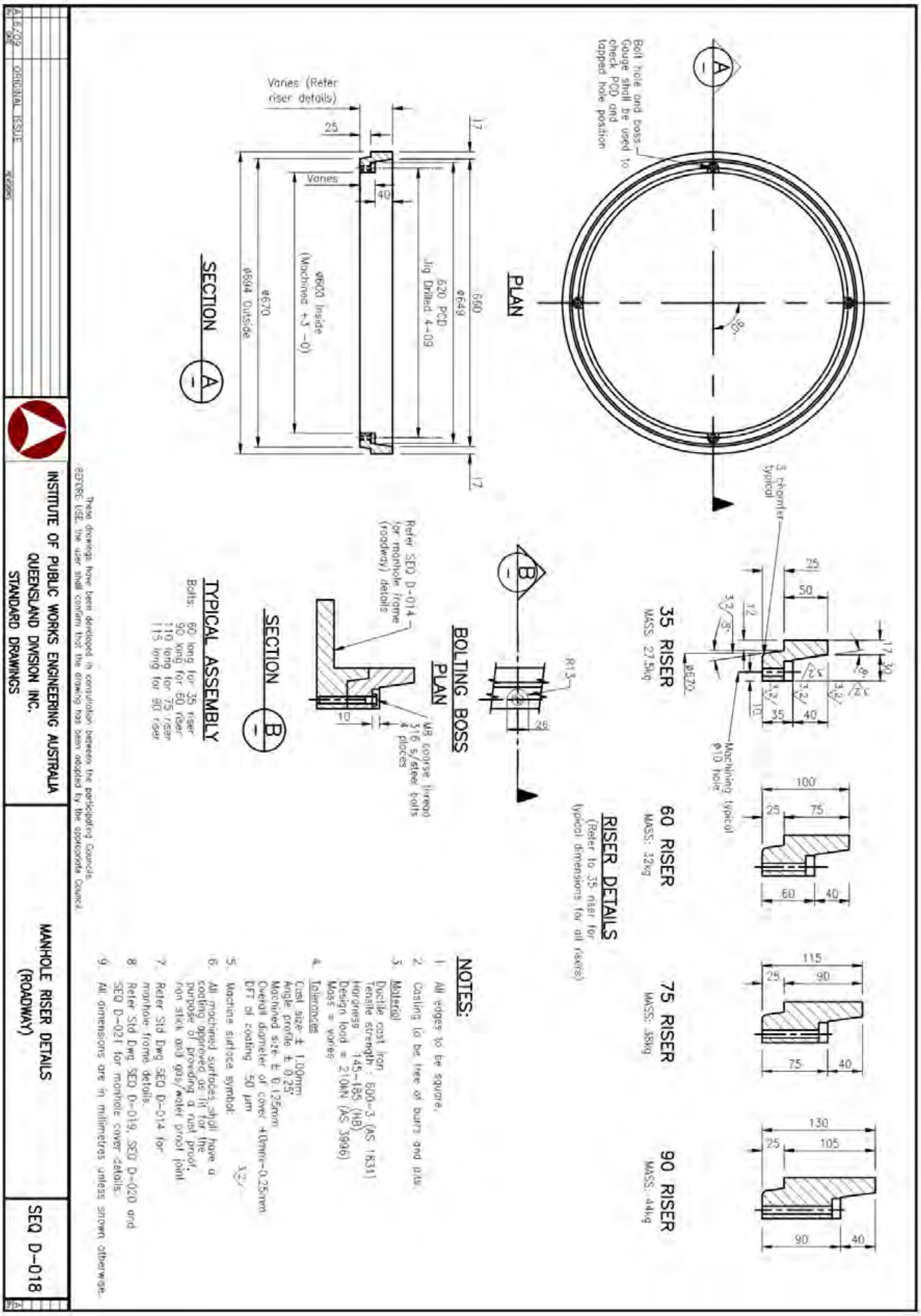
No	DATE	REVISIONS
D	06/14	Review
C	07/14	Amended Drawing Number
B	11/12	Concrete Strength Amended
A	10/12	ORIGINAL ISSUE

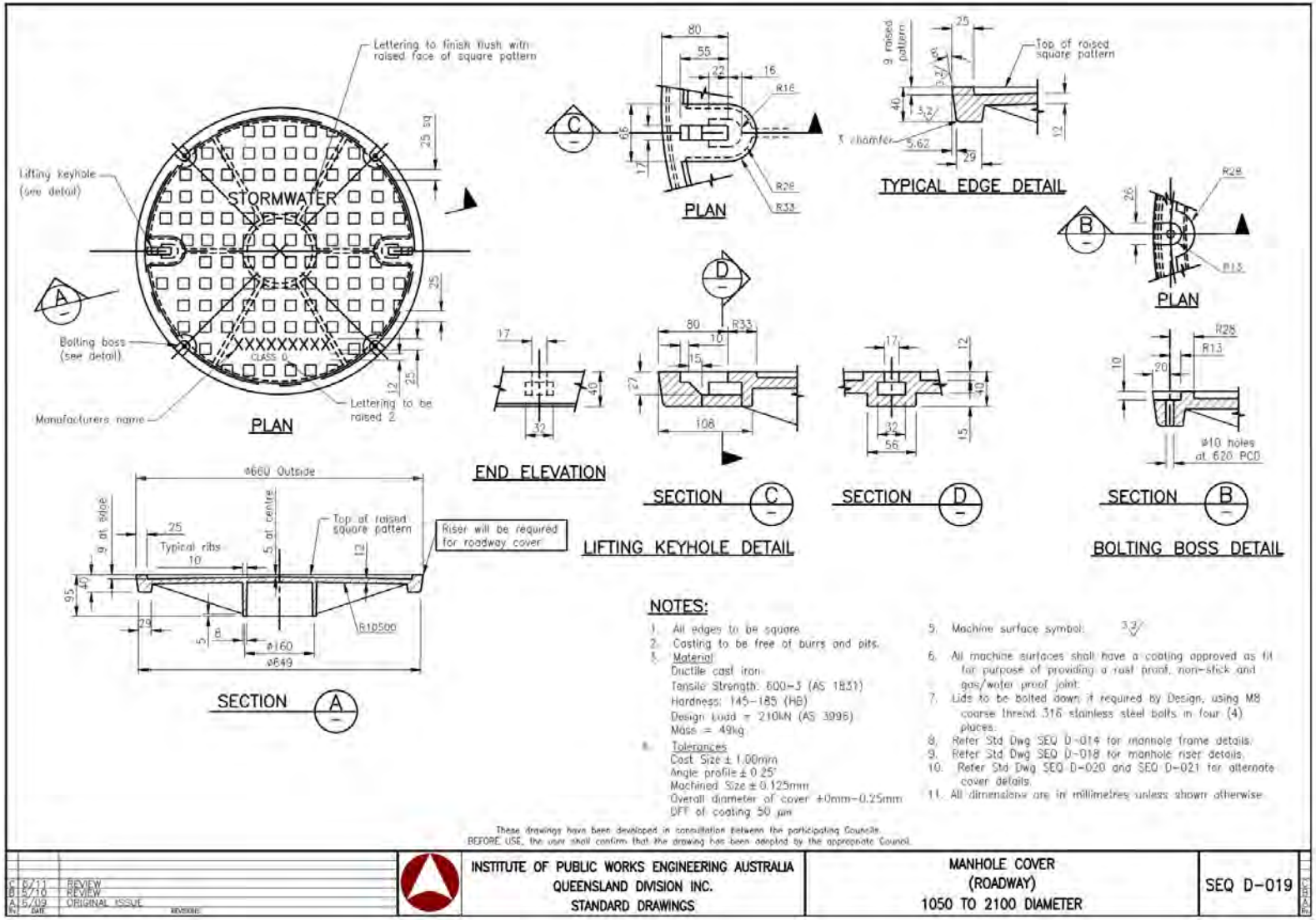
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALASIA
STANDARD DRAWINGS

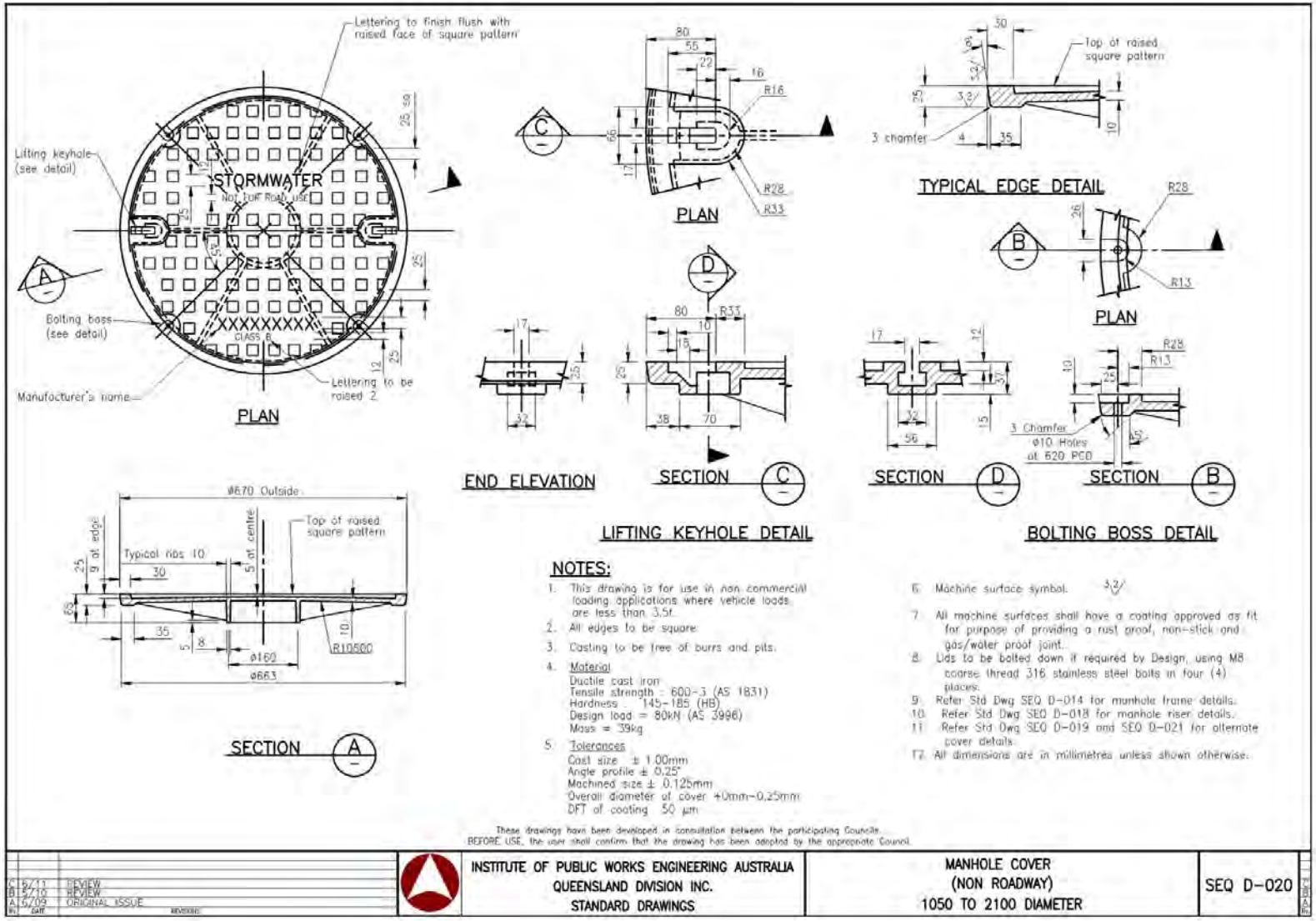
STORMWATER ACCESS CHAMBER DETAIL
1050 TO 2100 DIAMETER

DS-010


Hold-down slot
Stiffener rib
20
R12.5
25
25
25
90°
90°
PLAN
Riser will be required for roadway cover
See detail 1
NOTE
Gauge shall be used to check PCD and tapped hole position
ø694
ø670
620 PCD
Jig drilled and tap 4-M8 metric coarse thread
60
ø600 inside (Machined +3 -0)
125
125
ø850
SECTION
A
Stiffener rib R5 fillet to top face edges
78
12
35
55
10
60
40
35
25
35
3.2
125
M8 tapped hole metric coarse thread
DETAIL 1
NOTES:
1. All edges to be square.
2. Casting to be free of burrs and pits.
3. Material
Grey Cast iron (AS 1830)
Tensile strength : T220
Hardness : 145-185 (HB)
Design Load = 210kN (AS 3996)
Mass = 59.5Kg
4. Tolerances
Cast size ± 1.00mm
Angle Profile ± 0.25°
Machined size ± 0.125mm
Overall diameter of cover + 0mm-0.25mm
DFT of coating 50 µm
5. Machine surface symbol: 3.2
6. All machined surfaces shall have a coating approved as fit for the purpose of providing a rust proof, non-stick and gas/water proof joint.
7. Refer Std Dwg No SEQ D-018 for manhole riser details.
8. Refer Std Dwg No SEQ D-019, SEQ D-020 and SEQ D-021 for manhole cover details.
9. All dimensions are in millimetres unless shown otherwise.
These drawings have been developed in consultation between the participating Councils.
BEFORE USE, the user shall confirm that the drawing has been adopted by the appropriate Council.
B 5/10 REVIEW
A 6/09 ORIGINAL ISSUE
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.
STANDARD DRAWINGS
MANHOLE FRAME
(ROADWAY AND NON-ROADWAY)
1050 TO 2100 DIAMETER
SEQ D-014


Bolt hole and boss. Gauge shall be used to check PCD and tapped hole position
PLAN
3 chamfer typical
Machining typical ø10 hole
35 RISER
MASS: 27.5kg
60 RISER
MASS: 32kg
75 RISER
MASS: 38kg
90 RISER
MASS: 44kg
RISER DETAILS
(Refer to 35 riser for typical dimensions for all risers)
R13
BOLTING BOSS PLAN
660
ø649
620 PCD
Jig Drilled 4-ø9
ø600 Inside
(Machined +3 -0)
ø670
ø694 Outside
Varies (Refer riser details)
Varies
SECTION A
Refer SEQ D-014 for manhole frame (roadway) details
M8 coarse thread 316 s/steel bolts 4 places
SECTION B
TYPICAL ASSEMBLY
Bolts: 60 long for 35 riser
90 long for 60 riser
110 long for 75 riser
115 long for 90 riser
NOTES:
1. All edges to be square.
2. Casting to be free of burrs and pits.
3. Material
Ductile cast iron
Tensile strength : 600-3 (AS 1831)
Hardness : 145-185 (HB)
Design load = 210kN (AS 3996)
Mass = varies
4. Tolerances
Cast size ± 1.00mm
Angle profile ± 0.25°
Machined size ± 0.125mm
Overall diameter of cover +0mm-0.25mm
DFT of coating 50 µm
5. Machine surface symbol: 3.2
6. All machined surfaces shall have a coating approved as fit for the purpose of providing a rust proof, non stick and gas/water proof joint.
7. Refer Std Dwg SEQ D-014 for manhole frame details.
8. Refer Std Dwg SEQ D-019, SEQ D-020 and SEQ D-021 for manhole cover details.
9. All dimensions are in millimetres unless shown otherwise.
These drawings have been developed in consultation between the participating Councils.
BEFORE USE, the user shall confirm that the drawing has been adopted by the appropriate Council.
A 6/09 ORIGINAL ISSUE
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.
STANDARD DRAWINGS
MANHOLE RISER DETAILS
(ROADWAY)
SEQ D-018


Lettering to finish flush with raised face of square pattern
Lifting keyhole (see detail)
STORMWATER
XXXXXXXXX
CLASS D
Bolting boss (see detail)
Manufacturers name
Lettering to be raised 2
PLAN
END ELEVATION
PLAN
TYPICAL EDGE DETAIL
PLAN
SECTION C
SECTION D
LIFTING KEYHOLE DETAIL
SECTION B
BOLTING BOSS DETAIL
ø660 Outside
Typical ribs
Top of raised square pattern
Riser will be required for roadway cover
ø160
ø649
SECTION A
NOTES:
1. All edges to be square.
2. Casting to be free of burrs and pits.
3. Material
Ductile cast iron:
Tensile Strength: 600-3 (AS 1831)
Hardness: 145-185 (HB)
Design Load = 210kN (AS 3996)
Mass = 49kg
4. Tolerances
Cast Size ± 1.00mm
Angle profile ± 0.25°
Machined Size ± 0.125mm
Overall diameter of cover +0mm-0.25mm
DFT of coating 50 µm
5. Machine surface symbol:
6. All machine surfaces shall have a coating approved as fit for purpose of providing a rust proof, non-stick and gas/water proof joint.
7. Lids to be bolted down if required by Design, using M8 coarse thread 316 stainless steel bolts in four (4) places.
8. Refer Std Dwg SEQ D-014 for manhole frame details.
9. Refer Std Dwg SEQ D-018 for manhole riser details.
10. Refer Std Dwg SEQ D-020 and SEQ D-021 for alternate cover details.
11. All dimensions are in millimetres unless shown otherwise.
These drawings have been developed in consultation between the participating Councils.
BEFORE USE, the user shall confirm that the drawing has been adopted by the appropriate Council.
C 8/7/11 REVIEW
B 15/7/10 REVIEW
A 15/7/09 ORIGINAL ISSUE
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.
STANDARD DRAWINGS
MANHOLE COVER
(ROADWAY)
1050 TO 2100 DIAMETER
SEQ D-019



NOTES:

1. This drawing is for use in non commercial loading applications where vehicle loads are less than 3.5t.
2. All edges to be square.
3. Casting to be free of burrs and pits.
4. Material
   Ductile cast iron
   Tensile strength : 600-3 (AS 1831)
   Hardness : 145-185 (HB)
   Design load = 80kN (AS 3996)
   Mass = 39kg
5. Tolerances
   Cast size ± 1.00mm
   Angle profile ± 0.25°
   Machined size ± 0.125mm
   Overall diameter of cover +0mm-0.25mm
   DFT of coating 50 µm
6. Machine surface symbol. 3.2
7. All machine surfaces shall have a coating approved as fit for purpose of providing a rust proof, non-stick and gas/water proof joint.
8. Lids to be bolted down if required by Design, using M8 coarse thread 316 stainless steel bolts in four (4) places.
9. Refer Std Dwg SEQ D-014 for manhole frame details.
10. Refer Std Dwg SEQ D-018 for manhole riser details.
11. Refer Std Dwg SEQ D-019 and SEQ D-021 for alternate cover details.
12. All dimensions are in millimetres unless shown otherwise.

These drawings have been developed in consultation between the participating Councils.
BEFORE USE, the user shall confirm that the drawing has been adopted by the appropriate Council.

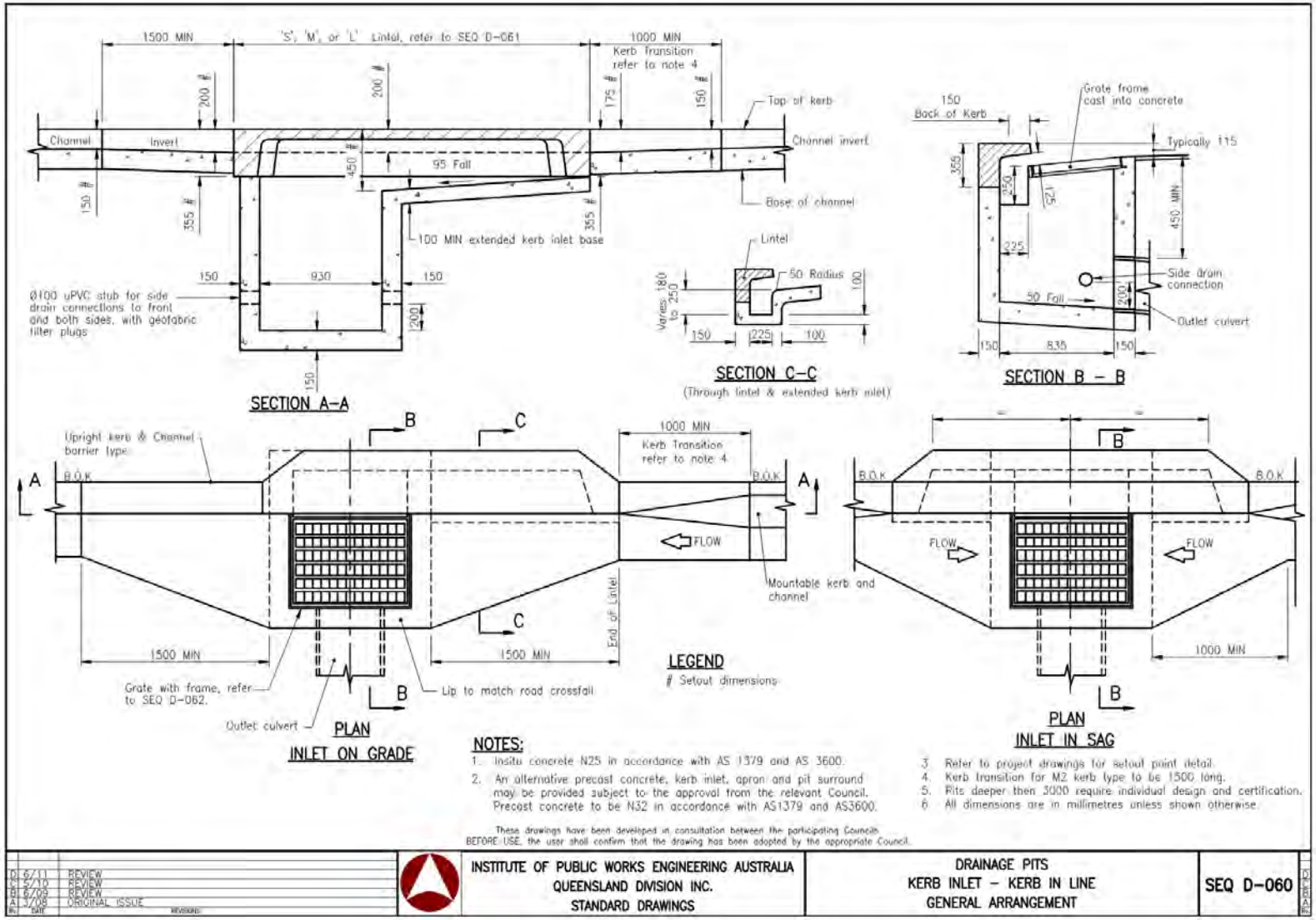
REV	DATE	REVISION
C	12/11	REVIEW
B	12/10	REVIEW
A	5/09	ORIGINAL ISSUE

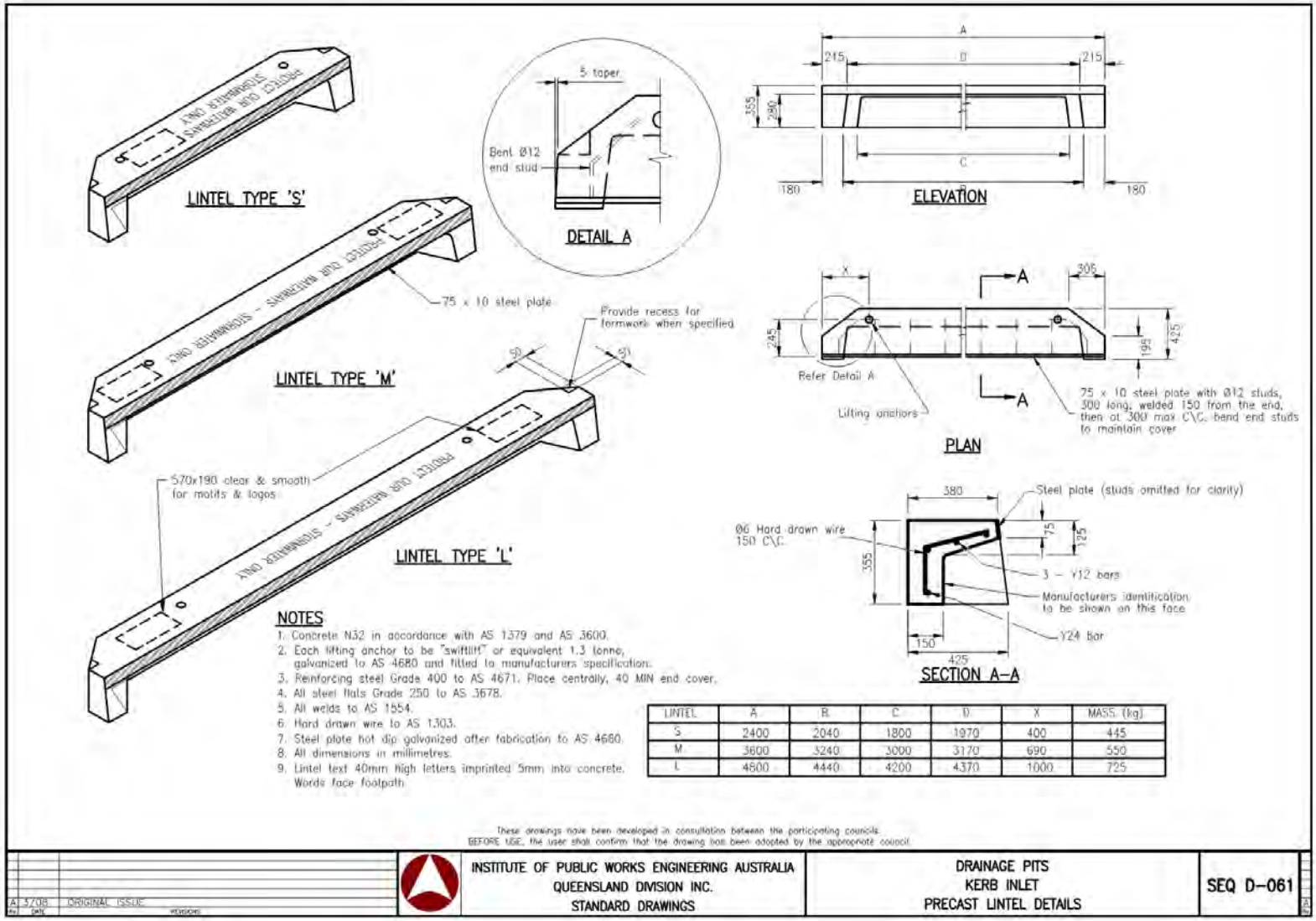
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.
STANDARD DRAWINGS

MANHOLE COVER
(NON ROADWAY)
1050 TO 2100 DIAMETER

SEQ D-020

STORMWATER
25 high text
12 high text
CLASS B SEWER
Manufacturer's name
Lifting keyhole
PLAN
END ELEVATION
DETAIL 1
3 chamfer
SECTION A
See detail 1 for typical edge detail
ø670 Outside
N20 concrete or decorative infill as directed
SL41 fabric central ø524
LIFTING KEYHOLE DETAILS
PLAN
SECTION C
SECTION D
Rebate for concrete bonding
SECTION B
2 recessed lettering
R33
R16
NOTES:
1. This drawing is for use in non-roadway application subject to pedestrian loadings only.
2. All edges to be square.
3. Casting to be free of burrs and pits.
4. Material
Ductile cast iron
Tensile strength : 600-3 (AS 1831)
Hardness : 145- 185 (HB)
Design Load : 80kN (AS 3996)
Mass = 59.5kg
5. Tolerances
Cast size ± 1.00mm
Angle profile ± 0.25°
Machined size ± 0.125mm
Overall diameter of cover +0mm-0.25mm
DFT of coating 50µm
6. Machine surface symbol
7. All machined surfaces shall have a coating approved as fit for the purpose of providing a rust proof non-stick and gas/water proof joint
8. Refer Std Dwg SEQ D-014 for manhole frame details.
9. Refer Std Dwg SEQ D-018 for manhole riser details.
10. Refer Std Dwg SEQ D-019 and SEQ D-020 for alternate cover details.
11. All dimensions are in millimetres unless shown otherwise.
These drawings have been developed in consultation between the participating Councils. BEFORE USE, the user shall confirm that the drawing has been adopted by the appropriate Council.
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.
STANDARD DRAWINGS
MANHOLE COVER CONCRETE INFILL (PEDESTRIAN TRAFFIC) 1050 TO 2100 DIAMETER
SEQ D-021
REVIEW
ORIGINAL ISSUE


1500 MIN
'S', 'M', or 'L' Lintel, refer to SEQ D-061
1000 MIN
Kerb Transition refer to note 4
Top of kerb
Channel
Invert
Channel invert
95 Fall
Base of channel
100 MIN extended kerb inlet base
Ø100 uPVC stub for side drain connections to front and both sides, with geofabric filter plugs
SECTION A-A
Lintel
50 Radius
Varies 180 to 250
SECTION C-C
(Through lintel & extended kerb inlet)
Grate frame cast into concrete
Back of Kerb
Typically 115
Side drain connection
50 Fall
Outlet culvert
SECTION B - B
Upright kerb & Channel barrier type
B.O.K
FLOW
Mountable kerb and channel
End of Lintel
Grate with frame, refer to SEQ D-062.
Outlet culvert
Lip to match road crossfall
PLAN
INLET ON GRADE
LEGEND
Setout dimensions
PLAN
INLET IN SAG
NOTES:
1. Insitu concrete N25 in accordance with AS 1379 and AS 3600.
2. An alternative precast concrete, kerb inlet, apron and pit surround may be provided subject to the approval from the relevant Council. Precast concrete to be N32 in accordance with AS1379 and AS3600.
3. Refer to project drawings for setout point detail.
4. Kerb transition for M2 kerb type to be 1500 long.
5. Pits deeper then 3000 require individual design and certification.
6. All dimensions are in millimetres unless shown otherwise.
These drawings have been developed in consultation between the participating Councils. BEFORE USE, the user shall confirm that the drawing has been adopted by the appropriate Council.
D 6/11 REVIEW
C 5/10 REVIEW
B 6/09 REVIEW
A 3/08 ORIGINAL ISSUE
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.
STANDARD DRAWINGS
DRAINAGE PITS
KERB INLET - KERB IN LINE
GENERAL ARRANGEMENT
SEQ D-060



NOTES

1. Concrete N32 in accordance with AS 1379 and AS 3600.
2. Each lifting anchor to be "swiftlift" or equivalent 1.3 tonne, galvanized to AS 4680 and fitted to manufacturers specification.
3. Reinforcing steel Grade 400 to AS 4671. Place centrally, 40 MIN end cover.
4. All steel flats Grade 250 to AS 3678.
5. All welds to AS 1554.
6. Hard drawn wire to AS 1303.
7. Steel plate hot dip galvanized after fabrication to AS 4680.
8. All dimensions in millimetres.
9. Lintel text 40mm high letters imprinted 5mm into concrete. Words face footpath.

LINTEL	A	B	C	D	X	MASS. (kg)
S	2400	2040	1800	1970	400	445
M	3600	3240	3000	3170	690	550
L	4800	4440	4200	4370	1000	725

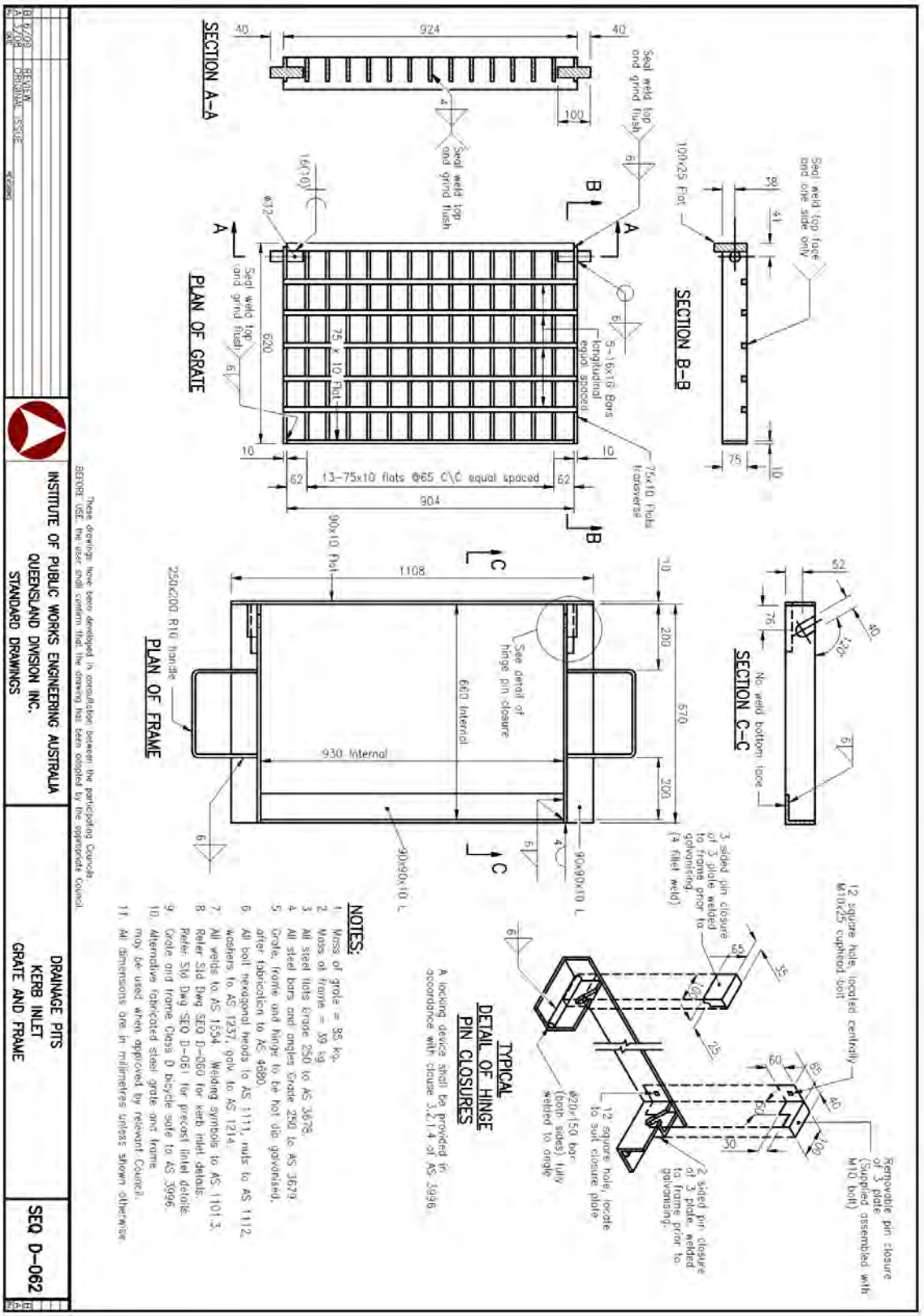
These drawings have been developed in consultation between the participating councils. BEFORE USE, the user shall confirm that the drawing has been adopted by the appropriate council.

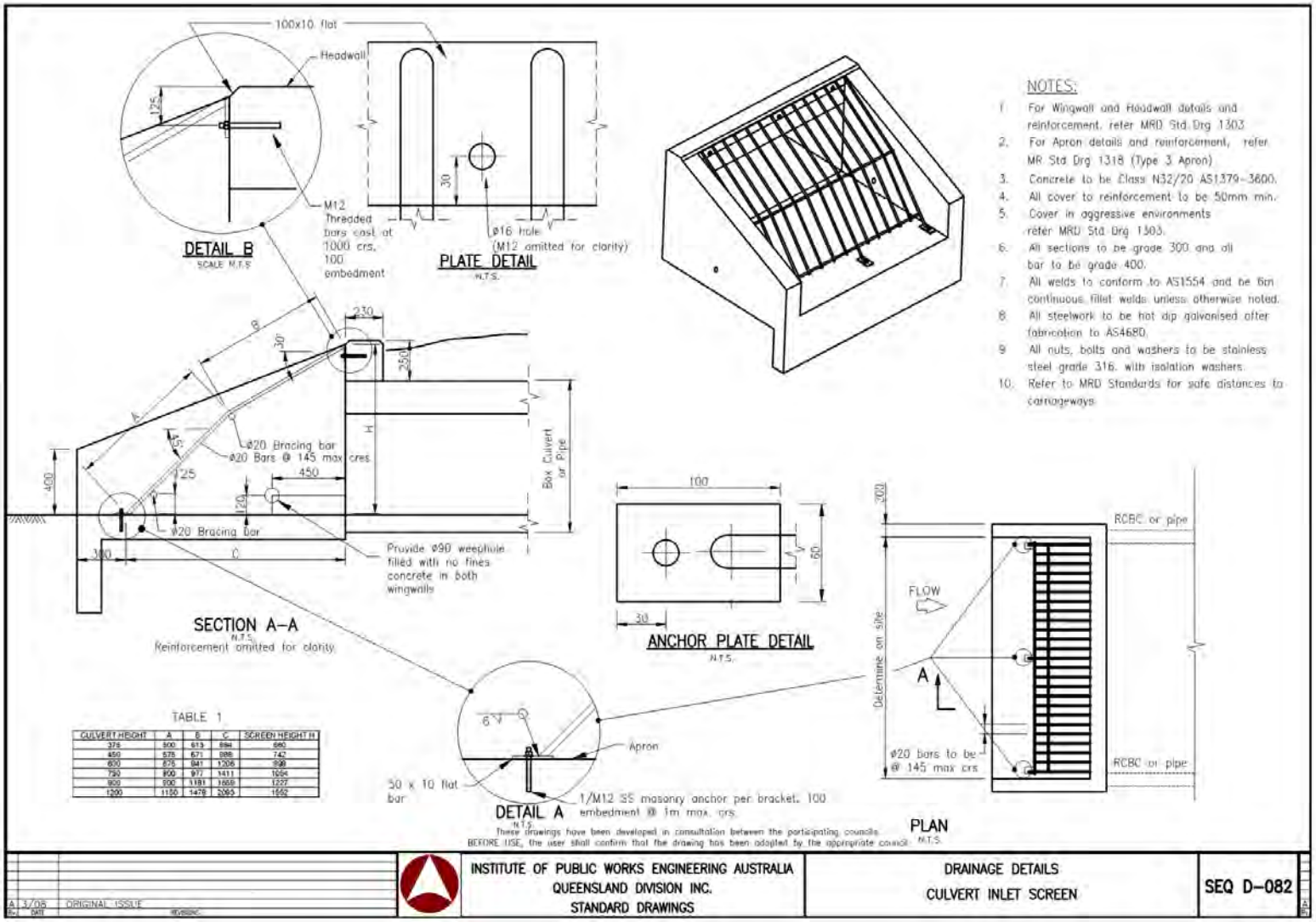
A 5/08 ORIGINAL ISSUE

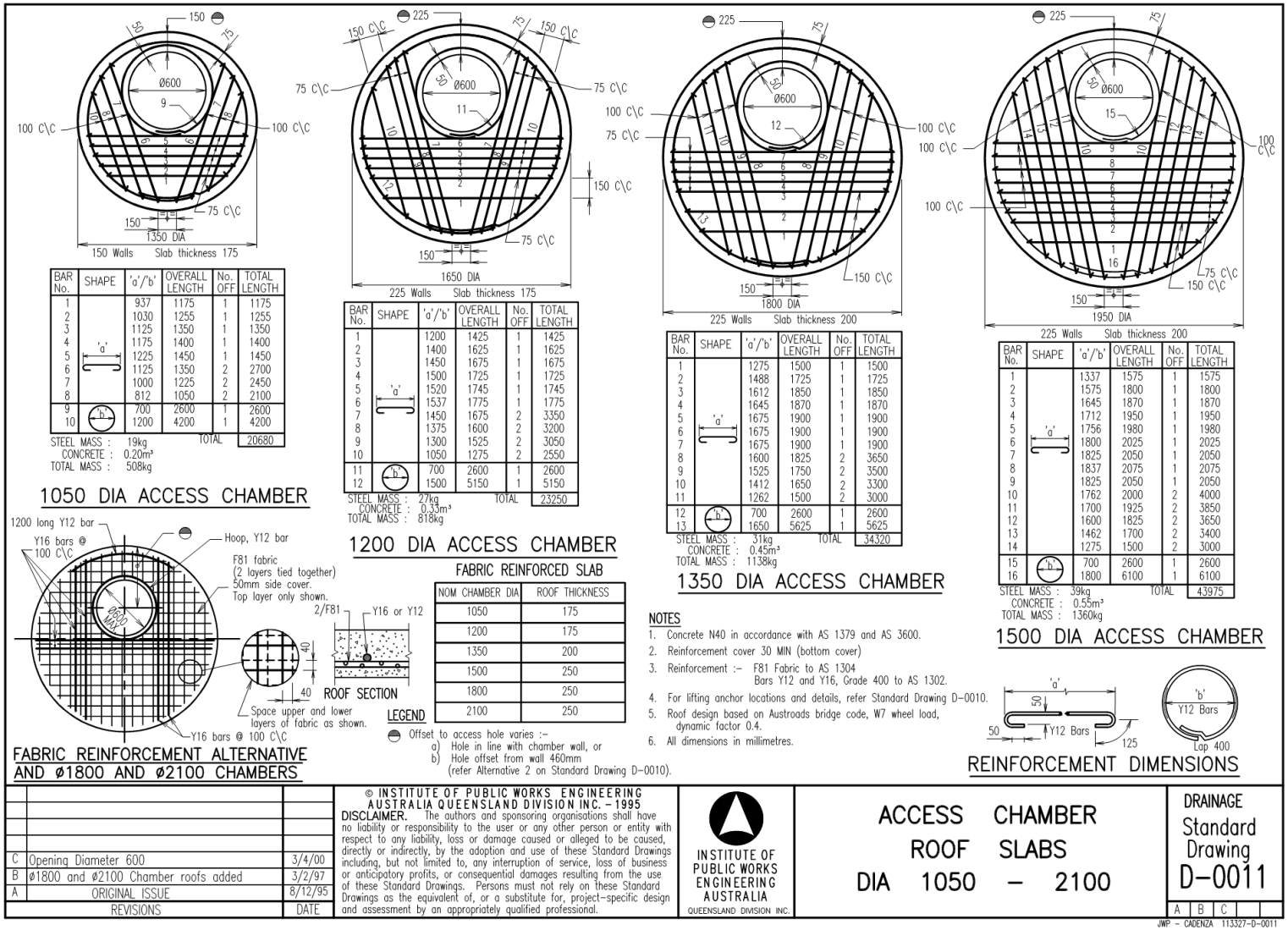
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.
STANDARD DRAWINGS

DRAINAGE PITS
KERB INLET
PRECAST LINTEL DETAILS

SEQ D-061


SECTION A-A
PLAN OF GRATE
SECTION B-B
SECTION C-C
PLAN OF FRAME
TYPICAL DETAIL OF HINGE PIN CLOSURES
NOTES:
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.
STANDARD DRAWINGS
DRAINAGE PITS
KERB INLET
GRATE AND FRAME
SEQ D-062


100x10 flat
Headwall
M12 Threaded bars cast at 1000 crs. 100 embedment
DETAIL B
SCALE N.T.S
ø16 hole (M12 omitted for clarity)
PLATE DETAIL
N.T.S.
NOTES:
1. For Wingwall and Headwall details and reinforcement, refer MRD Std. Drg. 1303
2. For Apron details and reinforcement, refer MR Std. Drg. 1318 (Type 3 Apron)
3. Concrete to be Class N32/20 AS1379-3600.
4. All cover to reinforcement to be 50mm min.
5. Cover in aggressive environments refer MRD Std. Drg. 1303.
6. All sections to be grade 300 and all bar to be grade 400.
7. All welds to conform to AS1554 and be 6m continuous fillet welds unless otherwise noted.
8. All steelwork to be hot dip galvanised after fabrication to AS4680.
9. All nuts, bolts and washers to be stainless steel grade 316, with isolation washers.
10. Refer to MRD Standards for safe distances to carriageways.
ø20 Bracing bar
ø20 Bars @ 145 max crs.
Box Culvert or Pipe
Provide ø90 weephole filled with no fines concrete in both wingwalls
SECTION A-A
N.T.S.
Reinforcement omitted for clarity
ANCHOR PLATE DETAIL
N.T.S.
TABLE 1
CULVERT HEIGHT | A | B | C | SCREEN HEIGHT H
375 | 500 | 613 | 894 | 590
450 | 575 | 671 | 988 | 742
600 | 675 | 841 | 1206 | 938
750 | 900 | 977 | 1411 | 1094
900 | 1050 | 1181 | 1668 | 1227
1200 | 1350 | 1478 | 2065 | 1552
Apron
50 x 10 flat bar
1/M12 SS masonry anchor per bracket, 100 embedment @ 1m max. crs.
DETAIL A
N.T.S.
These drawings have been developed in consultation between the participating councils. BEFORE USE, the user shall confirm that the drawing has been adopted by the appropriate council.
RCBC or pipe
FLOW
Determine on site
ø20 bars to be @ 145 max crs
PLAN
N.T.S.
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.
STANDARD DRAWINGS
DRAINAGE DETAILS
CULVERT INLET SCREEN
SEQ D-082
A 13/05 ORIGINAL ISSUE



BAR No.	SHAPE	'a'/'b'	OVERALL LENGTH	No. OFF	TOTAL LENGTH
1		937	1175	1	1175
2		1030	1255	1	1255
3		1125	1350	1	1350
4	'a'	1175	1400	1	1400
5		1225	1450	1	1450
6		1125	1350	2	2700
7		1000	1225	2	2450
8		812	1050	2	2100
9	'b'	700	2600	1	2600
10		1200	4200	1	4200

STEEL MASS : 19kg TOTAL 20680
CONCRETE : 0.20m³
TOTAL MASS : 508kg

1050 DIA ACCESS CHAMBER

BAR No.	SHAPE	'a'/'b'	OVERALL LENGTH	No. OFF	TOTAL LENGTH
1		1200	1425	1	1425
2		1400	1625	1	1625
3		1450	1675	1	1675
4		1500	1725	1	1725
5		1520	1745	1	1745
6	'a'	1537	1775	1	1775
7		1450	1675	2	3350
8		1375	1600	2	3200
9		1300	1525	2	3050
10		1050	1275	2	2550
11	'b'	700	2600	1	2600
12		1500	5150	1	5150

STEEL MASS : 27kg TOTAL 23250
CONCRETE : 0.33m³
TOTAL MASS : 818kg

1200 DIA ACCESS CHAMBER

BAR No.	SHAPE	'a'/'b'	OVERALL LENGTH	No. OFF	TOTAL LENGTH
1		1275	1500	1	1500
2		1488	1725	1	1725
3		1612	1850	1	1850
4		1645	1870	1	1870
5	'a'	1675	1900	1	1900
6		1675	1900	1	1900
7		1675	1900	1	1900
8		1600	1825	2	3650
9		1525	1750	2	3500
10		1412	1650	2	3300
11		1262	1500	2	3000
12	'b'	700	2600	1	2600
13		1650	5625	1	5625

STEEL MASS : 31kg TOTAL 34320
CONCRETE : 0.45m³
TOTAL MASS : 1138kg

1350 DIA ACCESS CHAMBER

BAR No.	SHAPE	'a'/'b'	OVERALL LENGTH	No. OFF	TOTAL LENGTH
1		1337	1575	1	1575
2		1575	1800	1	1800
3		1645	1870	1	1870
4		1712	1950	1	1950
5	'a'	1756	1980	1	1980
6		1800	2025	1	2025
7		1825	2050	1	2050
8		1837	2075	1	2075
9		1825	2050	1	2050
10		1762	2000	2	4000
11		1700	1925	2	3850
12		1600	1825	2	3650
13		1462	1700	2	3400
14		1275	1500	2	3000
15	'b'	700	2600	1	2600
16		1800	6100	1	6100

STEEL MASS : 39kg TOTAL 43975
CONCRETE : 0.55m³
TOTAL MASS : 1360kg

1500 DIA ACCESS CHAMBER

FABRIC REINFORCEMENT ALTERNATIVE AND ø1800 AND ø2100 CHAMBERS

FABRIC REINFORCED SLAB

NOM CHAMBER DIA	ROOF THICKNESS
1050	175
1200	175
1350	200
1500	250
1800	250
2100	250

LEGEND
Offset to access hole varies :–
a) Hole in line with chamber wall, or
b) Hole offset from wall 460mm
(refer Alternative 2 on Standard Drawing D–0010).

NOTES
1. Concrete N40 in accordance with AS 1379 and AS 3600.
2. Reinforcement cover 30 MIN (bottom cover)
3. Reinforcement :– F81 Fabric to AS 1304
Bars Y12 and Y16, Grade 400 to AS 1302.
4. For lifting anchor locations and details, refer Standard Drawing D–0010.
5. Roof design based on Austroads bridge code, W7 wheel load, dynamic factor 0.4.
6. All dimensions in millimetres.

REINFORCEMENT DIMENSIONS

C	Opening Diameter 600	3/4/00
B	ø1800 and ø2100 Chamber roofs added	3/2/97
A	ORIGINAL ISSUE	8/12/95
REVISIONS		DATE

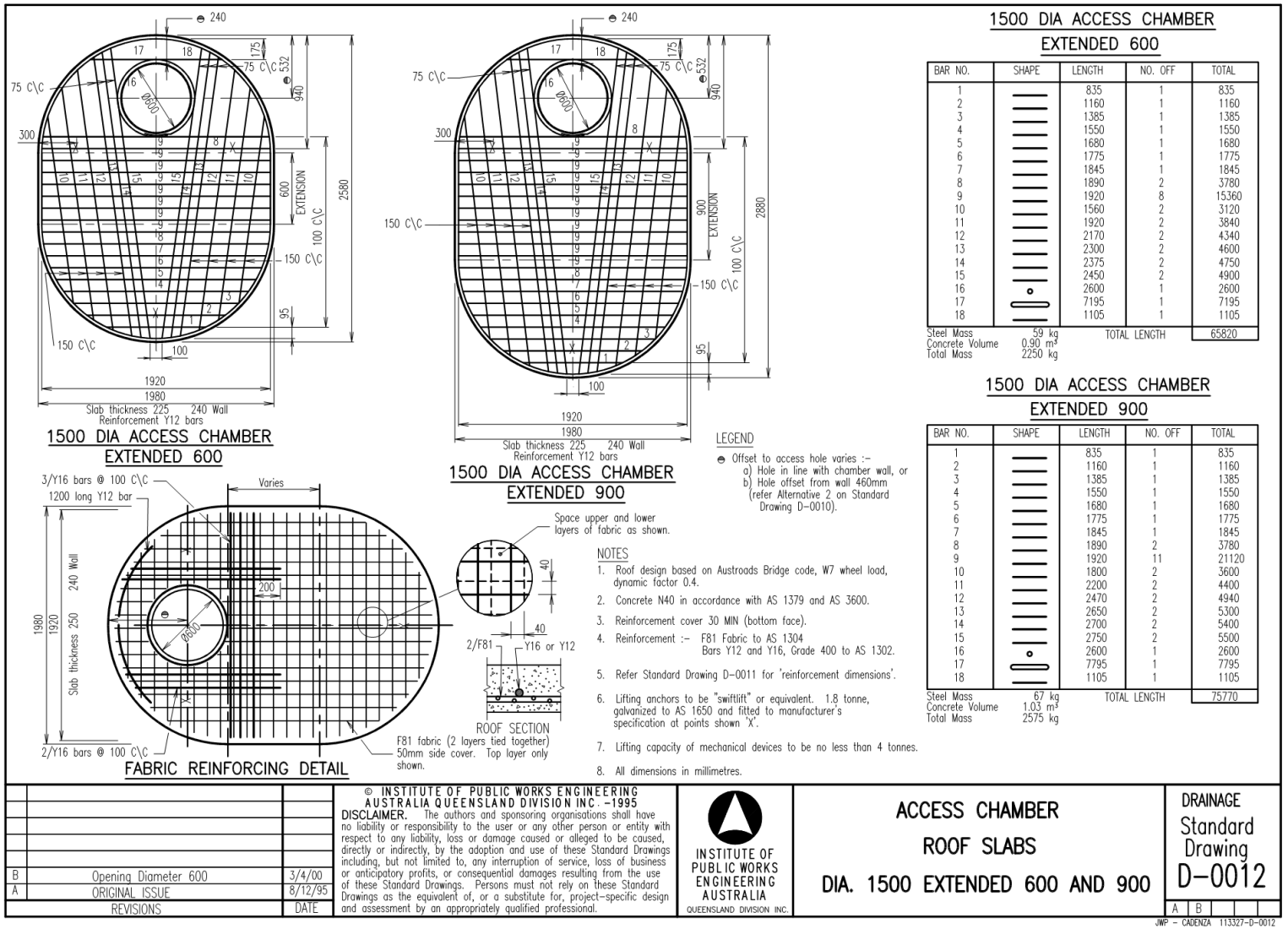
© INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA QUEENSLAND DIVISION INC. – 1995
DISCLAIMER. The authors and sponsoring organisations shall have no liability or responsibility to the user or any other person or entity with respect to any liability, loss or damage caused or alleged to be caused, directly or indirectly, by the adoption and use of these Standard Drawings including, but not limited to, any interruption of service, loss of business or anticipatory profits, or consequential damages resulting from the use of these Standard Drawings. Persons must not rely on these Standard Drawings as the equivalent of, or a substitute for, project–specific design and assessment by an appropriately qualified professional.

INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA QUEENSLAND DIVISION INC.

ACCESS CHAMBER ROOF SLABS DIA 1050 – 2100

DRAINAGE
Standard Drawing
D–0011
A B C

JWP – CADENZA 113327–D–0011



BAR NO.	SHAPE	LENGTH	NO. OFF	TOTAL
1		835	1	835
2		1160	1	1160
3		1385	1	1385
4		1550	1	1550
5		1680	1	1680
6		1775	1	1775
7		1845	1	1845
8		1890	2	3780
9		1920	8	15360
10		1560	2	3120
11		1920	2	3840
12		2170	2	4340
13		2300	2	4600
14		2375	2	4750
15		2450	2	4900
16		2600	1	2600
17		7195	1	7195
18		1105	1	1105

1500 DIA ACCESS CHAMBER
EXTENDED 900

BAR NO.	SHAPE	LENGTH	NO. OFF	TOTAL
1		835	1	835
2		1160	1	1160
3		1385	1	1385
4		1550	1	1550
5		1680	1	1680
6		1775	1	1775
7		1845	1	1845
8		1890	2	3780
9		1920	11	21120
10		1800	2	3600
11		2200	2	4400
12		2470	2	4940
13		2650	2	5300
14		2700	2	5400
15		2750	2	5500
16		2600	1	2600
17		7795	1	7795
18		1105	1	1105

B	Opening Diameter 600	3/4/00
A	ORIGINAL ISSUE	8/12/95
REVISIONS		DATE

© INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA QUEENSLAND DIVISION INC. -1995
DISCLAIMER. The authors and sponsoring organisations shall have no liability or responsibility to the user or any other person or entity with respect to any liability, loss or damage caused or alleged to be caused, directly or indirectly, by the adoption and use of these Standard Drawings including, but not limited to, any interruption of service, loss of business or anticipatory profits, or consequential damages resulting from the use of these Standard Drawings. Persons must not rely on these Standard Drawings as the equivalent of, or a substitute for, project-specific design and assessment by an appropriately qualified professional.

INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.

ACCESS CHAMBER
ROOF SLABS
DIA. 1500 EXTENDED 600 AND 900

DRAINAGE
Standard Drawing
D-0012

A B

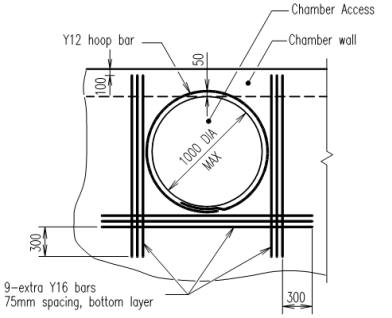
JWP - CADENZA 113327-D-0012

SHORT SPAN \ LONG SPAN	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	SLAB DEPTH
1200	Y12 AT 150	Y16 AT 200	Y16 AT 200	Y16 AT 200	Y16 AT 175	Y16 AT 175	Y16 AT 175	Y16 AT 150	Y16 AT 150	Y16 AT 150	200
1400		Y12 AT 150	Y16 AT 200	Y16 AT 200	Y16 AT 175	Y16 AT 175	Y16 AT 150	Y16 AT 150	Y16 AT 150	Y16 AT 150	200
1600			Y12 AT 150	Y16 AT 200	Y16 AT 200	Y16 AT 175	Y16 AT 150	Y16 AT 150	Y16 AT 150	Y16 AT 150	200
1800				Y12 AT 150	Y16 AT 200	Y16 AT 200	Y16 AT 200	Y16 AT 175	Y16 AT 175	Y16 AT 175	225
2000					Y12 AT 150	Y16 AT 200	Y16 AT 200	Y16 AT 200	Y16 AT 175	Y16 AT 175	225
2200						Y12 AT 150	Y16 AT 200	Y16 AT 200	Y16 AT 175	Y16 AT 175	225
2400							Y16 AT 200	Y16 AT 200	Y16 AT 200	Y16 AT 175	225
2600								Y16 AT 200	Y16 AT 200	Y16 AT 175	250
2800									Y16 AT 200	Y16 AT 175	250
3000										Y16 AT 175	250

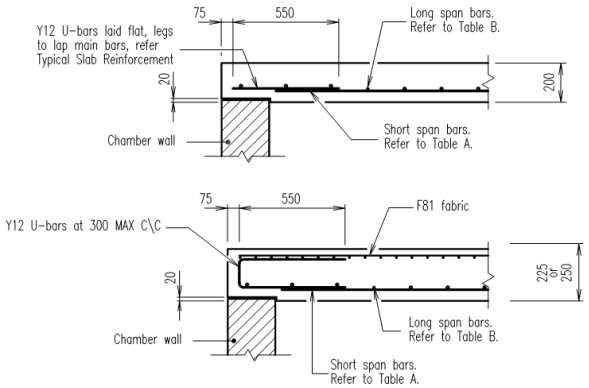
TABLE A : S BARS

SHORT SPAN \ LONG SPAN	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	SLAB DEPTH
1200	Y12 AT 150	Y12 AT 200	Y12 AT 200	Y12 AT 200	Y12 AT 200	Y12 AT 200	Y12 AT 200	Y12 AT 200	Y12 AT 200	Y12 AT 200	200
1400		Y12 AT 150	Y12 AT 200	Y12 AT 200	Y12 AT 200	Y12 AT 200	Y12 AT 200	Y12 AT 200	Y12 AT 200	Y12 AT 200	200
1600			Y12 AT 150	Y12 AT 150	Y12 AT 200	Y12 AT 200	Y12 AT 200	Y12 AT 200	Y12 AT 200	Y12 AT 200	200
1800				Y12 AT 150	Y12 AT 150	Y12 AT 200	Y12 AT 200	Y12 AT 200	Y12 AT 200	Y12 AT 200	225
2000					Y12 AT 150	Y12 AT 150	Y12 AT 200	Y12 AT 200	Y12 AT 200	Y12 AT 200	225
2200						Y12 AT 150	Y12 AT 150	Y12 AT 150	Y12 AT 200	Y12 AT 200	225
2400							Y16 AT 200	Y12 AT 150	Y12 AT 150	Y16 AT 150	225
2600								Y16 AT 200	Y16 AT 200	Y16 AT 200	250
2800									Y16 AT 200	Y16 AT 200	250
3000										Y16 AT 175	250

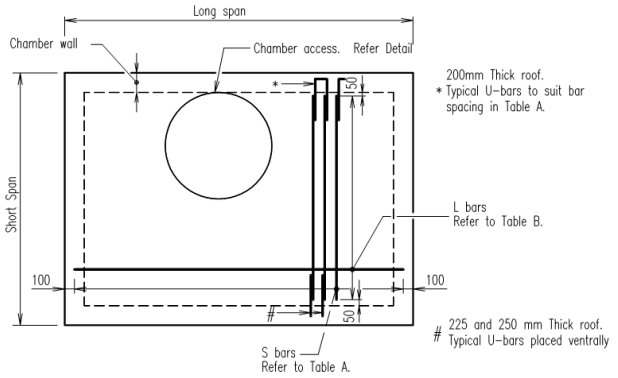
TABLE B : L BARS



SLAB REINFORCEMENT AROUND CHAMBER ACCESS



TYPICAL SECTIONS



TYPICAL SLAB REINFORCEMENT

NOTES

1. Concrete N32/20 in accordance with AS 1379 and AS 3600.
2. Reinforcement :- F81 Fabric to AS 1304
   Bars Y12 and Y16, Grade 400 to AS 1302.
3. All laps in reinforcment shall be :-
   Y12 - 300, Y16 - 400
4. Formwork in accordance with AS 3610.
5. Designed to Austroads Bridge Code, W7 wheel load, dynamic factor 0.4.
6. Maximum fill over roof slab shall be 3000mm.
7. Reinforcement cover 45 MIN.
8. Refer Service Authority for access hole diameter to be adopted.
9. Refer project drawings for details of chamber walls and floors.
10. For sections at chamber access refer Standard Drawing D-0010.
11. All dimensions in millimetres.

REVISIONS	DATE
B TITLE ALTERED	16/1/97
A ORIGINAL ISSUE	8/12/95

© INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA QUEENSLAND DIVISION INC. -1995
DISCLAIMER. The authors and sponsoring organisations shall have no liability or responsibility to the user or any other person or entity with respect to any liability, loss or damage caused or alleged to be caused, directly or indirectly, by the adoption and use of these Standard Drawings including, but not limited to, any interruption of service, loss of business or anticipatory profits, or consequential damages resulting from the use of these Standard Drawings. Persons must not rely on these Standard Drawings as the equivalent of, or a substitute for, project-specific design and assessment by an appropriately qualified professional.

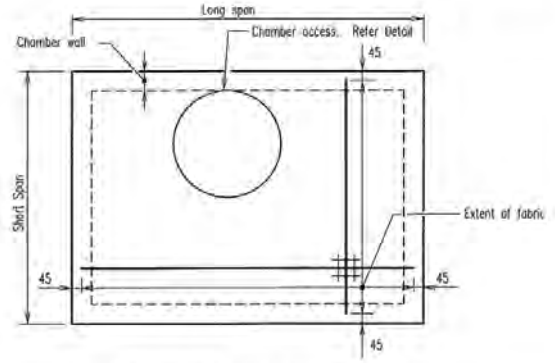
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA QUEENSLAND DIVISION INC.

ACCESS CHAMBER ROOF SLAB - RECTANGULAR STANDARD REINFORCEMENT

DRAINAGE Standard Drawing D-0013

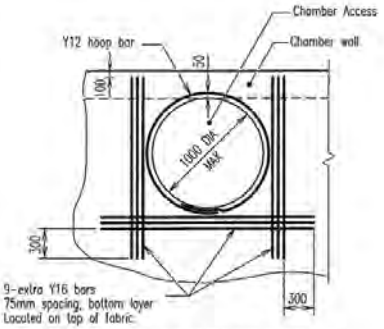
A B

JWP - CADENZA 113327-D-0013

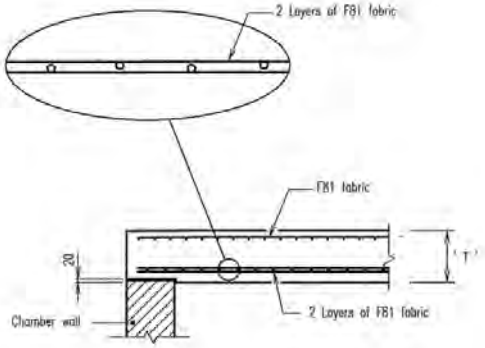


TYPICAL SLAB REINFORCEMENT

FABRIC REINFORCED SLAB	
SHORT SPAN	SLAB THICKNESS 'T'
1200 TO 1800	225
1800 TO 2400	250
2600 TO 3000	275



SLAB REINFORCEMENT AROUND CHAMBER ACCESS



TYPICAL SECTION

NOTES

1. Concrete N32/20 in accordance with AS 1379 and AS 3600.
2. Reinforcement :- F81 Fabric to AS 1304
   Bars Y16, Grade 400 to AS 1302.
3. All laps in reinforcement shall be :-
   Y12 - 300, Y16 - 400, Fabric - 250
4. Formwork in accordance with AS 3610.
5. Designed to Austroads Bridge Code, W7 wheel load, dynamic factor 0.4.
6. Maximum fill over roof slab shall be 3000mm.
7. Reinforcement cover 45 MIN.
8. Refer Service Authority for access hole diameter to be adopted.
9. Refer project drawings for details of chamber walls and floors.
10. For sections of chamber access refer Standard Drawing D-0010.
11. All dimensions in millimetres.

© INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA QUEENSLAND DIVISION INC. -1995
DISCLAIMER. The authors and sponsoring organisations shall have no liability or responsibility to the user or any other person or entity with respect to any liability, loss or damage caused or alleged to be caused, directly or indirectly, by the adoption and use of these Standard Drawings including, but not limited to, any interruption of service, loss of business or anticipatory profits, or consequential damages resulting from the use of these Standard Drawings. Persons must not rely on these Standard Drawings as the equivalent of, or a substitute for, project-specific design and assessment by an appropriately qualified professional.

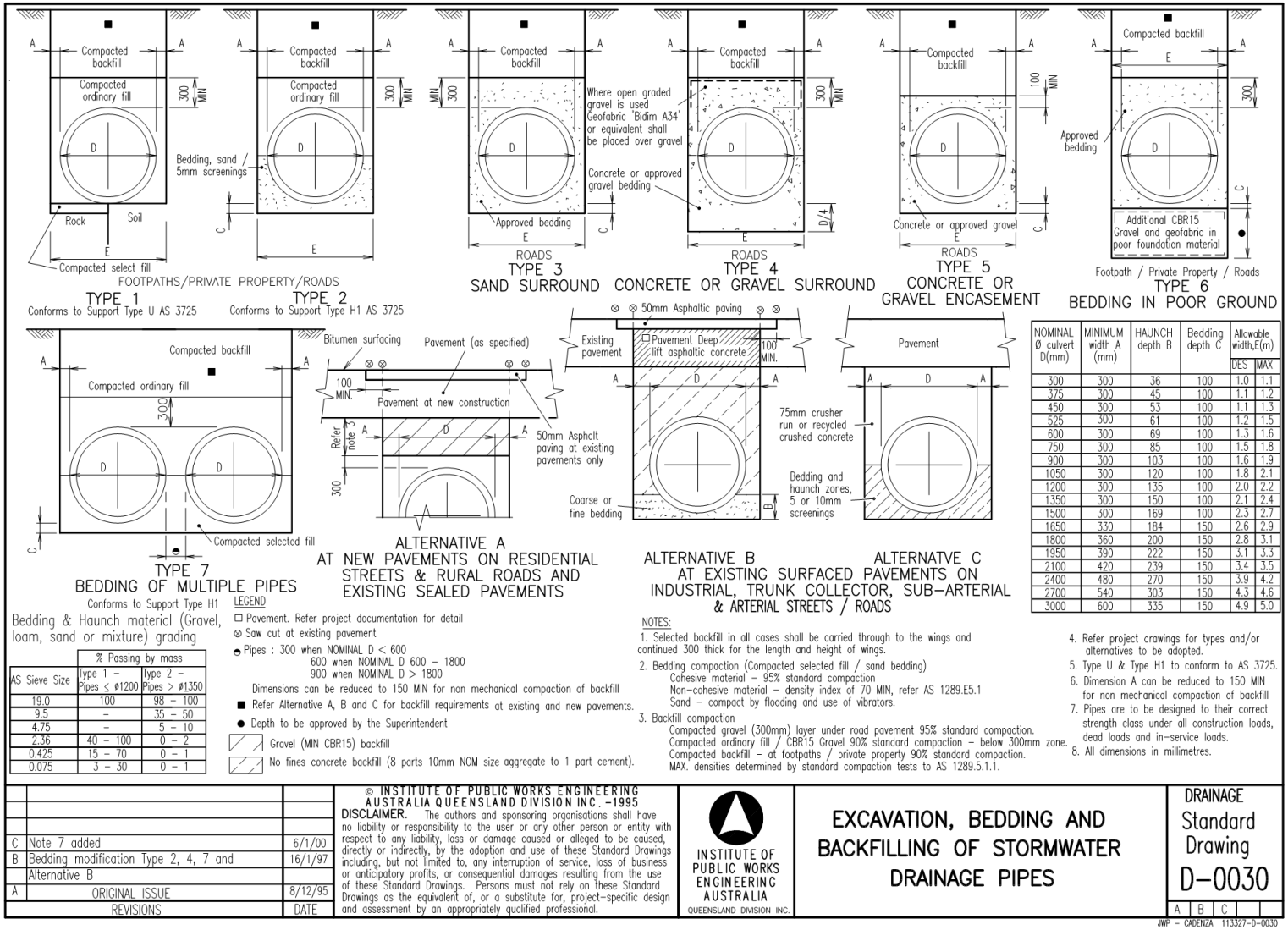
REVISIONS	DATE
A ORIGINAL ISSUE	25/2/97

INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA QUEENSLAND DIVISION INC.

ACCESS CHAMBER ROOF SLAB – RECTANGULAR FABRIC REINFORCEMENT

DRAINAGE Standard Drawing D-0017 A

JWP - CADD2A 113327-D-0017



NOMINAL Ø culvert D(mm)	MINIMUM width A (mm)	HAUNCH depth B	Bedding depth C	Allowable width,E(m) DES	Allowable width,E(m) MAX
300	300	36	100	1.0	1.1
375	300	45	100	1.1	1.2
450	300	53	100	1.1	1.3
525	300	61	100	1.2	1.5
600	300	69	100	1.3	1.6
750	300	85	100	1.5	1.8
900	300	103	100	1.6	1.9
1050	300	120	100	1.8	2.1
1200	300	135	100	2.0	2.2
1350	300	150	100	2.1	2.4
1500	300	169	100	2.3	2.7
1650	330	184	150	2.6	2.9
1800	360	200	150	2.8	3.1
1950	390	222	150	3.1	3.3
2100	420	239	150	3.4	3.5
2400	480	270	150	3.9	4.2
2700	540	303	150	4.3	4.6
3000	600	335	150	4.9	5.0

Bedding & Haunch material (Gravel, loam, sand or mixture) grading

AS Sieve Size	% Passing by mass: Type 1 – Pipes ≤ ø1200	% Passing by mass: Type 2 – Pipes > ø1350
19.0	100	98 – 100
9.5	–	35 – 50
4.75	–	5 – 10
2.36	40 – 100	0 – 2
0.425	15 – 70	0 – 1
0.075	3 – 30	0 – 1

LEGEND

- □ Pavement. Refer project documentation for detail
- ⊗ Saw cut at existing pavement
- ◓ Pipes : 300 when NOMINAL D < 600
  600 when NOMINAL D 600 – 1800
  900 when NOMINAL D > 1800
  Dimensions can be reduced to 150 MIN for non mechanical compaction of backfill
- ■ Refer Alternative A, B and C for backfill requirements at existing and new pavements.
- ● Depth to be approved by the Superintendent
- Gravel (MIN CBR15) backfill
- No fines concrete backfill (8 parts 10mm NOM size aggregate to 1 part cement).

NOTES:

1. Selected backfill in all cases shall be carried through to the wings and continued 300 thick for the length and height of wings.
2. Bedding compaction (Compacted selected fill / sand bedding)
   Cohesive material – 95% standard compaction
   Non-cohesive material – density index of 70 MIN, refer AS 1289.E5.1
   Sand – compact by flooding and use of vibrators.
3. Backfill compaction
   Compacted gravel (300mm) layer under road pavement 95% standard compaction.
   Compacted ordinary fill / CBR15 Gravel 90% standard compaction – below 300mm zone.
   Compacted backfill – at footpaths / private property 90% standard compaction.
   MAX. densities determined by standard compaction tests to AS 1289.5.1.1.
4. Refer project drawings for types and/or alternatives to be adopted.
5. Type U & Type H1 to conform to AS 3725.
6. Dimension A can be reduced to 150 MIN for non mechanical compaction of backfill
7. Pipes are to be designed to their correct strength class under all construction loads, dead loads and in-service loads.
8. All dimensions in millimetres.

	REVISIONS	DATE
C	Note 7 added	6/1/00
B	Bedding modification Type 2, 4, 7 and Alternative B	16/1/97
A	ORIGINAL ISSUE	8/12/95

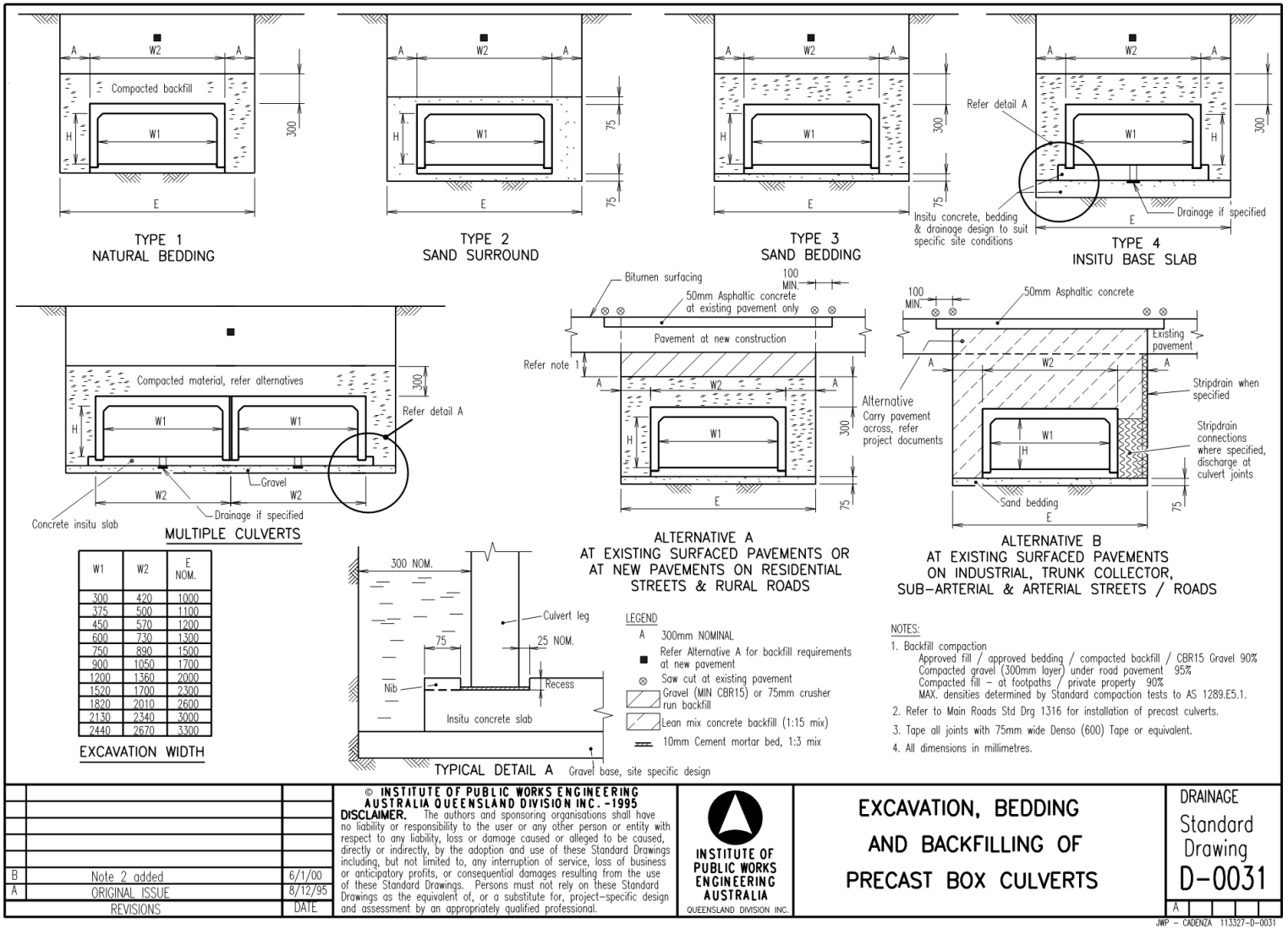
© INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA QUEENSLAND DIVISION INC. -1995
DISCLAIMER. The authors and sponsoring organisations shall have no liability or responsibility to the user or any other person or entity with respect to any liability, loss or damage caused or alleged to be caused, directly or indirectly, by the adoption and use of these Standard Drawings including, but not limited to, any interruption of service, loss of business or anticipatory profits, or consequential damages resulting from the use of these Standard Drawings. Persons must not rely on these Standard Drawings as the equivalent of, or a substitute for, project-specific design and assessment by an appropriately qualified professional.

INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.

EXCAVATION, BEDDING AND BACKFILLING OF STORMWATER DRAINAGE PIPES

DRAINAGE
Standard Drawing
D–0030
A B C

JWP – CADENZA 113327-D-0030



W1	W2	E NOM.
300	420	1000
375	500	1100
450	570	1200
600	730	1300
750	890	1500
900	1050	1700
1200	1360	2000
1520	1700	2300
1820	2010	2600
2130	2340	3000
2440	2670	3300

EXCAVATION WIDTH

REVISIONS		DATE
B	Note 2 added	6/1/00
A	ORIGINAL ISSUE	8/12/95

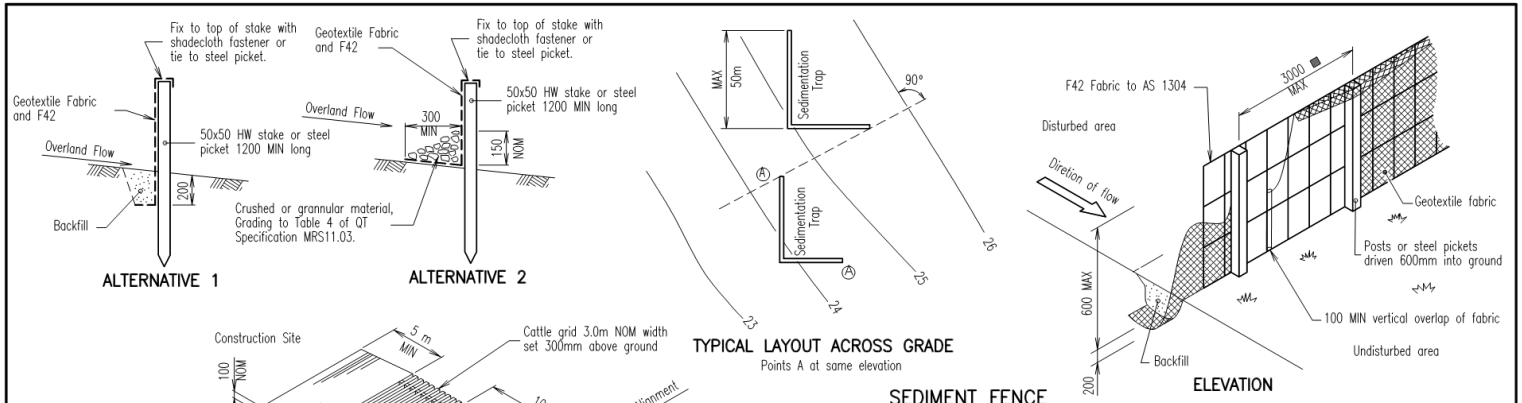
© INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA QUEENSLAND DIVISION INC. - 1995
DISCLAIMER. The authors and sponsoring organisations shall have no liability or responsibility to the user or any other person or entity with respect to any liability, loss or damage caused or alleged to be caused, directly or indirectly, by the adoption and use of these Standard Drawings including, but not limited to, any interruption of service, loss of business or anticipatory profits, or consequential damages resulting from the use of these Standard Drawings. Persons must not rely on these Standard Drawings as the equivalent of, or a substitute for, project-specific design and assessment by an appropriately qualified professional.

INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA QUEENSLAND DIVISION INC.

EXCAVATION, BEDDING AND BACKFILLING OF PRECAST BOX CULVERTS

DRAINAGE
Standard Drawing
D-0031
A

JWP - CADENZA 113327-D-0031



LEGEND

- Unbound pavement material (gravel) to Grading B, Table 9 of QT Specification MRS11.05, exclude material finer than AS sieve 2.36mm.
- Without F42 fabric, 2000 MAX C\C

NOTES

1. General
   - (a) Temporary drainage control. Flow should be diverted around the work site where possible.
   - (b) All drainage, erosion and sediment controls to be installed and be operational before commencing up-slope earthworks.
   - (c) All control measures to be inspected at least weekly and after significant runoff producing storms.
   - (d) Control measures may be removed when on-site erosion is controlled and 70% permanent soil coverage is obtained over all upstream disturbed land.
   - (e) In areas where runoff turbidity is to be controlled, exposed surfaces to be either mulched, covered with erosion control blankets or turfed if earthworks are expected to be delayed for more than 14 days.
   - (f) Straw bale sediment traps are a secondary option which generally should not be used if other options are available.
2. Sediment Fence
   - (a) Not to be located in areas of concentrated flow.
   - (b) Normally located along the contour with a maximum catchment area 0.6 ha per 100m length of fence.
   - (c) Woven fabrics are preferred, non-woven fabrics may be used on small work sites, i.e. operational period less than 6 months or on sites where significant sediment runoff is not expected.
   - (d) Where fences need to be located across the contour the layout shall conform to 'Typical Layout Across Grade'.
   - (e) Fences are required 2m MIN from toe of cut or fill batters, where not practical one fence can be at the toe with a second fence 1m MIN away. Fence should not be located parallel with toe if concentration of flow will occur behind the fence.
3. Temp Construction Entry/Exit Sediment Trap.
   - (a) Adjacent stormwater runoff to be diverted away from entry/exit.
   - (b) Wheel – wash or spray unit may be required during wet weather.
4. Safety issues must be considered at all times, incorporate traffic control devices to the satisfaction of the Superintendent.
5. All dimensions in millimetres unless indicated otherwise.

A	ORIGINAL ISSUE	8/12/95
REVISIONS		DATE

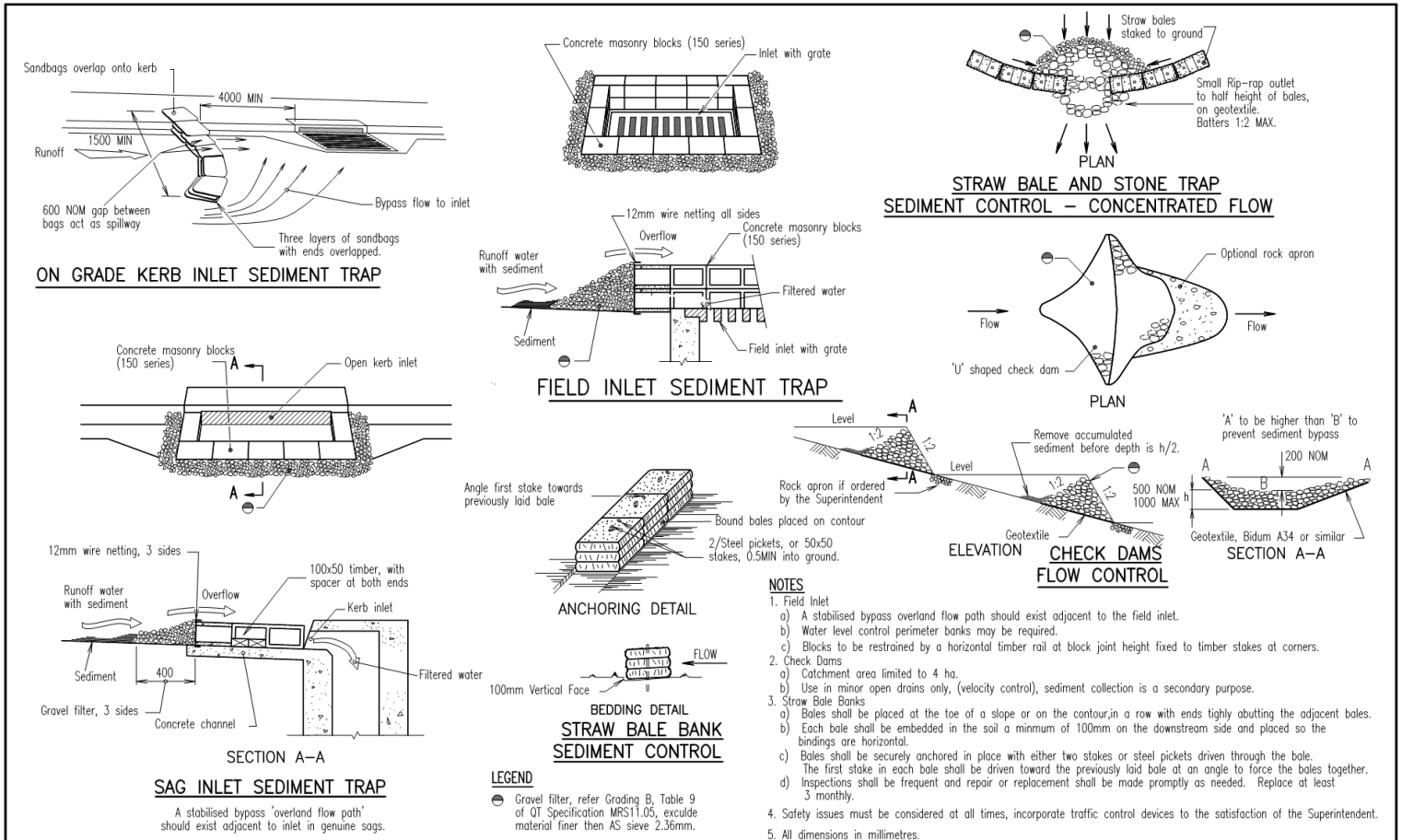
© INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA QUEENSLAND DIVISION INC. -1995
DISCLAIMER. The authors and sponsoring organisations shall have no liability or responsibility to the user or any other person or entity with respect to any liability, loss or damage caused or alleged to be caused, directly or indirectly, by the adoption and use of these Standard Drawings including, but not limited to, any interruption of service, loss of business or anticipatory profits, or consequential damages resulting from the use of these Standard Drawings. Persons must not rely on these Standard Drawings as the equivalent of, or a substitute for, project-specific design and assessment by an appropriately qualified professional.

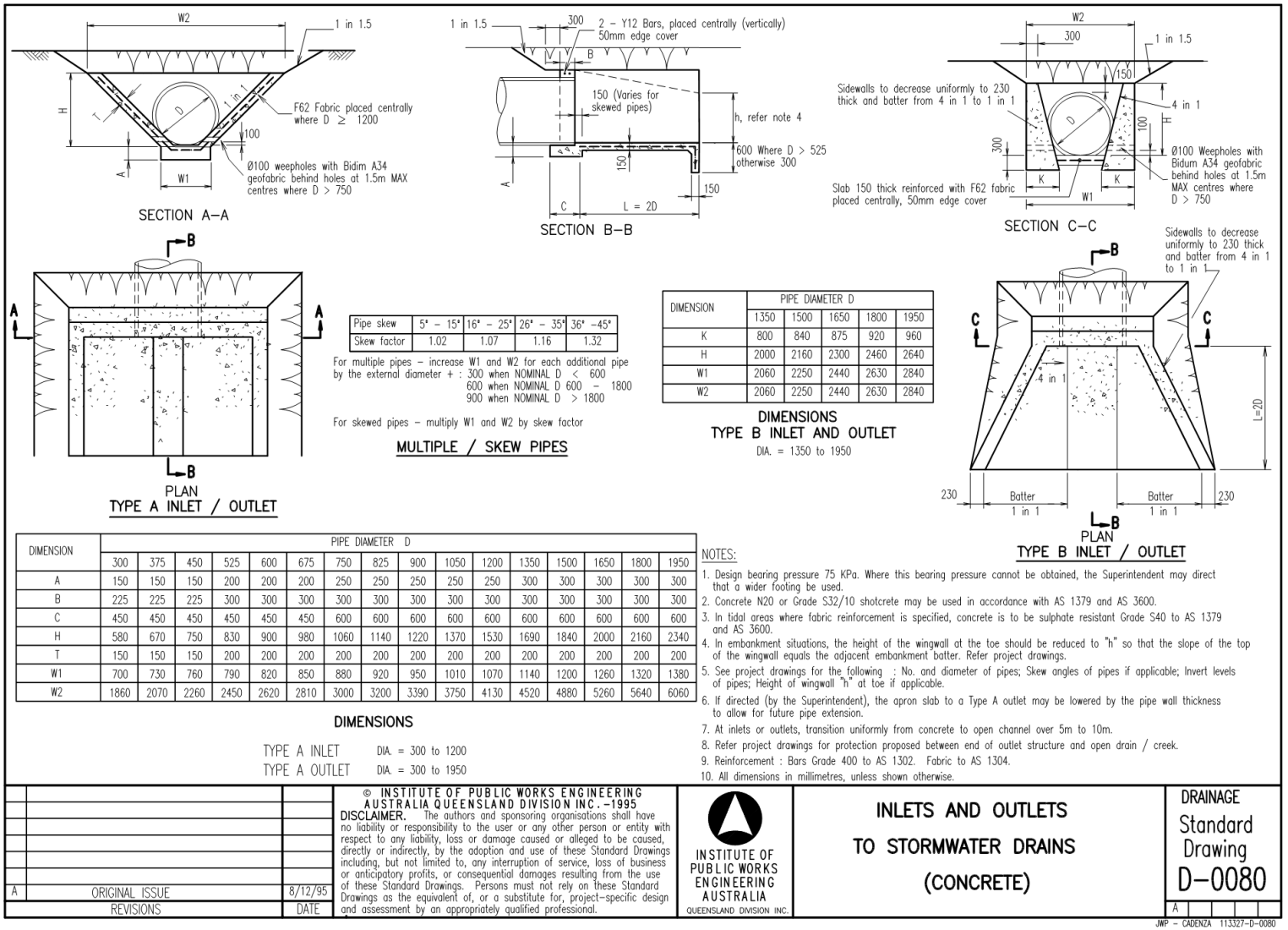
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA
QUEENSLAND DIVISION INC.

SEDIMENT CONTROL DEVICES
SEDIMENT FENCE
ENTRY/EXIT SEDIMENT TRAP

DRAINAGE
Standard Drawing
D-0040
A

JWP - CADENZA 113327-D-0040


Sandbags overlap onto kerb
4000 MIN
1500 MIN
Runoff
600 NOM gap between bags act as spillway
Bypass flow to inlet
Three layers of sandbags with ends overlapped.
ON GRADE KERB INLET SEDIMENT TRAP
Concrete masonry blocks (150 series)
Inlet with grate
12mm wire netting all sides
Overflow
Concrete masonry blocks (150 series)
Runoff water with sediment
Filtered water
Sediment
Field inlet with grate
FIELD INLET SEDIMENT TRAP
Straw bales staked to ground
Small Rip-rap outlet to half height of bales, on geotextile. Batters 1:2 MAX.
PLAN
STRAW BALE AND STONE TRAP
SEDIMENT CONTROL – CONCENTRATED FLOW
Optional rock apron
Flow
Flow
'U' shaped check dam
PLAN
Concrete masonry blocks (150 series)
A
Open kerb inlet
A
Angle first stake towards previously laid bale
Bound bales placed on contour
2/Steel pickets, or 50x50 stakes, 0.5MIN into ground.
ANCHORING DETAIL
Level
A
1:2
1:2
A
Level
Remove accumulated sediment before depth is h/2.
Rock apron if ordered by the Superintendent
1:2
1:2
500 NOM
1000 MAX
h
Geotextile
ELEVATION
CHECK DAMS
FLOW CONTROL
'A' to be higher than 'B' to prevent sediment bypass
200 NOM
A
B
A
Geotextile, Bidum A34 or similar
SECTION A–A
12mm wire netting, 3 sides
100x50 timber, with spacer at both ends
Runoff water with sediment
Overflow
Kerb inlet
Sediment
400
Filtered water
Gravel filter, 3 sides
Concrete channel
SECTION A–A
SAG INLET SEDIMENT TRAP
A stabilised bypass 'overland flow path' should exist adjacent to inlet in genuine sags.
FLOW
100mm Vertical Face
BEDDING DETAIL
STRAW BALE BANK
SEDIMENT CONTROL
LEGEND
Gravel filter, refer Grading B, Table 9 of QT Specification MRS11.05, exculde material finer then AS sieve 2.36mm.
NOTES
1. Field Inlet
a) A stabilised bypass overland flow path should exist adjacent to the field inlet.
b) Water level control perimeter banks may be required.
c) Blocks to be restrained by a horizontal timber rail at block joint height fixed to timber stakes at corners.
2. Check Dams
a) Catchment area limited to 4 ha.
b) Use in minor open drains only, (velocity control), sediment collection is a secondary purpose.
3. Straw Bale Banks
a) Bales shall be placed at the toe of a slope or on the contour,in a row with ends tighly abutting the adjacent bales.
b) Each bale shall be embedded in the soil a minmum of 100mm on the downstream side and placed so the bindings are horizontal.
c) Bales shall be securely anchored in place with either two stakes or steel pickets driven through the bale. The first stake in each bale shall be driven toward the previously laid bale at an angle to force the bales together.
d) Inspections shall be frequent and repair or replacement shall be made promptly as needed. Replace at least 3 monthly.
4. Safety issues must be considered at all times, incorporate traffic control devices to the satisfaction of the Superintendent.
5. All dimensions in millimetres.
A ORIGINAL ISSUE 8/12/95
REVISIONS DATE
© INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA QUEENSLAND DIVISION INC. –1995
DISCLAIMER. The authors and sponsoring organisations shall have no liability or responsibility to the user or any other person or entity with respect to any liability, loss or damage caused or alleged to be caused, directly or indirectly, by the adoption and use of these Standard Drawings including, but not limited to, any interruption of service, loss of business or anticipatory profits, or consequential damages resulting from the use of these Standard Drawings. Persons must not rely on these Standard Drawings as the equivalent of, or a substitute for, project-specific design and assessment by an appropriately qualified professional.
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA QUEENSLAND DIVISION INC.
SEDIMENT CONTROL DEVICES
KERB AND FIELD INLETS,
CHECK DAMS & STRAW BALE BANK
DRAINAGE
Standard Drawing
D–0041
A
JWP – CADENZA 113327-D-0041



DIMENSION	PIPE DIAMETER D															
	300	375	450	525	600	675	750	825	900	1050	1200	1350	1500	1650	1800	1950
A	150	150	150	200	200	200	250	250	250	250	250	300	300	300	300	300
B	225	225	225	300	300	300	300	300	300	300	300	300	300	300	300	300
C	450	450	450	450	450	450	600	600	600	600	600	600	600	600	600	600
H	580	670	750	830	900	980	1060	1140	1220	1370	1530	1690	1840	2000	2160	2340
T	150	150	150	200	200	200	200	200	200	200	200	200	200	200	200	200
W1	700	730	760	790	820	850	880	920	950	1010	1070	1140	1200	1260	1320	1380
W2	1860	2070	2260	2450	2620	2810	3000	3200	3390	3750	4130	4520	4880	5260	5640	6060

DIMENSIONS

TYPE A INLET DIA. = 300 to 1200
TYPE A OUTLET DIA. = 300 to 1950

NOTES:

1. Design bearing pressure 75 KPa. Where this bearing pressure cannot be obtained, the Superintendent may direct that a wider footing be used.
2. Concrete N20 or Grade S32/10 shotcrete may be used in accordance with AS 1379 and AS 3600.
3. In tidal areas where fabric reinforcement is specified, concrete is to be sulphate resistant Grade S40 to AS 1379 and AS 3600.
4. In embankment situations, the height of the wingwall at the toe should be reduced to "h" so that the slope of the top of the wingwall equals the adjacent embankment batter. Refer project drawings.
5. See project drawings for the following : No. and diameter of pipes; Skew angles of pipes if applicable; Invert levels of pipes; Height of wingwall "h" at toe if applicable.
6. If directed (by the Superintendent), the apron slab to a Type A outlet may be lowered by the pipe wall thickness to allow for future pipe extension.
7. At inlets or outlets, transition uniformly from concrete to open channel over 5m to 10m.
8. Refer project drawings for protection proposed between end of outlet structure and open drain / creek.
9. Reinforcement : Bars Grade 400 to AS 1302. Fabric to AS 1304.
10. All dimensions in millimetres, unless shown otherwise.

A	ORIGINAL ISSUE	8/12/95
REVISIONS		DATE

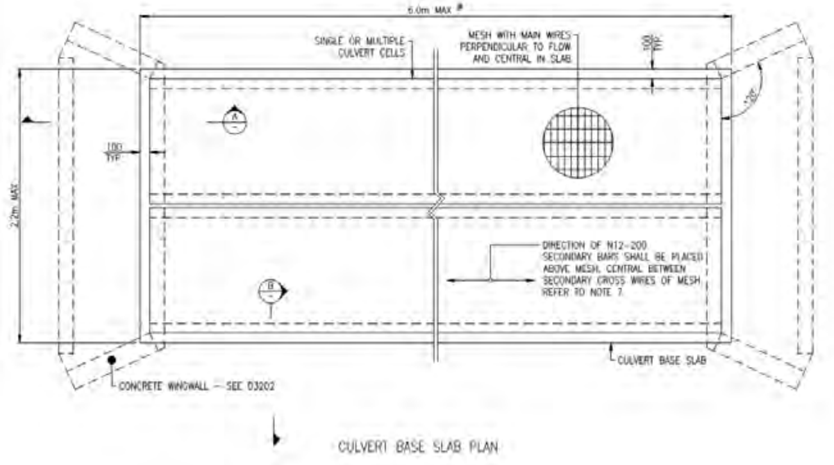
© INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA QUEENSLAND DIVISION INC. –1995
DISCLAIMER. The authors and sponsoring organisations shall have no liability or responsibility to the user or any other person or entity with respect to any liability, loss or damage caused or alleged to be caused, directly or indirectly, by the adoption and use of these Standard Drawings including, but not limited to, any interruption of service, loss of business or anticipatory profits, or consequential damages resulting from the use of these Standard Drawings. Persons must not rely on these Standard Drawings as the equivalent of, or a substitute for, project–specific design and assessment by an appropriately qualified professional.

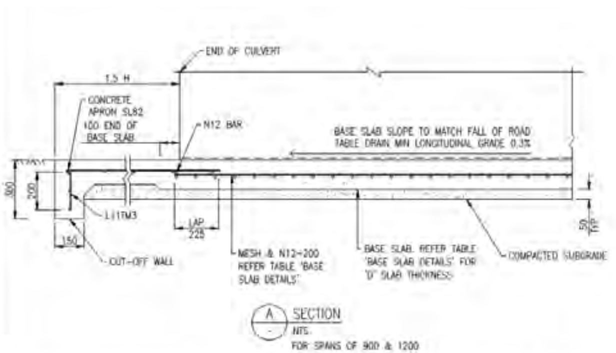
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALIA QUEENSLAND DIVISION INC.

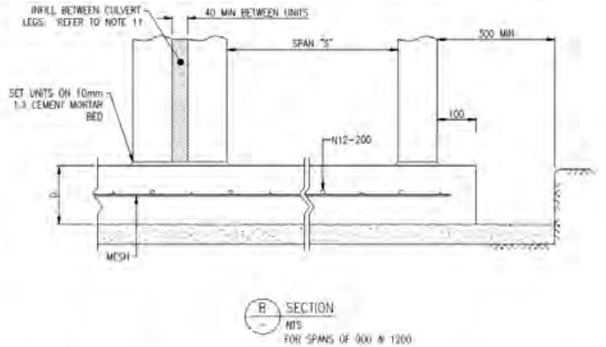
INLETS AND OUTLETS TO STORMWATER DRAINS (CONCRETE)

DRAINAGE Standard Drawing D–0080 A

JWP – CADENZA 113327–D–0080







LEGEND

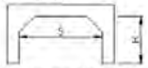
UNLESS OTHERWISE APPROVED BY BRC ENGINEER

BASE SLAB DETAILS

SPAN "S"	SLAB DEPTH "D"	MESH	SECONDARY BARS
≤900	130	RL918	N12-200
1200	150	RL1018	N12-200
>1200	REFER TMR STD DWG 1317, 1318		

CULVERT BASE SLAB NOTES

1. DESIGN VEHICLE LOADING: 5.0kPa OR 31kN IN ACCORDANCE WITH AS/NZS1170.1
2. FILL HEIGHT: MAXIMUM FILL HEIGHT OVER THE CULVERT CROWN IS 300mm.
3. UNIT DIMENSIONS:



H = CLEAR HEIGHT OF CULVERT OPENING
S = CLEAR SPAN/WIDTH OF CULVERT OPENING

4. CONCRETE SHALL BE IN ACCORDANCE WITH AS3600. REQUIREMENTS FOR CONCRETE ARE INDICATED IN THE TABLE BELOW:

MINIMUM EXPOSURE CLASSIFICATION	B2
MINIMUM CONCRETE CLASS	N32/20
MINIMUM COVER TO REINFORCEMENT UNO	45mm

5. ALL EXPOSED EDGES SHALL HAVE 19 x 19 CHAMFERS.
6. REINFORCING STEEL SHALL BE IN ACCORDANCE WITH AS/NZS4671 - DEFORMED BARS GRADE D500N AND REINFORCING MESH GRADE D500L. REINFORCEMENT SHALL BE HOT DIP GALVANISED TO AS/NZS4680 WHERE SHOWN.
7. REINFORCEMENT BARS IN THE SECONDARY DIRECTION SHALL BE OFFSET FROM THE SECONDARY (CROSS) WIRES OF THE MESH BY 100mm.
8. FOUNDATION: MINIMUM ALLOWABLE BEARING PRESSURE IS 100kPa. CONSULT BRC ENGINEER IF MINIMUM ALLOWABLE BEARING PRESSURE CANNOT BE ACHIEVED.
9. THIS DRAWING DOCUMENTS THE CULVERT BASE SLAB AND APRON ONLY. CONCRETE WINGWALL SEE D3202.
10. BASE SLAB HAS BEEN DESIGNED TO SUIT SINGLE OR DOUBLE RCBC.
11. INFILL BETWEEN LEGS OF MULTIPLE CELL CULVERTS SHALL BE ACHIEVED BY PLACING CONCRETE PLUGS OF 250 MINIMUM LENGTH AT BOTH ENDS OF THE CULVERT, USING SAME GRADE OF CONCRETE AS HEADWALL, AND INFILL THE REMAINING GAP WITH 1:10 LEAN MIX HAVING MAXIMUM AGGREGATE SIZE OF 10MM PACKED DRY. DO NOT USE FLUID GROUT AS HYDROSTATIC HEAD WILL DAMAGE CULVERT LEGS.
12. DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.

Scale: NOT TO SCALE

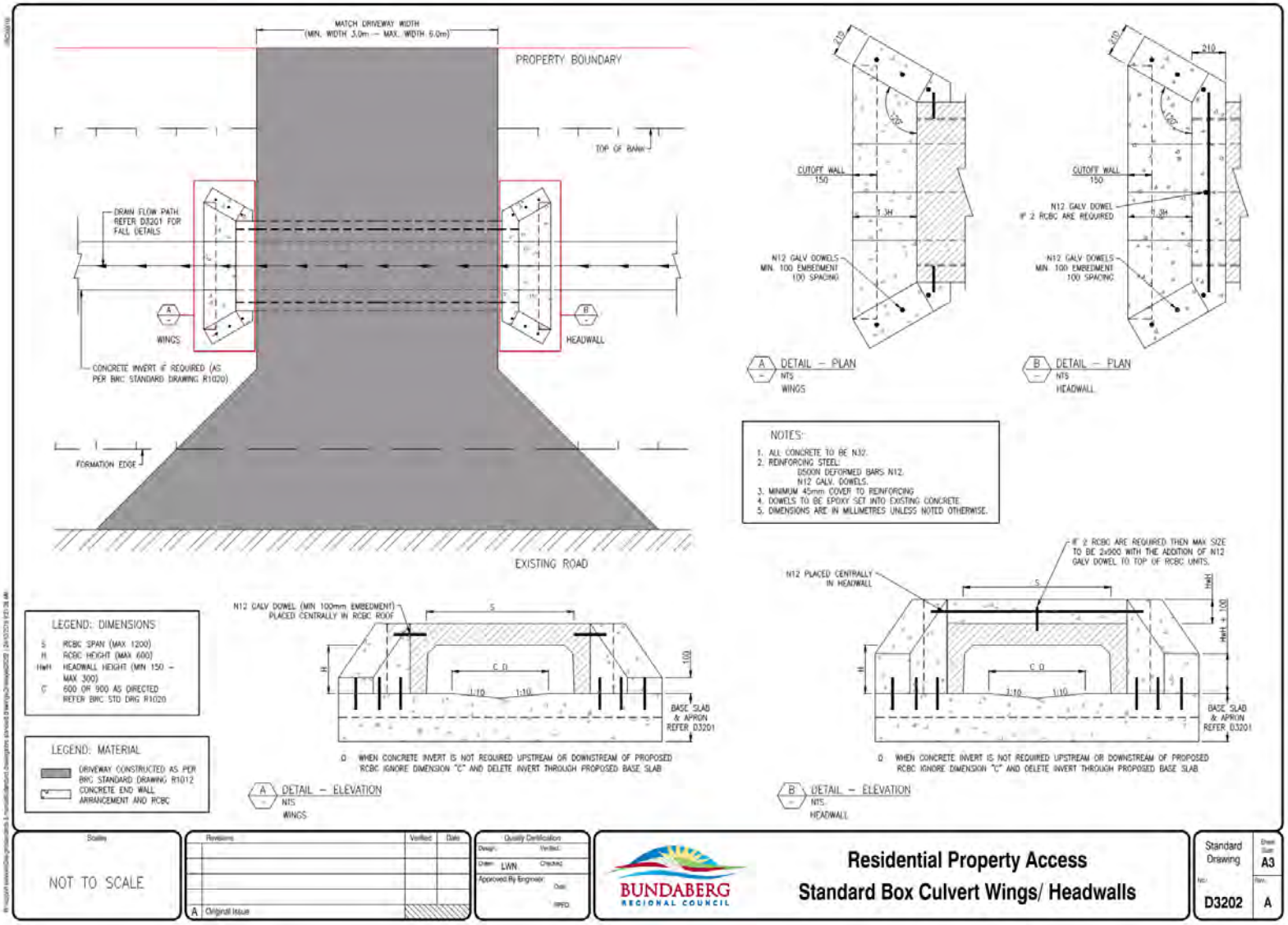
	Revisions	Verified	Date
B	NBS REMOVED AND NOTES AMENDED	RMC	24/10/18
A	Original issue		

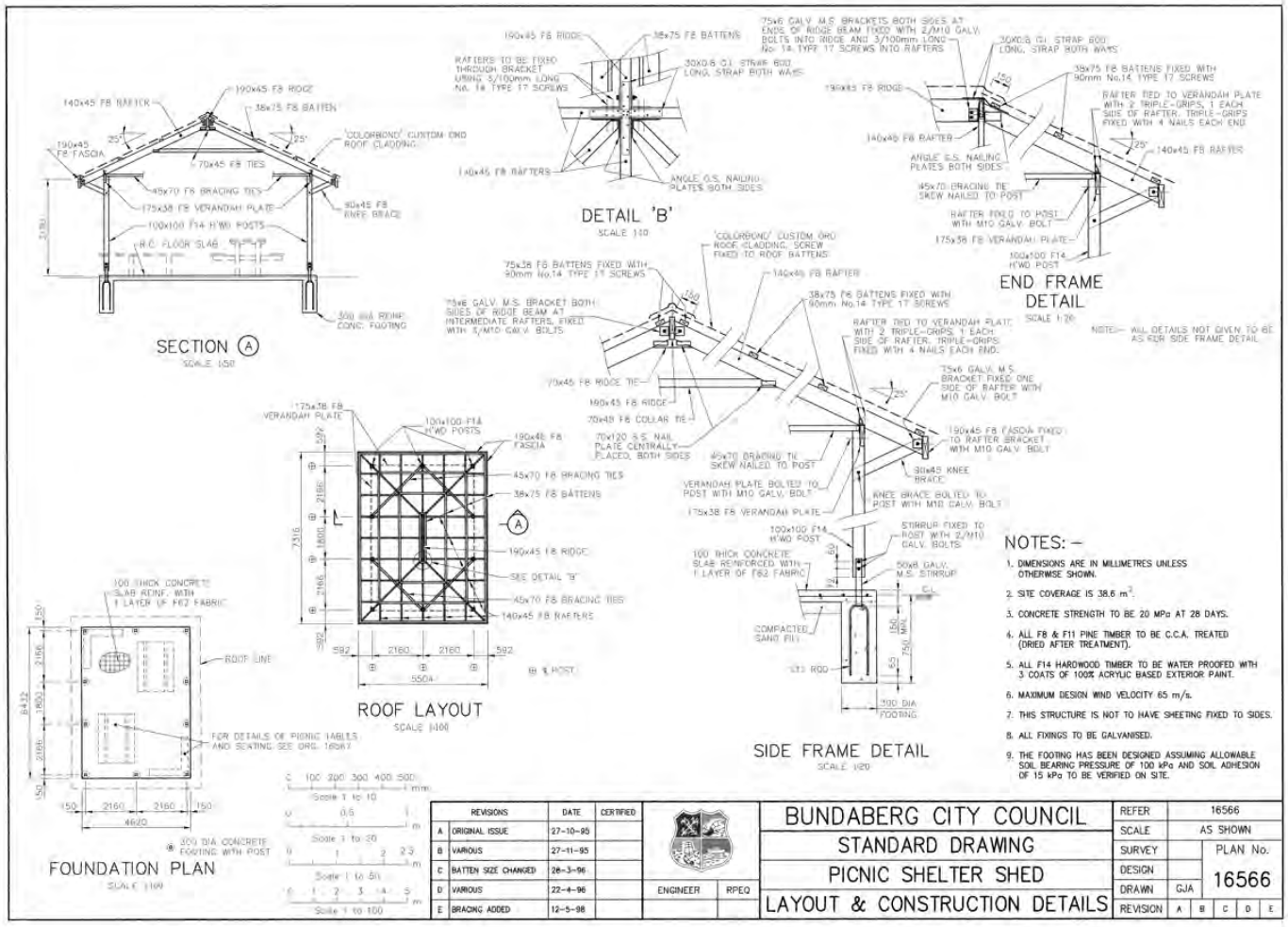
Quality Certification — Design: GB; Verified: CG; Drawn: LWN; Checked: GB; Approved By Engineer; Date; RPEQ

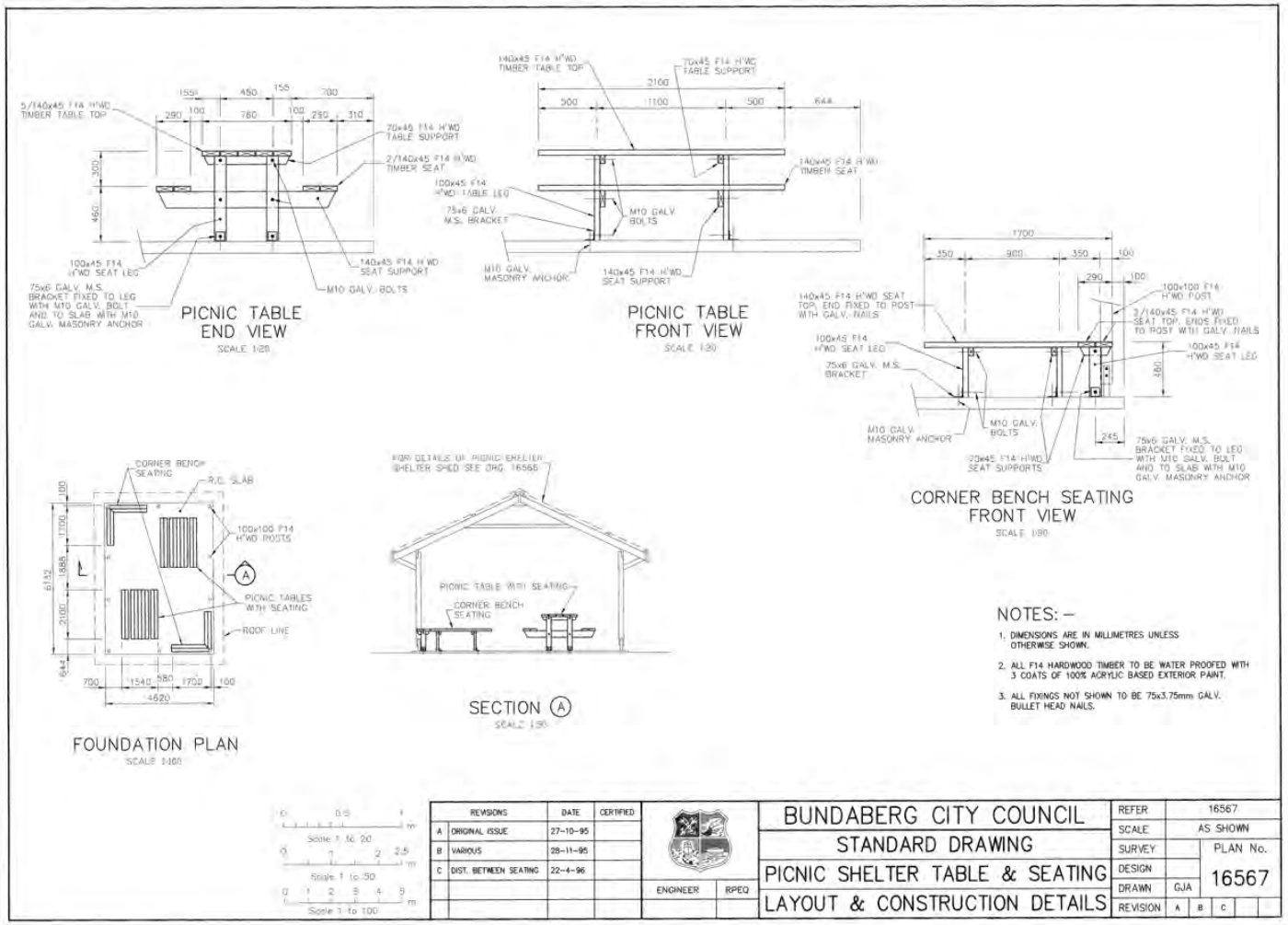
BUNDABERG REGIONAL COUNCIL

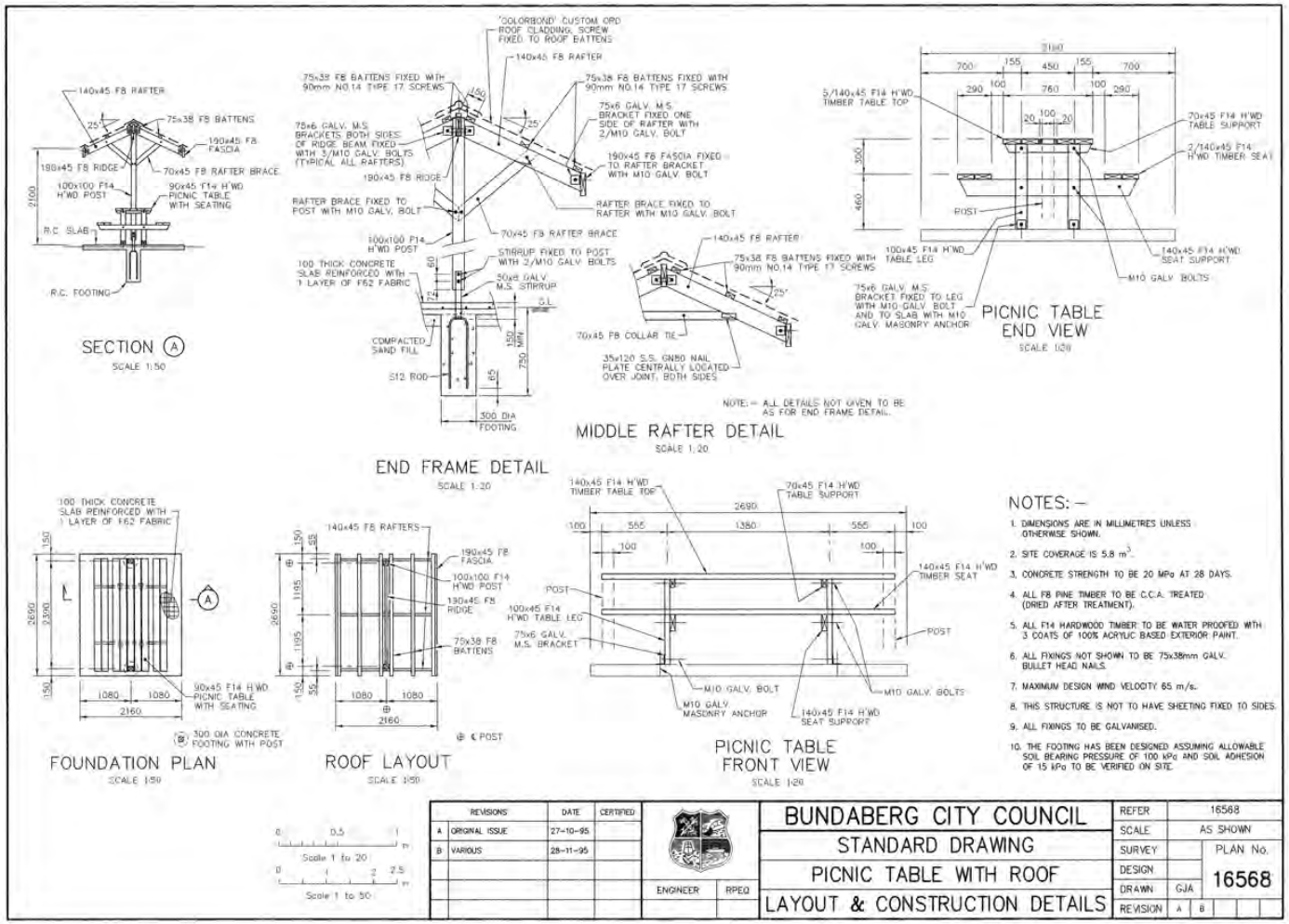
Residential Property Access
Standard Box Culvert Base Slabs

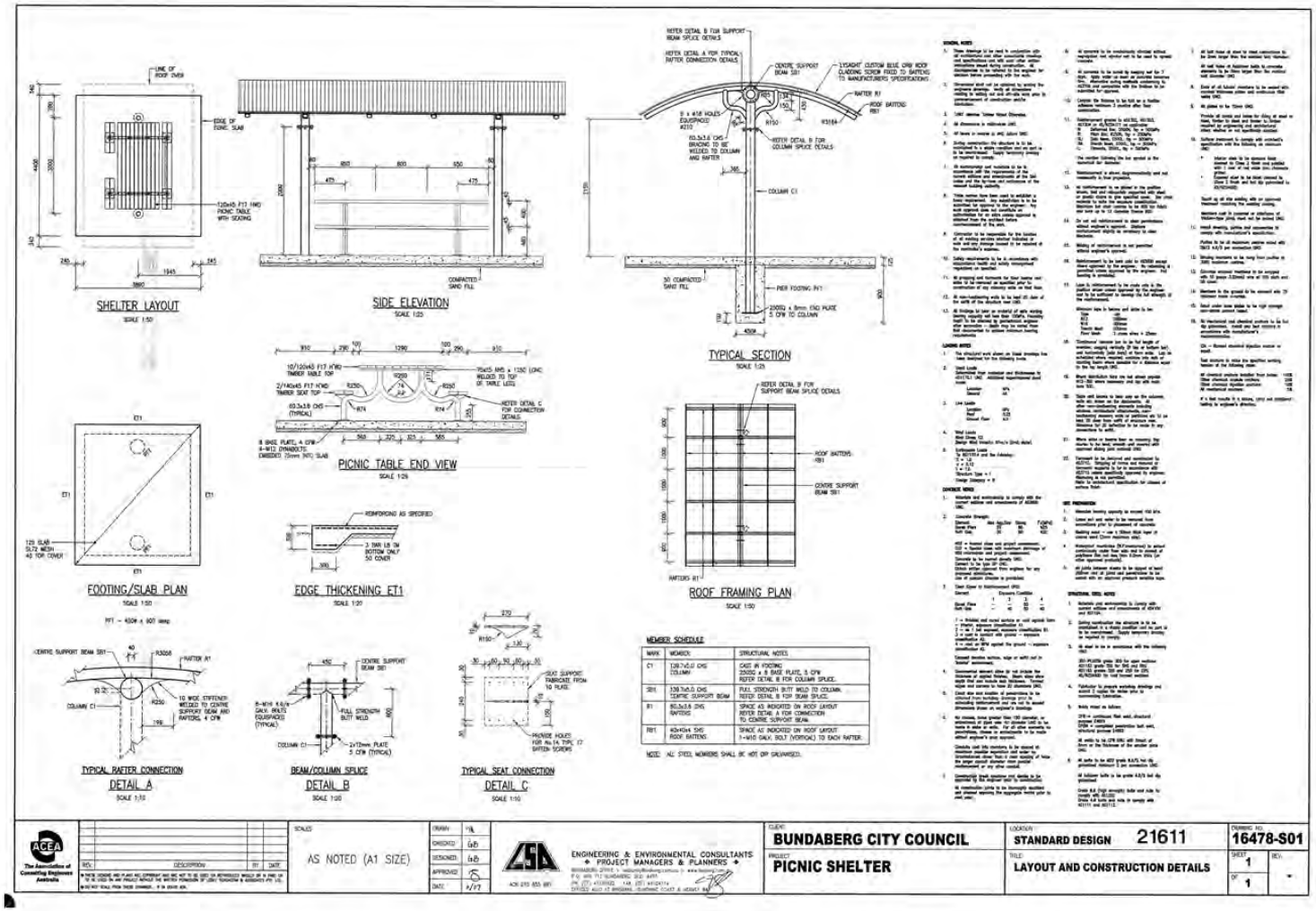
Standard Drawing No: D3201 | Sheet Size: A3 | Rev: B

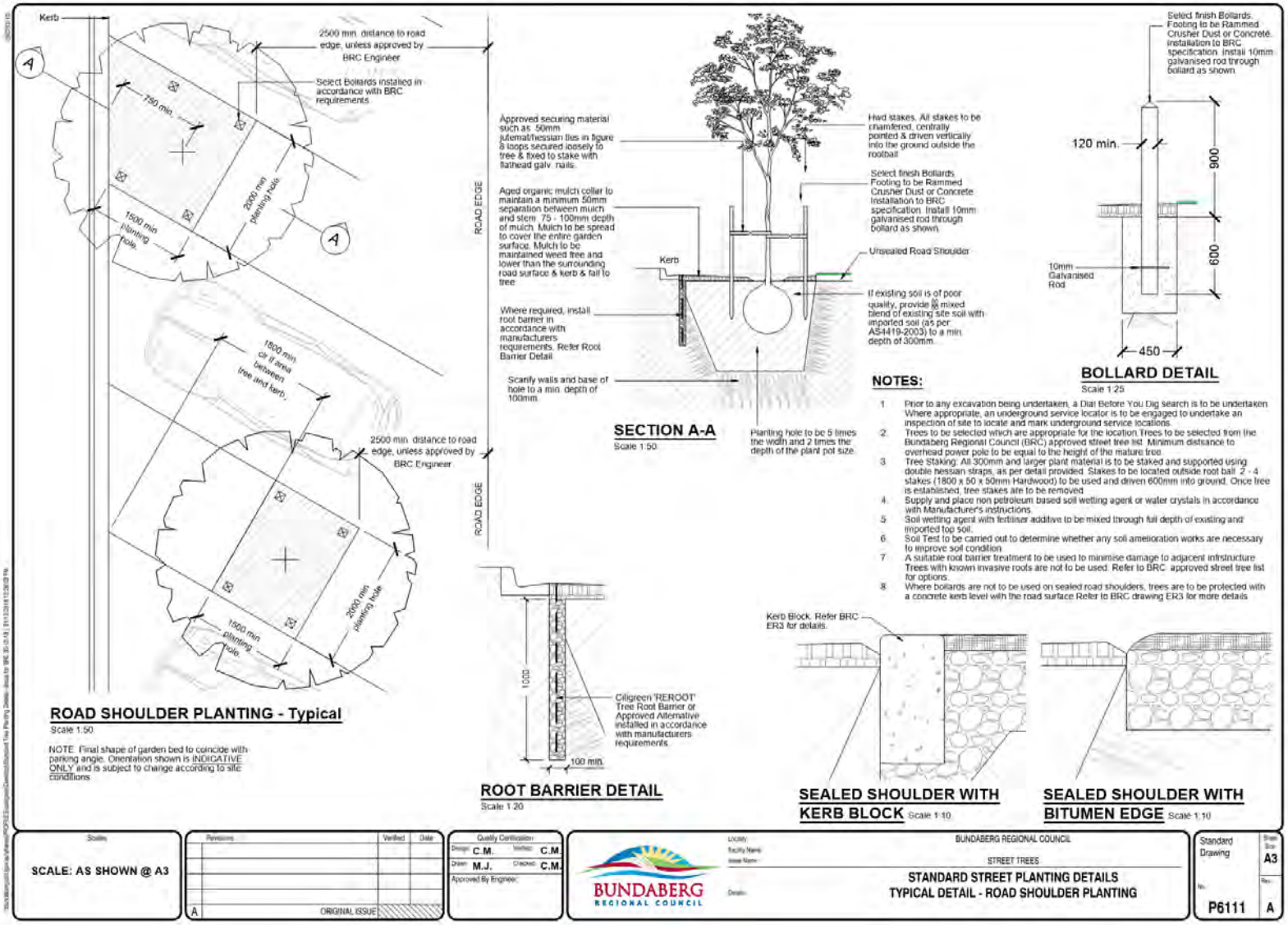

MATCH DRIVEWAY WIDTH
(MIN. WIDTH 3.0m — MAX. WIDTH 6.0m)
PROPERTY BOUNDARY
TOP OF BANK
DRAIN FLOW PATH
REFER D3201 FOR
FALL DETAILS
WINGS
HEADWALL
CONCRETE INVERT IF REQUIRED (AS
PER BRC STANDARD DRAWING R1020)
FORMATION EDGE
EXISTING ROAD
CUTOFF WALL
150
1:3H
N12 GALV DOWELS
MIN. 100 EMBEDMENT
100 SPACING
DETAIL – PLAN
NTS
WINGS
N12 GALV DOWEL
IF 2 RCBC ARE REQUIRED
DETAIL – PLAN
NTS
HEADWALL
NOTES:
1. ALL CONCRETE TO BE N32.
2. REINFORCING STEEL:
D500N DEFORMED BARS N12.
N12 GALV. DOWELS.
3. MINIMUM 45mm COVER TO REINFORCING
4. DOWELS TO BE EPOXY SET INTO EXISTING CONCRETE.
5. DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
LEGEND: DIMENSIONS
S RCBC SPAN (MAX 1200)
H RCBC HEIGHT (MAX 600)
HeH HEADWALL HEIGHT (MIN 150 – MAX 300)
C 600 OR 900 AS DIRECTED REFER BRC STD DRG R1020
LEGEND: MATERIAL
DRIVEWAY CONSTRUCTED AS PER BRC STANDARD DRAWING R1012
CONCRETE END WALL ARRANGEMENT AND RCBC
N12 GALV DOWEL (MIN 100mm EMBEDMENT)
PLACED CENTRALLY IN RCBC ROOF
C.O
1:10
BASE SLAB & APRON REFER D3201
C.O WHEN CONCRETE INVERT IS NOT REQUIRED UPSTREAM OR DOWNSTREAM OF PROPOSED RCBC IGNORE DIMENSION "C" AND DELETE INVERT THROUGH PROPOSED BASE SLAB
DETAIL – ELEVATION
NTS
WINGS
N12 PLACED CENTRALLY IN HEADWALL
IF 2 RCBC ARE REQUIRED THEN MAX SIZE TO BE 2x900 WITH THE ADDITION OF N12 GALV DOWEL TO TOP OF RCBC UNITS.
DETAIL – ELEVATION
NTS
HEADWALL
NOT TO SCALE
Revisions
Verified
Date
A Original Issue
Quality Certification
Design:
Verified:
Drawn: LWN
Checked:
Approved By Engineer:
Date:
RPEQ:
BUNDABERG REGIONAL COUNCIL
Residential Property Access
Standard Box Culvert Wings/ Headwalls
Standard Drawing
No.:
D3202
Sheet Size
A3
Rev.
A

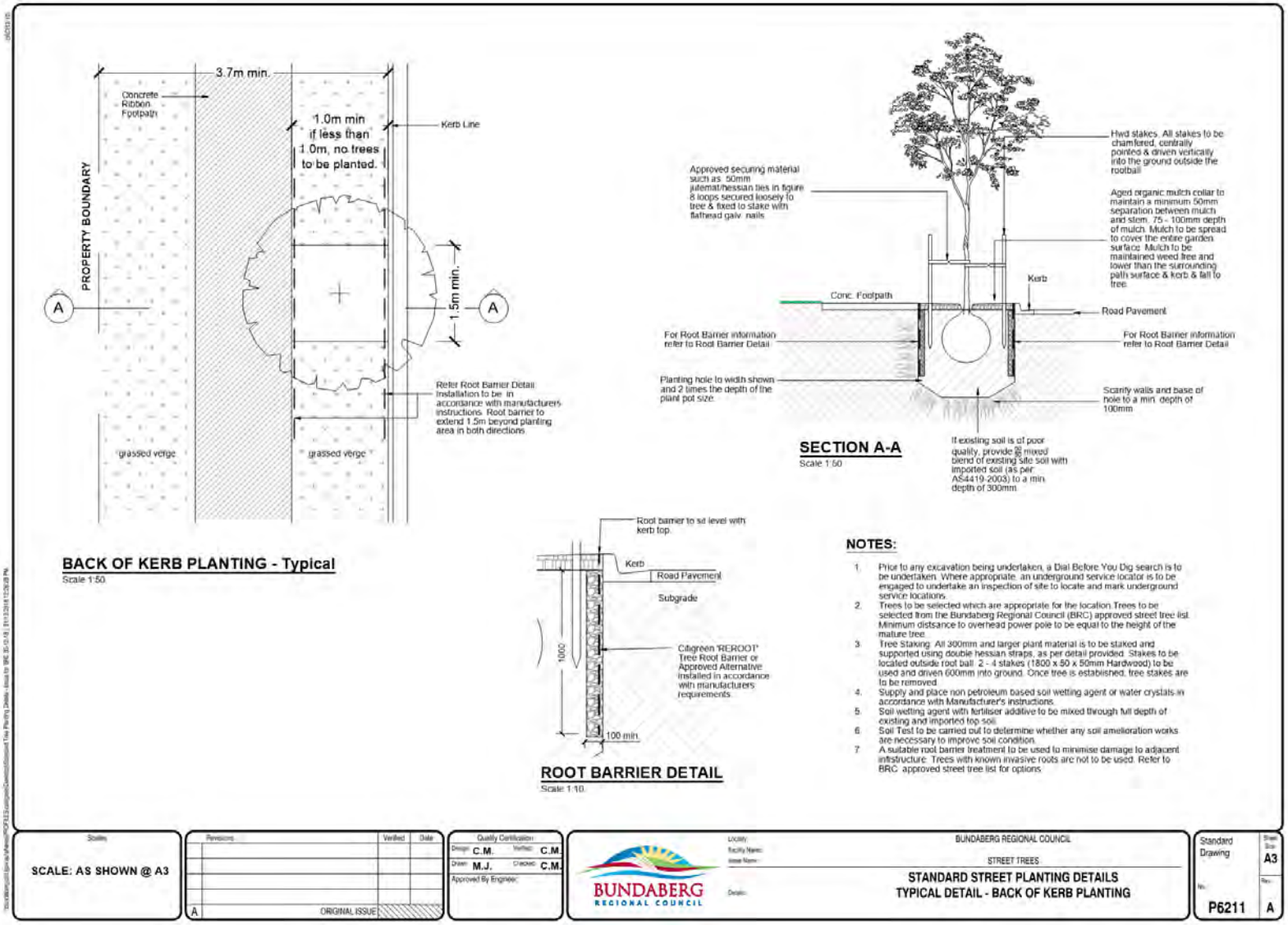

SECTION (A)
SCALE 1:50
DETAIL 'B'
SCALE 1:10
END FRAME DETAIL
SCALE 1:20
ROOF LAYOUT
SCALE 1:100
SIDE FRAME DETAIL
SCALE 1:20
FOUNDATION PLAN
SCALE 1:100
NOTES: –
1. DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
2. SITE COVERAGE IS 38.6 m².
3. CONCRETE STRENGTH TO BE 20 MPa AT 28 DAYS.
4. ALL F8 & F11 PINE TIMBER TO BE C.C.A. TREATED (DRIED AFTER TREATMENT).
5. ALL F14 HARDWOOD TIMBER TO BE WATER PROOFED WITH 3 COATS OF 100% ACRYLIC BASED EXTERIOR PAINT.
6. MAXIMUM DESIGN WIND VELOCITY 65 m/s.
7. THIS STRUCTURE IS NOT TO HAVE SHEETING FIXED TO SIDES.
8. ALL FIXINGS TO BE GALVANISED.
9. THE FOOTING HAS BEEN DESIGNED ASSUMING ALLOWABLE SOIL BEARING PRESSURE OF 100 kPa AND SOIL ADHESION OF 15 kPa TO BE VERIFIED ON SITE.
REVISIONS | DATE | CERTIFIED
A ORIGINAL ISSUE | 27-10-95
B VARIOUS | 27-11-95
C BATTEN SIZE CHANGED | 28-3-96
D VARIOUS | 22-4-96
E BRACING ADDED | 12-5-98
ENGINEER | RPEQ
BUNDABERG CITY COUNCIL
STANDARD DRAWING
PICNIC SHELTER SHED
LAYOUT & CONSTRUCTION DETAILS
REFER 16566
SCALE AS SHOWN
SURVEY
DESIGN
DRAWN GJA
REVISION A B C D E
PLAN No. 16566

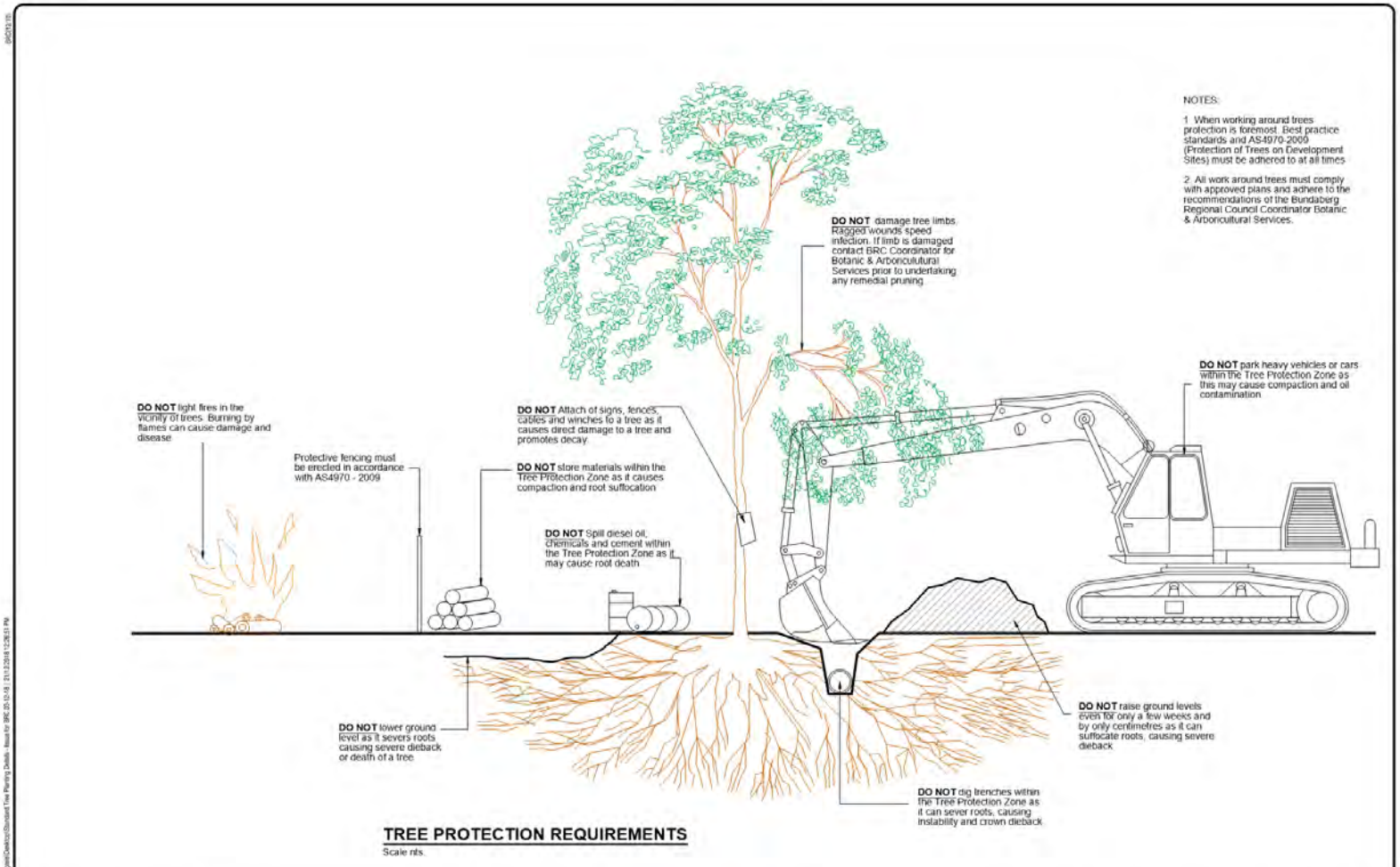

PICNIC TABLE END VIEW
SCALE 1:25
PICNIC TABLE FRONT VIEW
SCALE 1:20
CORNER BENCH SEATING FRONT VIEW
SCALE 1:20
FOUNDATION PLAN
SCALE 1:100
SECTION A
SCALE 1:50
NOTES: –
1. DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
2. ALL F14 HARDWOOD TIMBER TO BE WATER PROOFED WITH 3 COATS OF 100% ACRYLIC BASED EXTERIOR PAINT.
3. ALL FIXINGS NOT SHOWN TO BE 75x3.75mm GALV. BULLET HEAD NAILS.
BUNDABERG CITY COUNCIL
STANDARD DRAWING
PICNIC SHELTER TABLE & SEATING
LAYOUT & CONSTRUCTION DETAILS
REFER 16567
SCALE AS SHOWN
SURVEY
DESIGN
DRAWN GJA
REVISION A B C
PLAN No. 16567
ENGINEER RPEQ
A ORIGINAL ISSUE 27-10-95
B VARIOUS 28-11-95
C DIST. BETWEEN SEATING 22-4-96


SECTION A
SCALE 1:50
END FRAME DETAIL
SCALE 1:20
MIDDLE RAFTER DETAIL
SCALE 1:20
PICNIC TABLE END VIEW
SCALE 1:20
FOUNDATION PLAN
SCALE 1:50
ROOF LAYOUT
SCALE 1:50
PICNIC TABLE FRONT VIEW
SCALE 1:20
NOTES:-
1. DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SHOWN.
2. SITE COVERAGE IS 5.8 m².
3. CONCRETE STRENGTH TO BE 20 MPa AT 28 DAYS.
4. ALL F8 PINE TIMBER TO BE C.C.A. TREATED (DRIED AFTER TREATMENT).
5. ALL F14 HARDWOOD TIMBER TO BE WATER PROOFED WITH 3 COATS OF 100% ACRYLIC BASED EXTERIOR PAINT.
6. ALL FIXINGS NOT SHOWN TO BE 75x38mm GALV. BULLET HEAD NAILS.
7. MAXIMUM DESIGN WIND VELOCITY 65 m/s.
8. THIS STRUCTURE IS NOT TO HAVE SHEETING FIXED TO SIDES.
9. ALL FIXINGS TO BE GALVANISED.
10. THE FOOTING HAS BEEN DESIGNED ASSUMING ALLOWABLE SOIL BEARING PRESSURE OF 100 kPa AND SOIL ADHESION OF 15 kPa TO BE VERIFIED ON SITE.
REVISIONS
A ORIGINAL ISSUE 27-10-95
B VARIOUS 28-11-95
ENGINEER RPEQ
BUNDABERG CITY COUNCIL
STANDARD DRAWING
PICNIC TABLE WITH ROOF
LAYOUT & CONSTRUCTION DETAILS
REFER 16568
SCALE AS SHOWN
SURVEY
DESIGN
DRAWN GJA
REVISION A B
PLAN No. 16568


SHELTER LAYOUT
SCALE 1:50
SIDE ELEVATION
SCALE 1:25
TYPICAL SECTION
SCALE 1:25
PICNIC TABLE END VIEW
SCALE 1:25
FOOTING/SLAB PLAN
SCALE 1:50
EDGE THICKENING ET1
SCALE 1:20
ROOF FRAMING PLAN
SCALE 1:50
TYPICAL RAFTER CONNECTION
DETAIL A
SCALE 1:10
BEAM/COLUMN SPLICE
DETAIL B
SCALE 1:20
TYPICAL SEAT CONNECTION
DETAIL C
SCALE 1:10
MEMBER SCHEDULE
NOTE: ALL STEEL MEMBERS SHALL BE HOT DIP GALVANISED.
AS NOTED (A1 SIZE)
ENGINEERING & ENVIRONMENTAL CONSULTANTS
PROJECT MANAGERS & PLANNERS
BUNDABERG CITY COUNCIL
PICNIC SHELTER
STANDARD DESIGN
21611
LAYOUT AND CONSTRUCTION DETAILS
16478-S01


Kerb
2500 min. distance to road edge, unless approved by BRC Engineer
Select Bollards installed in accordance with BRC requirements
750 min.
2000 min planting hole
1500 min planting hole
ROAD EDGE
1800 min c/r if area between tree and kerb.
ROAD SHOULDER PLANTING - Typical
Scale 1:50
NOTE: Final shape of garden bed to coincide with parking angle. Orientation shown is INDICATIVE ONLY and is subject to change according to site conditions
Approved securing material such as 50mm jute/hessian bus in figure 8 loops secured loosely to tree & fixed to stake with flathead galv. nails.
Aged organic mulch collar to maintain a minimum 50mm separation between mulch and stem. 75 - 100mm depth of mulch. Mulch to be spread to cover the entire garden surface. Mulch to be maintained weed free and lower than the surrounding road surface & kerb & fall to tree
Where required, install root barrier in accordance with manufacturers requirements. Refer Root Barrier Detail
Scarify walls and base of hole to a min. depth of 100mm
Hwd stakes. All stakes to be chamfered, centrally pointed & driven vertically into the ground outside the rootball
Select finish Bollards. Footing to be Rammed Crusher Dust or Concrete. Installation to BRC specification. Install 10mm galvanised rod through bollard as shown.
Unsealed Road Shoulder
If existing soil is of poor quality, provide a mixed blend of existing site soil with imported soil (as per AS4419-2003) to a min. depth of 300mm.
Kerb
Planting hole to be 5 times the width and 2 times the depth of the plant pot size.
SECTION A-A
Scale 1:50
Seleted finish Bollards. Footing to be Rammed Crusher Dust or Concrete. Installation to BRC specification. Install 10mm galvanised rod through bollard as shown.
120 min.
900
600
10mm Galvanised Rod
450
BOLLARD DETAIL
Scale 1:25
NOTES:
1. Prior to any excavation being undertaken, a Dial Before You Dig search is to be undertaken. Where appropriate, an underground service locator is to be engaged to undertake an inspection of site to locate and mark underground service locations.
2. Trees to be selected which are appropriate for the location. Trees to be selected from the Bundaberg Regional Council (BRC) approved street tree list. Minimum distance to overhead power pole to be equal to the height of the mature tree.
3. Tree Staking: All 300mm and larger plant material is to be staked and supported using double hessian straps, as per detail provided. Stakes to be located outside root ball. 2 - 4 stakes (1800 x 50 x 50mm Hardwood) to be used and driven 600mm into ground. Once tree is established, tree stakes are to be removed.
4. Supply and place non petroleum based soil wetting agent or water crystals in accordance with Manufacturer's instructions.
5. Soil wetting agent with fertiliser additive to be mixed through full depth of existing and imported top soil.
6. Soil Test to be carried out to determine whether any soil amelioration works are necessary to improve soil condition.
7. A suitable root barrier treatment to be used to minimise damage to adjacent infrastructure. Trees with known invasive roots are not to be used. Refer to BRC approved street tree list for options.
8. Where bollards are not to be used on sealed road shoulders, trees are to be protected with a concrete kerb level with the road surface. Refer to BRC drawing ER3 for more details
1000
Ciligreen 'REROOT' Tree Root Barrier or Approved Alternative installed in accordance with manufacturers requirements.
100 min.
ROOT BARRIER DETAIL
Scale 1:20
Kerb Block. Refer BRC ER3 for details.
SEALED SHOULDER WITH KERB BLOCK Scale 1:10
SEALED SHOULDER WITH BITUMEN EDGE Scale 1:10
SCALE: AS SHOWN @ A3
Revisions
Verified
Date
A
ORIGINAL ISSUE
Quality Certification
Design: C.M.
Verified: C.M.
Drawn: M.J.
Checked: C.M.
Approved By Engineer:
BUNDABERG REGIONAL COUNCIL
BUNDABERG REGIONAL COUNCIL
STREET TREES
STANDARD STREET PLANTING DETAILS
TYPICAL DETAIL - ROAD SHOULDER PLANTING
Standard Drawing
No.
P6111
Size
A3
Rev.
A


3.7m min.
Concrete Ribbon Footpath
1.0m min if less than 1.0m, no trees to be planted.
Kerb Line
PROPERTY BOUNDARY
1.5m min.
A
A
grassed verge
grassed verge
Refer Root Barrier Detail. Installation to be in accordance with manufacturers instructions. Root barrier to extend 1.5m beyond planting area in both directions.
BACK OF KERB PLANTING - Typical
Scale 1:50
Hwd stakes. All stakes to be chamfered, centrally pointed & driven vertically into the ground outside the rootball
Approved securing material such as 50mm jutemat/hessian ties in figure 8 loops secured loosely to tree & fixed to stake with flathead galv. nails
Aged organic mulch collar to maintain a minimum 50mm separation between mulch and stem. 75 - 100mm depth of mulch. Mulch to be spread to cover the entire garden surface. Mulch to be maintained weed free and lower than the surrounding path surface & kerb & fall to tree
Kerb
Conc. Footpath
Road Pavement
For Root Barrier information refer to Root Barrier Detail
For Root Barrier information refer to Root Barrier Detail
Planting hole to width shown and 2 times the depth of the plant pot size
Scarify walls and base of hole to a min. depth of 100mm
If existing soil is of poor quality, provide 20% mixed blend of existing site soil with imported soil (as per AS4419-2003) to a min. depth of 300mm
SECTION A-A
Scale 1:50
Root barrier to sit level with kerb top
Kerb
Road Pavement
Subgrade
1000
Citigreen 'REROOT' Tree Root Barrier or Approved Alternative installed in accordance with manufacturers' requirements
100 min
ROOT BARRIER DETAIL
Scale 1:10
NOTES:
1. Prior to any excavation being undertaken, a Dial Before You Dig search is to be undertaken. Where appropriate, an underground service locator is to be engaged to undertake an inspection of site to locate and mark underground service locations.
2. Trees to be selected which are appropriate for the location. Trees to be selected from the Bundaberg Regional Council (BRC) approved street tree list. Minimum distance to overhead power pole to be equal to the height of the mature tree.
3. Tree Staking: All 300mm and larger plant material is to be staked and supported using double hessian straps, as per detail provided. Stakes to be located outside root ball. 2 - 4 stakes (1800 x 50 x 50mm Hardwood) to be used and driven 600mm into ground. Once tree is established, tree stakes are to be removed.
4. Supply and place non petroleum based soil wetting agent or water crystals in accordance with Manufacturer's instructions.
5. Soil wetting agent with fertiliser additive to be mixed through full depth of existing and imported top soil.
6. Soil Test to be carried out to determine whether any soil amelioration works are necessary to improve soil condition.
7. A suitable root barrier treatment to be used to minimise damage to adjacent infrastructure. Trees with known invasive roots are not to be used. Refer to BRC approved street tree list for options.
Scale
SCALE: AS SHOWN @ A3
Revisions
Verified
Date
A
ORIGINAL ISSUE
Quality Certification
Design: C.M.
Verified: C.M.
Drawn: M.J.
Checked: C.M.
Approved By Engineer:
BUNDABERG REGIONAL COUNCIL
Locality:
Facility Name:
Issue Name:
Details:
BUNDABERG REGIONAL COUNCIL
STREET TREES
STANDARD STREET PLANTING DETAILS
TYPICAL DETAIL - BACK OF KERB PLANTING
Standard Drawing
Sheet Size
A3
No.
P6211
Rev.
A


NOTES:
1. When working around trees protection is foremost. Best practice standards and AS4970-2009 (Protection of Trees on Development Sites) must be adhered to at all times
2. All work around trees must comply with approved plans and adhere to the recommendations of the Bundaberg Regional Council Coordinator Botanic & Arboricultural Services.
DO NOT damage tree limbs. Ragged wounds speed infection. If limb is damaged contact BRC Coordinator for Botanic & Arboricultural Services prior to undertaking any remedial pruning
DO NOT park heavy vehicles or cars within the Tree Protection Zone as this may cause compaction and oil contamination
DO NOT light fires in the vicinity of trees. Burning by flames can cause damage and disease
Protective fencing must be erected in accordance with AS4970 - 2009
DO NOT store materials within the Tree Protection Zone as it causes compaction and root suffocation
DO NOT Attach of signs, fences, cables and winches to a tree as it causes direct damage to a tree and promotes decay
DO NOT Spill diesel oil, chemicals and cement within the Tree Protection Zone as it may cause root death
DO NOT lower ground level as it severs roots causing severe dieback or death of a tree
DO NOT raise ground levels even for only a few weeks and by only centimetres as it can suffocate roots, causing severe dieback
DO NOT dig trenches within the Tree Protection Zone as it can sever roots, causing instability and crown dieback
TREE PROTECTION REQUIREMENTS
Scale nts.
Scales
SCALE: Not To Scale
Revisions
Verified
Date
A
ORIGINAL ISSUE
Quality Certification
Design: C.M.
Verified: C.M.
Drawn: M.J.
Checked: C.M.
Approved By Engineer:
BUNDABERG REGIONAL COUNCIL
Locality:
Facility Name:
Asset Name:
STREET TREES
Details:
STANDARD STREET PLANTING DETAILS
TYPICAL DETAIL - TREE PROTECTION REQUIREMENTS
Standard Drawing
No.
P6311
Sheet Size
A3
Rev.
A

Item

25 June 2019

Item Number:	File Number:	Part:
L1	521.2019.101.1	DEVELOPMENT ASSESSMENT

Portfolio:

Planning & Development Services

Subject:

305 Bucca Road, Bucca – Development Permit for Reconfiguring a Lot (1 lot into 3 lots)

Report Author:

Grant Barringer, Planning Officer

Authorised by:

Michael Ellery, Group Manager Development

Link to Corporate Plan:

Our Environment - 2.3 Sustainable built and natural environment - 2.3.3 Review and consistently enforce local laws, the planning scheme, and other associated environment and public health legislation to ensure they meet community standards.

Summary:

APPLICATION NO	521.2019.101.1
PROPOSAL	Reconfiguring a Lot (1 lot into 3 lots)
APPLICANT	GD Davis & JE Davis
OWNER	JE Davis & GD Davis
PROPERTY DESCRIPTION	Lot 1 on RP865676
ADDRESS	305 Bucca Road, Bucca
PLANNING SCHEME	Bundaberg Regional Council Planning Scheme 2015
ZONING	Rural Zone
OVERLAYS	Agricultural Land Overlay Biodiversity Areas Overlay Bushfire Hazard Overlay
LEVEL OF ASSESSMENT	Impact
SITE AREA	39.7 ha
CURRENT USE	Large format rural allotment with a Dwelling House
PROPERLY MADE DATE	30 January 2019
STATUS	The 35 business day decision period ended on 9 May 2019
REFERRAL AGENCIES	Not applicable
NO OF SUBMITTERS	One (1) properly made submission
PREVIOUS APPROVALS	Nil
SITE INSPECTION CONDUCTED	6 February 2019
COMPLEXITY RATING	Moderate

1. INTRODUCTION

1.1 Proposal

The applicant seeks a development permit for a proposed one (1) lot into three (3) lot subdivision. Proposed lot 1 (adjoining 359 Bucca Road, Bucca) with a land area of 2.85 ha has a road frontage of 165.53 metres and is proposed in an area predominately cleared of vegetation. Land generally falls from the road reserve, east over the site to a natural watercourse, partially located over proposed Lot 32 and Lot 2 on RP175023 to the south.

Proposed Lot 2 measures 19.43 ha and has a frontage of 469 metres and proposes to include the existing dwelling on the subject site. The proposed boundaries on the allotment have been located to align with the extent of MSES vegetation located on the eastern portion of the subject site.

Proposed lot 3, represents the balance of the site, with an area of 17.43 ha and a frontage of 435.25 metres to Bucca Road and 724 metres to Kliedons Road. The proposed land area is unimproved and contains a mix of Category B and C MSES areas and well as being completely overlayed by the agricultural land overlay (Area A).

1.2 Site Description

The subject site has a total area of 39.7 hectares with a 1.069km frontage to Bucca Road and 724 metres to Kliedons Road. Parts of the site have been previously cropped for pineapples but in recent times has been used for hobby cattle grazing. The site is improved with a single residential dwelling, connected to overhead power and telecommunications, on-site water supply and septic wastewater disposal. The current access to the site is via an unformed crossing and gravel roadway.

Adjoining lots vary in size and are utilised primarily for cattle grazing uses or agriculture. The site has a natural drainage path (from Smiths Crossing Road directing water from the western and eastern parts of the site towards the western part of proposed lot 2 then into the gully into the waterway at the southern boundary of the subject site.

A single allotment (Lot 3 on RP865876) is surrounded by the subject site (bordering proposed lots 2 and 3). This allotment is 2 acres in area, regular in shape and is developed with a dwelling house and associated outbuildings.

The majority of the subject land is identified as being within the Agricultural Land Overlay (Class A) and also includes MSES (wildlife habitat), MSES Protected Vegetation and areas of Medium Bushfire risk.

2. ASSESSMENT PROVISIONS

2.1. Assessment Benchmarks

The following are the benchmarks applying for this development:

Benchmarks applying for the development	Benchmark reference
Zone Code: Rural Zone	Bundaberg Regional Council Planning Scheme 2015
Overlay Code • Agricultural Land Overlay Code • Biodiversity Areas Overlay Code • Bushfire Hazard Overlay Code	Bundaberg Regional Council Planning Scheme 2015
Other Development Code • Landscaping Code • Nuisance Code • Reconfiguring a Lot Code • Transport and Parking Code • Vegetation Management Code • Works, Services and Infrastructure Code	Bundaberg Regional Council Planning Scheme 2015
Planning Scheme Policy • Planning Scheme Policy for Development Works	Bundaberg Regional Council Planning Scheme 2015

2.2. *State Planning Instruments*

The Bundaberg Regional Council Planning Scheme 2015 has been endorsed to reflect the state planning instruments.

3. ISSUES RELEVANT TO THE APPLICATION

The following significant issues have been identified in the assessment of the application:

Rural Zone Code

The proposed subdivision is not considered to comply with a number of Performance Outcomes of the Rural Zone Code, including, the requirement to limit permanent forms of residential accommodation in the zone (PO3), and provide for and support rural activities (PO1, PO2 and PO6), particularly given the proposed intensification of residential uses which may conflict with 'as of right' rural uses on adjoining land. In addition to those matters above, the proposal significantly reduces the current rural land area without demonstrating an overriding need for the development in the public interest.

As the proposed development is in conflict with a number of Code provisions, the purpose and overall outcomes of the code must be considered. These include:

The purpose of the Rural Zone Code is to:-

(a) provide for a wide range of rural uses including cropping, intensive horticulture, intensive animal industries, animal husbandry, animal keeping and other primary production activities;

(b) provide opportunities for non-rural uses that provide a service to or rely upon access to rural areas;
(c) ensure that non-rural uses are compatible with agriculture, the environment and the landscape character of the rural area and do not compromise the long-term use of land for rural uses; and
(d) ensure that rural areas are sustainably managed to maintain and enhance the character, visual amenity and ecological sustainability of the rural landscape.

The purpose of the Rural Zone Code will be achieved through the following overall outcomes:-

(a) development provides for a broad range of rural activities as well as more intensive rural activities, provided that adverse environmental and amenity impacts are avoided or appropriately managed;
(b) permanent residential accommodation in the zone is generally limited in scale and intensity;
(c) where appropriate, complementary visitor accommodation and other non-rural uses that support rural enterprise or rural tourism activities may be established in the zone;
(d) development minimises conflicts with existing and future rural uses and activities on the surrounding rural lands and ensures that the productive capacity of rural land is protected for rural uses and associated value adding industries;
(e) development provides for the protection of agricultural land classification (ALC) Class A and Class B land for sustainable agricultural use;
(f) development maintains the rural and landscape character, scale and amenity of the zone; and
(g) development encourages and facilitates the efficient provision and safe operation of physical and social infrastructure.

In consideration of the items above it is challenging to accept that a proposal that creates small rural lots and fragments an existing rural lot, complies with these key provisions of the Planning Scheme. The proposal does not support or encourage rural activities, rather introduces the types of non-rural uses that are intended to be limited. Fragmentation of agricultural land does not protect or enhance the sustainable agricultural use of these areas for the future.

Out of sequence development

Performance Outcome 2 (PO2) of the Reconfiguring a Lot Code requires that the proposed development avoids the sporadic or out of sequence creation of new lots and aims to ensure the efficient delivery of supporting infrastructure. The proposal to create additional lots in a rural zoned area remote from existing services presents a non-compliance with this code criteria that has not been justified sufficiently by the applicant within the lodged planning report and supporting material.

The applicant provides that despite the conflict with the Rural Zone Code and Reconfiguring a Lot Code (particularly the minimum lot size and introduction of additional sensitive land uses in a rural setting), the proposal satisfies the outcomes for Rural Residential development under section 3.3.4 of the Strategic Framework. The Specific Outcomes of Element 3 (s.3.3.4.1(c)) of the Strategic Framework within the Bundaberg Region Planning Scheme (Rural Residential development) which are referenced, stipulate that Rural Residential development on land outside of that zoned Rural Residential may only occur under circumstances (i) to (ix), which are discussed below.

While the developer may suggest there is a demand for rural residential development in this location this does not demonstrate justified demand, having regards to the needs of the community and the capacity of the existing vacant land supply already

allocated in the Rural Residential Zone, or approvals already granted (as stated in s.3.3.4.1(c)(i)). It is considered at this time, the needs of the community are suitably addressed through urban growth opportunities to the north west and south west of the subject site (being within the Rural Residential Zone), the closest being 3.2 km from the subject site.

When considering the planning scheme in its entirety, the subject land is not identified as a rural residential area on SFM-001, nor has the land been included in the Rural Residential Zone. The settlement pattern, identifies significant areas for urban growth and rural residential development across the region in the life of the Planning Scheme, providing for housing choice in different locations. Accordingly, the settlement pattern within the Strategic Framework provides for population growth in the area through the expansion of the Urban Area (including the two examples mentioned above), not through unplanned rural residential development.

Section 3.3.4.1(c)(ii) relates to the location of the proposed rural residential subdivision in close proximity to, readily accessible to or easily serviced by an existing village, settlement or services/ community facilities, such as health, education, shopping, sporting, recreational facilities and public transport. The proposed location of this subdivision is not serviced by public transport and is relatively isolated from any of the described services.

Section 3.3.4.1(c)(iii) requires that development will not fragment ALC Class A and Class B land, and will not constrain or conflict with the existing or future potential use of the surrounding rural lands and economic resource areas. This matter will be further addressed in a later section of this report, however, it is noted that the introduction of a sensitive land use (residential use) within an existing rural area, wholly surrounded by rural land, struggles to demonstrate adequate compliance with this requirement. Although, the existing lot size is below the minimum lot size currently, the proposed subdivision will fragment the ALC Class B land.

It is noted that Council's Planning Scheme provides significant opportunities for rural residential growth in appropriate areas of the region. The Strategic Framework commentary which provides support for the subdivision of rural land in a limited range of circumstances cannot be interpreted to support this development in this location. Notwithstanding this, the meeting of criteria set within the one section (3.3.4) is not the only consideration in assessment of whether rural residential development is appropriate in this location. Rather, it is appropriate for Council to also consider whether the application is, on balance, consistent with the Strategic Framework in its entirety. In this regard, it is considered that on balance, the proposed development is not consistent or compliant with a broad range and number of these provisions.

Reconfiguring a Lot Code

Performance Outcome 1 (PO1) of the Reconfiguring a Lot Code requires the proposed lot layout and configuration be responsive to a number of factors, including the setting of the site within a non-urban context and the adjoining natural environmental values.

PO2 requires the consideration of the impact of the proposed subdivision on adjoining existing lawful (rural) uses and vice versa, a consideration of the impacts of the existing rural uses on the proposed residential use. The subject site is adjacent to and within close proximity to rural uses, currently under assignment. The purpose and overall outcomes of the Rural Zone Code also require that the development does not compromise the long term use of the rural zoned land for rural activities and

development is to maintain the scale, character and amenity of the zone. It is noted that the proposed development does not adequately address these requirements, particularly given the proposal subdivides rural land well below the minimum lot size and introduces an irregular pattern of development which is not responsive nor considerate of the existing rural area and incompatible with as of right uses.
Despite the applicant's representations, it is clear that the proposed development does not meet the stipulated minimum lot size of 100 ha minimum lot size in the Bundaberg Regional Council Planning Scheme. PO12 of the code seeks to regulate incompatible uses by separation and/ or buffering. In this instance 'reverse amenity' issues are created affecting continued operation of existing uses. It is evident from a balanced review of the Code that it does not favour subdivision of this type.

Agricultural land

In addition to the proposal not being compliant with the zoning or lot sizes within the planning scheme, the subject parcel is predominately included within the Agricultural Land Overlay. The purpose and overall outcomes of the Agricultural Land Overlay Code clearly articulate that land classified with an Agricultural Land Classification (ALC) is to be protected from development that leads to its alienation, fragmentation or diminished productivity. This is achieved by locating appropriate uses, avoiding conflicts between uses and avoiding fragmentation as a result of a reconfiguration of a lot application. The provisions within the Performance Outcomes of the code support and enforce this purpose. It is considered that the proposed development is in conflict with a large proportion of this code (including PO1, PO3 and PO4) and a substantial justification for this non-compliance has not been provided.

The existing good quality rural land will be impacted by the proposed development, which cannot fully demonstrate compliance with the overlay code, including the purpose and overall outcomes, which include:

(1) The purpose of the Agricultural land overlay code is to ensure that agricultural land is protected from development that leads to its alienation, fragmentation or diminished productivity.

(2) The purpose of the code will be achieved through the following overall outcome:-

(a) the ongoing productive use of Agricultural Land Classification (ALC) Class A and Class B land for agricultural purposes is maintained and protected by ensuring that:-

(i) ALC Class A and Class B land is protected and remains available for productive and sustainable agricultural and rural pursuits, unless:-

A. there is an overriding need in terms of public benefit; and

B. there is no alternative site suitable for the particular purpose; and

C. the impact on productive agricultural land has been avoided and minimised;

(ii) conflict between farming activities and sensitive land uses is avoided by establishing effective separation distances and buffers;

(iii) further fragmentation of ALC Class A and Class B land as a result of reconfiguring a lot is avoided; and

(iv) development avoids adverse impacts on ALC Class A and Class B land from land degradation and stormwater run-off.

The proposed subdivision further fragments and alienates agricultural land in conflict with the purpose of the code and overall outcome (2)(a)(iii). The proposal also impacts upon the ongoing use of ALC land by introducing additional conflict between farming

activities on the surrounding rural lots to the south and east and any sensitive land use developed on the proposed lots.

With reference to overall outcome (2)(a)(i), a number of these factors that may allow for the reduction in available ALC Class A and B land, have not been fully demonstrated within the development application, including an overriding need in terms of public benefit. The above sections have discussed that ample alternative sites are available for a rural residential purpose (2)(a)(i)(B). It is acknowledged that it is difficult for a reconfiguring of a lot proposal to meet the requirement for avoiding and minimising impacts within this purpose, however the intent is clear whereby fragmentation is not encouraged. Although not currently used intensively (more recently for hobby cattle grazing), the lot is still used for a rural purpose, and contributes to the broader rural landscape and scenic amenity.

Biodiversity overlay

The proposed reconfiguring of a lot locates in an area identified as containing MSES-Regulated Vegetation, MSES- Wildlife Habitat, MSES- Regulated Vegetation (intersecting a watercourse) and the related Buffer. As a result the provisions of the overlay code are relevant.

The proposed development does not comply with a number of the performance outcomes which relate to locating, designing and siting of development to avoid or mitigate impacts to the matter of state environmental significance (PO1 and PO2). The proposed common boundary of lots 2 and 3 is located within the eastern gully of the site, which as proposed, will dissect two separate mapped areas of MSES (Vegetation and Wildlife Habitat). Although not linked, creating a boundary between these two areas, fragments the site specific corridor and although on the fringe of the regional ecological corridor, conflicts with PO5 of the code.

Public Notification

The following matters were raised by submitters:

Matters raised in any submissions	**Description of how matters were dealt with in reaching the decision**
Minimum Lot size are well below the prescribed minimum	Comments are noted and suggested conflicts with the Bundaberg Regional Planning Scheme area detailed in the body of the report and reflected in the Officer recommendation.
Proximity of proposed Lot 1 to the adjoining dwelling house and its related safety impacts of site access, privacy etc.	
The impact of Agricultural Land areas, not only over the site (fragmentation) but the reverse impacts on the existing rural uses on adjoin allotments	

4. REFERRALS

4.1 Internal Referrals

Advice was received from the following internal departments:

Internal department	Referral Comments Received
Development Assessment - Engineering	Nil
Water and Wastewater	Nil

Any significant issues raised in the referrals have been included in section 3 of this report.

4.2 Referral Agency

Not Applicable

5. PUBLIC NOTIFICATION

Pursuant to the *Planning Act 2016*, this application was advertised for 15 business days from 7 March 2019 until 29 March 2019. The Applicant submitted documentation on 1 April 2019 advising that public notification had been carried out in accordance with the *Planning Act 2016*. Council received one (1) submission in relation to this development application during this period. Any significant issues raised have been included in section 3 of this report.

6. REASONS FOR DECISION

The reasons for this decision are:

1. The proposed development is in conflict with the Bundaberg Regional Council Planning Scheme, specifically the:
   - Biodiversity Overlay Code, including the Purpose, Overall Outcomes and Performance Outcomes PO1, PO2, PO5, specifically noting the significant impacts to a matter of state environmental significance (vegetation and wildlife habitat);
   - Rural Zone Code, including the Purpose and Overall Outcomes and Performance Outcomes PO1, PO2, PO3, PO6, PO8, PO11 and PO13;
   - Reconfiguring a Lot Code, including the Purpose, Overall Outcomes and Performance Outcome PO1, PO2, PO3, PO12, specifically noting the intent to minimise further fragmentation of Rural zoned land; and
   - Agricultural land overlay code, including the Purpose, Overall Outcomes and Performance Outcomes PO1, PO3 and PO4.
2. The proposed development does not satisfy the requirements of section 3.3.4.1(c) of the Strategic Framework in relation to locating rural residential development in areas not included in the Strategic Framework Map SFM-001 (Settlement Pattern Elements) in that:
   a. There is no demonstrated and justified need for additional rural residential lots to occur within this area given the substantial capacity of nearby rural residential zoned land;

b. The site is not located close to an existing village or settlement; and

c. The proposal would fragment land included in Agricultural Land Classification A and B; and

d. The development does not appropriately address the physical and environmental constraints of the land.

3. The proposed development fragments Good Quality Agricultural Land (Agricultural Land Classification (ALC) Class A and Class B) and diminishes its ability to be used for sustainable agricultural production;

4. The applicant has not demonstrated planning or economic need for the proposed development in the location, given the availability of appropriately zoned land elsewhere in the nearby surrounding area;

5. The development impacts adversely on Matters of State Environmental Significance (MSES) relating to the protection and preservation of wildlife habitat, regulated vegetation and watercourse buffer areas;

6. Approval of the proposed development would introduce an accepted use right for additional sensitive land uses to locate within new lots, exacerbating reverse amenity issues and impacting on the use of adjoining land for rural purposes;

7. The proposed development is inconsistent with reasonable community expectations as informed by the *Bundaberg Regional Council Planning Scheme 2015* (in terms of minimum lot size, protection of rural character, amenity, managing residential and rural land use conflict, and protecting and preserving rural land) and the expectations of those persons living and investing in the locality in which the proposed development is located, are compromised;

8. The proposed development is inconsistent with the assumptions about the type, scale, location or timing of future development and infrastructure provision in this area;

9. The proposed development results in the progressive increase in residential densities in a way that is not planned or contemplated under the Bundaberg Regional Council Planning Scheme 2015;

10. The extent of inconsistency and conflict with the Bundaberg Regional Planning Scheme are considered to be of such significance that the proposal, if approved, would compromise the achievement of the intended planning outcomes for this area.

Communication Strategy:

Communications Team consulted. A Communication Strategy is:

☐ Not required

☒ Required

Attachments:

⇩1 Site Plan
⇩2 Locality Plan
⇩3 Proposal Plan

Recommendation:

That the Development Application 521.2019.101.1 detailed below be decided as follows:

1. Location details

Street address:	305 Bucca Road, Bucca
Real property description:	Lot 1 on RP865676
Local government area:	Bundaberg Regional Council

2. Details of the proposed development

Development Permit for Reconfiguring a Lot (1 lot into 3 lots)

3. Decision

Decision details: Refused

4. Referral agencies for the application

Nil

5. Reasons for refusal

Under section 63(2)(f)(ii) of the Planning Act 2016, the Bundaberg Regional Council must set out reasons for the decision to refuse the application.

The reasons for this refusal are:

1. The proposed development is in conflict with the Bundaberg Regional Council Planning Scheme, specifically the:
   - Biodiversity Overlay Code, including the Purpose, Overall Outcomes and Performance Outcomes PO1, PO2, PO5, specifically noting the significant impacts to a matter of state environmental significance (vegetation and wildlife habitat);
   - Rural Zone Code, including the Purpose and Overall Outcomes and Performance Outcomes PO1, PO2, PO3, PO6, PO8, PO11 and PO13;
   - Reconfiguring a Lot Code, including the Purpose, Overall Outcomes and Performance Outcome PO1, PO2, PO3, PO12, specifically noting the intent to minimise further fragmentation of Rural zoned land; and
   - Agricultural Land Overlay Code, including the Purpose, Overall Outcomes and Performance Outcomes PO1, PO3 and PO4.
2. The proposed development fragments Good Quality Agricultural Land (Agricultural Land Classification (ALC) Class A and Class b) and diminishes its ongoing use for sustainable agricultural production;

a. There is no demonstrated and justified need for additional rural residential lots to occur within this area given the substantial capacity of nearby rural residential zoned land;
b. The site is not located close to an existing village or settlement; and
c. The proposal would fragment land included in Agricultural Land Classification A and B; and
d. The development does not appropriately address the physical and environmental constraints of the land.

3. The proposed development fragments Good Quality Agricultural Land (Agricultural Land Classification (ALC) Class A and Class B) and diminishes its ability to be used for sustainable agricultural production;
4 The applicant has not demonstrated planning or economic need for the proposed development in the location, given the availability of appropriately zoned land elsewhere in the nearby surrounding area;
5. The development impacts adversely on Matters of State Environmental Significance (MSES) relating to the protection and preservation of wildlife habitat, regulated vegetation and watercourse buffer areas;
6. Approval of the proposed development would introduce an accepted use right for additional sensitive land uses to locate within new lots, exacerbating reverse amenity issues and impacting on the use of adjoining land for rural purposes;
7. The proposed development is inconsistent with reasonable community expectations as informed by the *Bundaberg Regional Council Planning Scheme 2015* (in terms of minimum lot size, protection of rural character, amenity, managing residential and rural land use conflict, and protecting and preserving rural land) and the expectations of those persons living and investing in the locality in which the proposed development is located, are compromised;
8. The proposed development is inconsistent with the assumptions about the type, scale, location or timing of future development and infrastructure provision in this area;
9. The proposed development results in the progressive increase in residential densities in a way that is not planned or contemplated under the Bundaberg Regional Council Planning Scheme 2015;
10. The extent of inconsistency and conflict with the Bundaberg Regional Planning Scheme are considered to be of such significance that the proposal, if approved, would compromise the achievement of the intended planning outcomes for this area.

Findings on material questions of fact

- The subject site is located with the Rural Zone of the Bundaberg Regional Council Planning Scheme 2015.
- The site is predominantly categorised as Agricultural land Classification A in the Bundaberg Regional Council Planning Scheme Overlays, with a

smaller part of the site mapped as Agricultural Land Classification B and some not mapped at all.

- The site contains areas mapped as being areas of State Environmental Significance, including regulated vegetation, wildlife habitat and a watercourse.
- The development application was made for Development Permit for Reconfiguring a Lot (1 lot into 3 lots ranging from 2.85 ha to 19.43 ha).
- All proposed lots are less than the acceptable solution minimum lot size for rural zoned land under table 9.3.4.3.2 of the Reconfiguring a Lot Code.
- Part 5.5 of the planning scheme categorises the creation of additional lots less than 100 ha within the rural zone as requiring impact assessment.
- Bundaberg Regional Council, as the statutory Assessment Manager, undertook assessment of the development application under the relevant benchmarks and the provisions of the strategic framework within the Local categorising instrument.
- An information request was issued by Council on the 18 February 2019.
- An information request response was received by Council on the 6 March 2019.
- Public Notification of the proposed development was undertaken between 7 March 2019 and 29 March 2019 (inclusive).
- One (1) properly made submission was received by Council.
- The proposal would result in the fragmentation of areas mapped as being good quality agricultural land and also areas of state environmental significance.
- The land is not contiguous to existing urban zoned land or established village.
- The site is approximately 11 kilometres to the nearest village identified in the Strategic Framework Map SFM-001.
- There is approximately 205 hectares of undeveloped, rural residential zoned land within 4.2 kilometers to the north west of the site and over 2,800 hectares of rural residential zoned land located within 3.5 km to the south west of the site, the majority of which is undeveloped.

Evidence or other material on which the findings were based

- The development application including the information request, information response and submission/s received during the public notification period;
- The Bundaberg Regional Council Planning Scheme 2015;
- The *Planning Act 2016*;
- The *Planning Regulation 2017*; and
- State Planning Policy 2017.

6. Properly made submissions

Properly made submissions were received from the following principal submitters:

Name of principal submitter	Residential or Business Address	Electronic Address
Nikki and Finlay Gilfoyle	359 Bucca Road, Bucca, QLD 4670	finnik@bigpond.com

7. Rights of appeal

The rights of applicants to appeal to a tribunal or the Planning and Environment Court against decisions about a development application are set out in Chapter 6, Part 1 of the *Planning Act 2016.* For particular applications, there may also be a right to make an application for a declaration by a tribunal (see Chapter 6, Part 2 of the *Planning Act 2016*).

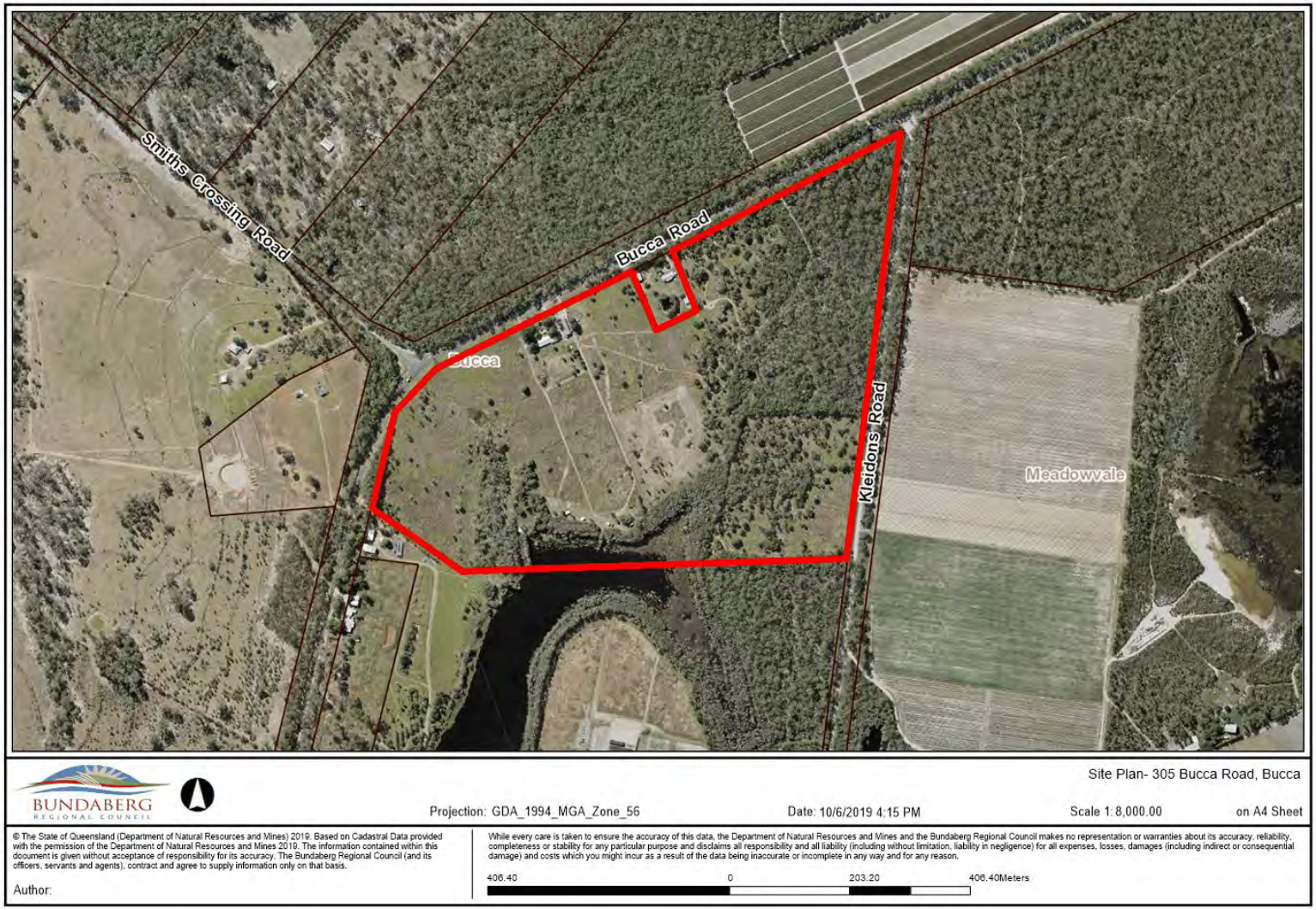
Appeal by an applicant

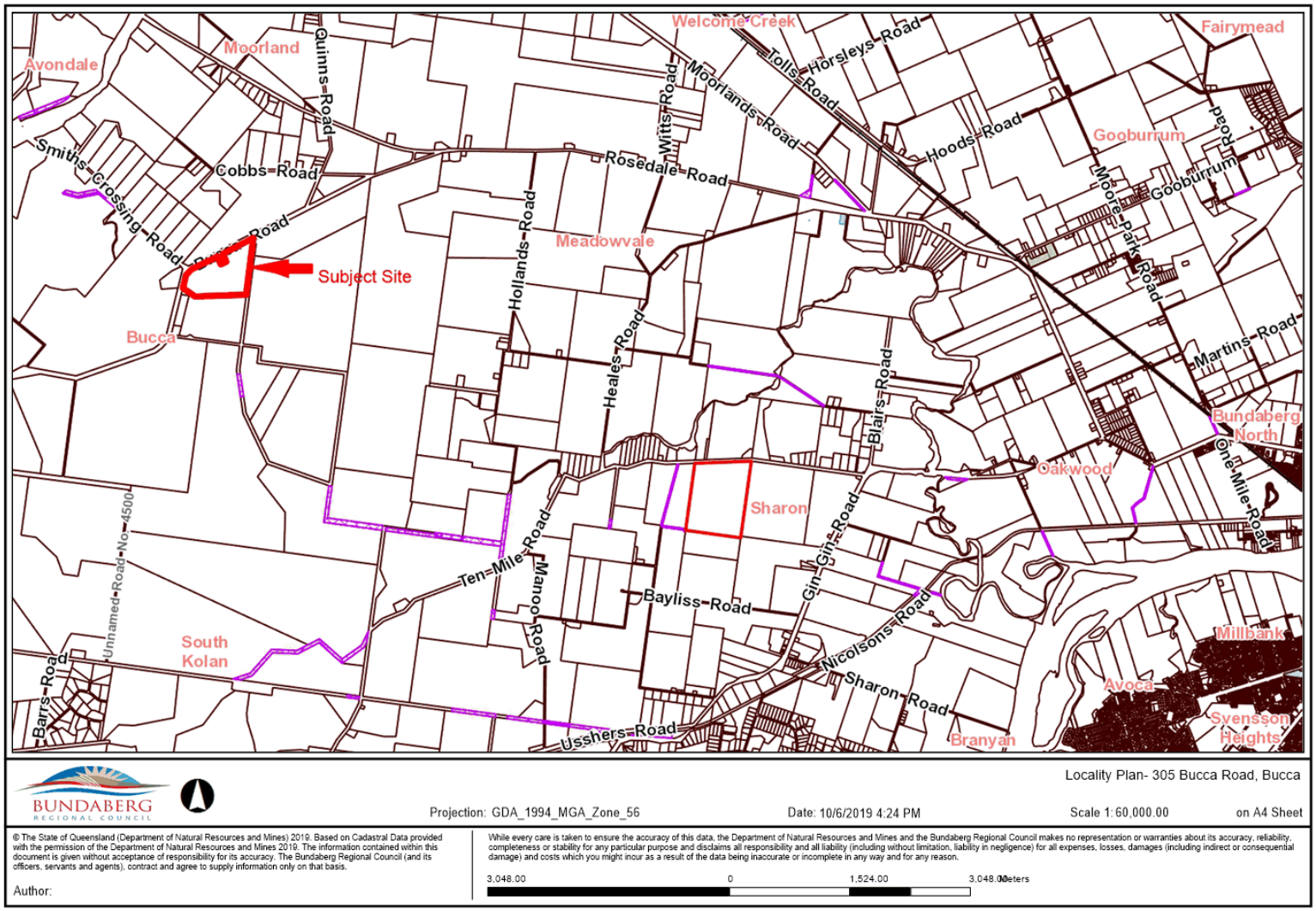
An applicant for a development application may appeal to the Planning and Environment Court against the following:

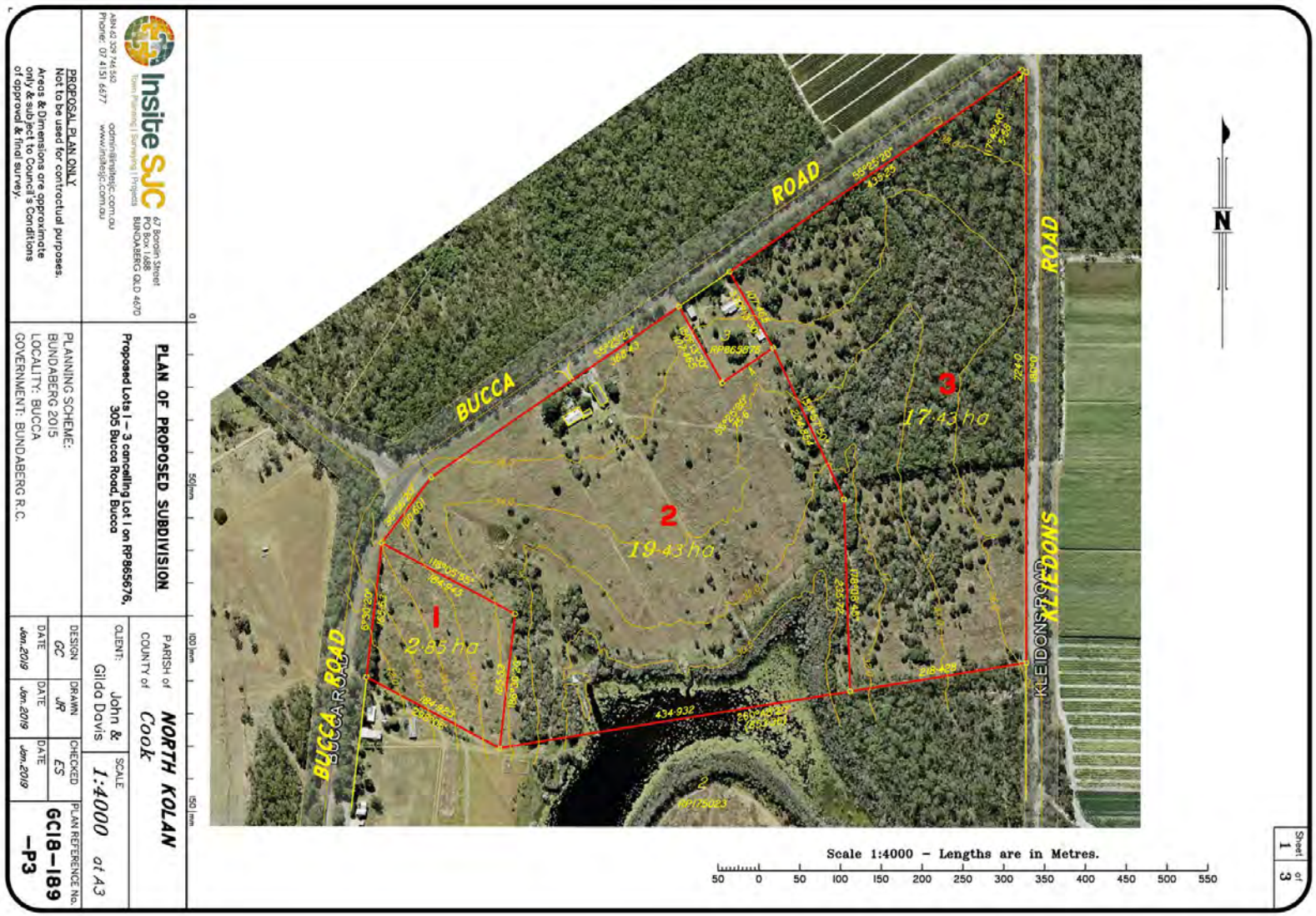
- the refusal of all or part of the development application
- a provision of the development approval
- the decision to give a preliminary approval when a development permit was applied for
- a deemed refusal of the development application.

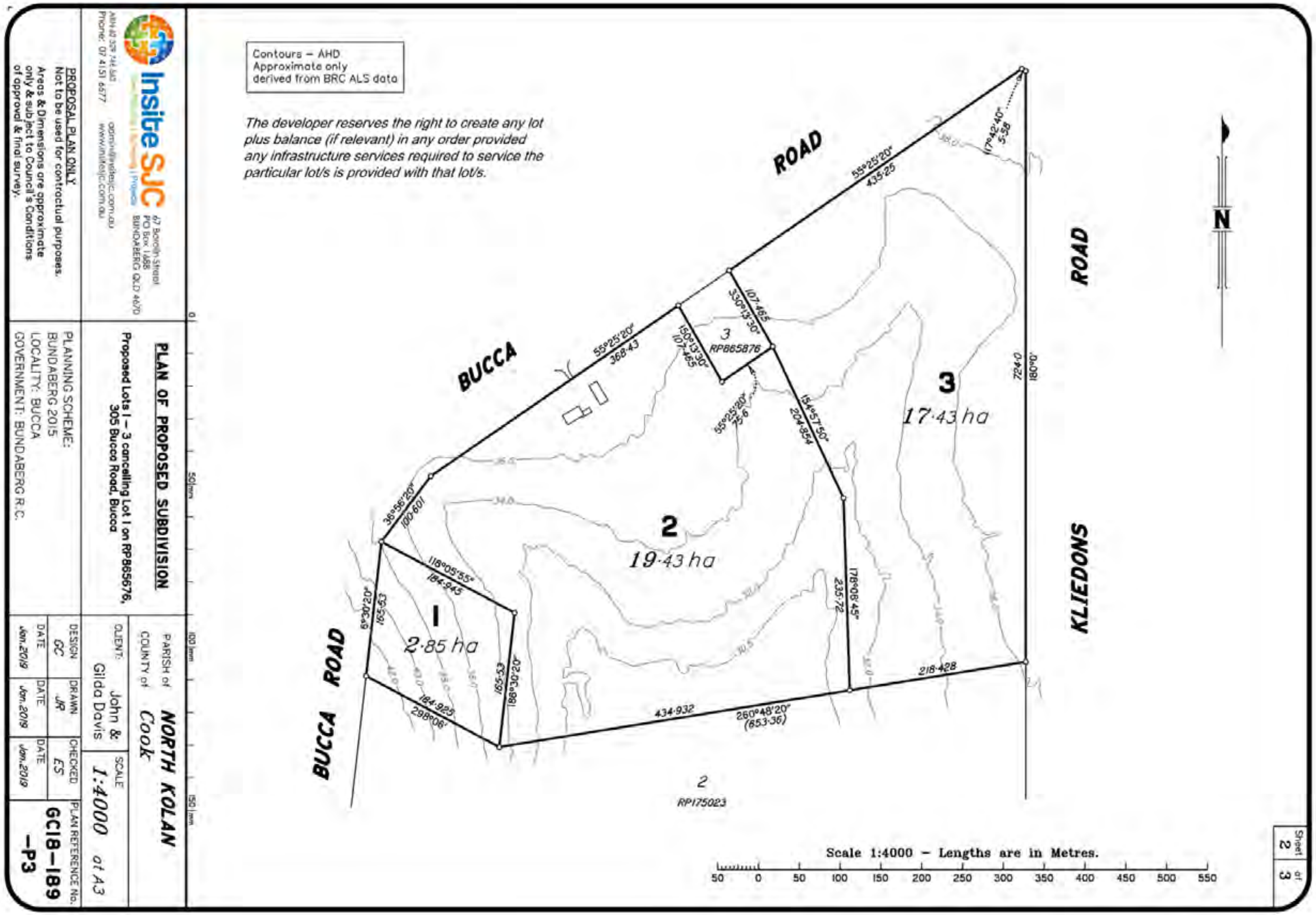
The timeframes for starting an appeal in the Planning and Environment Court are set out in Section 229 of the *Planning Act 2016*.

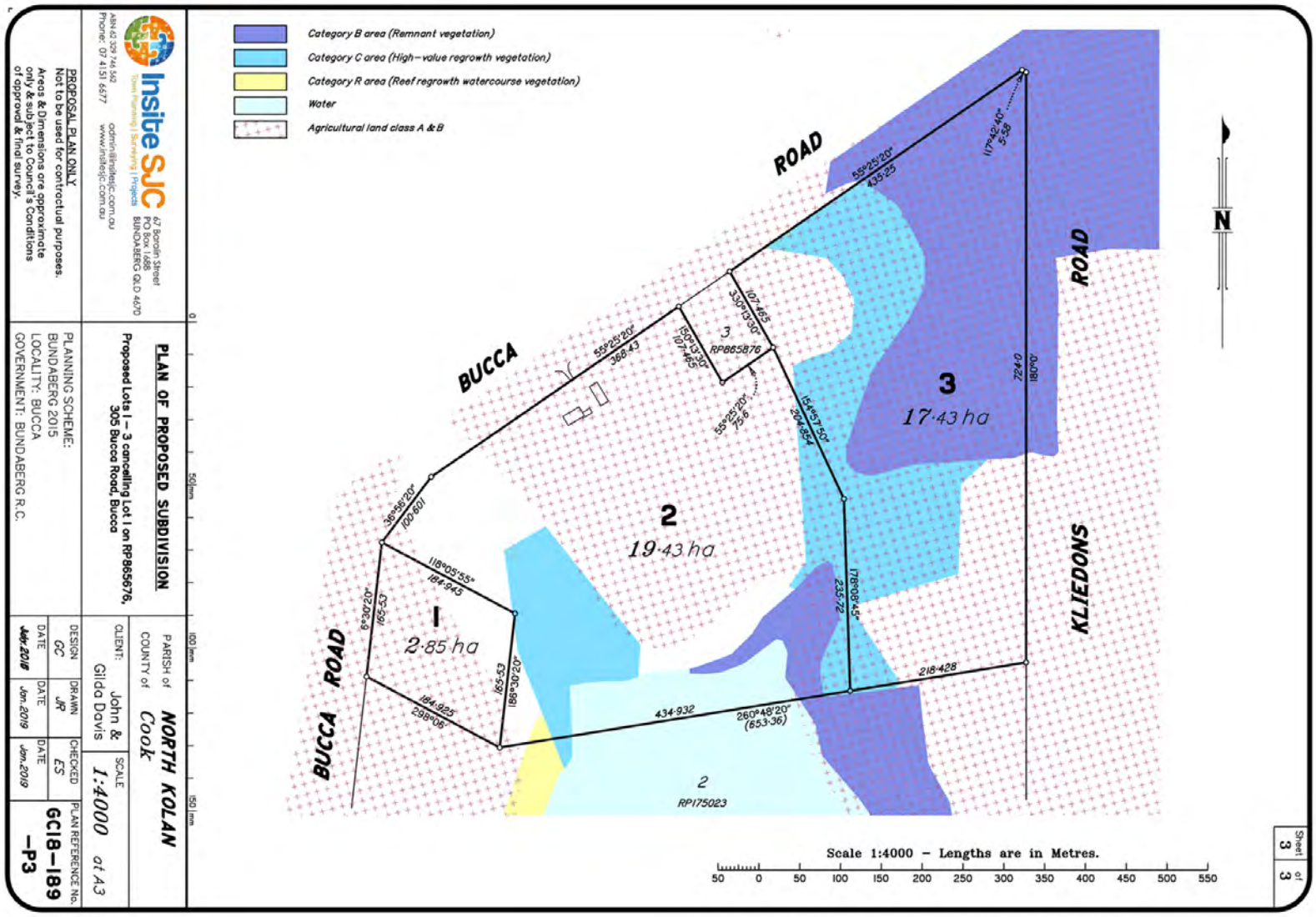
Schedule 1 is an extract from the *Planning Act 2016* that sets down the applicant's appeal rights.


Smiths Crossing Road
Bucca Road
Bucca
Kleidons Road
Meadowvale
BUNDABERG
REGIONAL COUNCIL
Site Plan- 305 Bucca Road, Bucca
Projection: GDA_1994_MGA_Zone_56
Date: 10/6/2019 4:15 PM
Scale 1:8,000.00
on A4 Sheet
© The State of Queensland (Department of Natural Resources and Mines) 2019. Based on Cadastral Data provided with the permission of the Department of Natural Resources and Mines 2019. The information contained within this document is given without acceptance of responsibility for its accuracy. The Bundaberg Regional Council (and its officers, servants and agents), contract and agree to supply information only on that basis.
Author:
While every care is taken to ensure the accuracy of this data, the Department of Natural Resources and Mines and the Bundaberg Regional Council makes no representation or warranties about its accuracy, reliability, completeness or stability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason.
406.40
0
203.20
406.40Meters


Welcome Creek
Fairymead
Moorland
Avondale
Quinns Road
Witts Road
Moorlands Road
Tolls Horsleys Road
Hoods Road
Gooburrum
Gooburrum Road
Moore Park Road
Smiths Crossing Road
Cobbs Road
Rosedale Road
Meadowvale
Subject Site
Hollands Road
Bucca
Heales Road
Blairs Road
Martins Road
Bundaberg North
Oakwood
One Mile Road
Sharon
Gin Gin Road
Ten Mile Road
Manoon Road
Bayliss Road
Unnamed Road No 4500
South Kolan
Barrs Road
Nicolsons Road
Millbank
Avoca
Sharon Road
Svensson Heights
Ussher Road
Branyan
Locality Plan- 305 Bucca Road, Bucca
BUNDABERG REGIONAL COUNCIL
Projection: GDA_1994_MGA_Zone_56
Date: 10/6/2019 4:24 PM
Scale 1:60,000.00
on A4 Sheet
© The State of Queensland (Department of Natural Resources and Mines) 2019. Based on Cadastral Data provided with the permission of the Department of Natural Resources and Mines 2019. The information contained within this document is given without acceptance of responsibility for its accuracy. The Bundaberg Regional Council (and its officers, servants and agents), contract and agree to supply information only on that basis.
While every care is taken to ensure the accuracy of this data, the Department of Natural Resources and Mines and the Bundaberg Regional Council makes no representation or warranties about its accuracy, reliability, completeness or stability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason.
Author:
3,048.00
0
1,524.00
3,048.00 Meters


PLAN OF PROPOSED SUBDIVISION
Proposed Lots 1 – 3 cancelling Lot 1 on RP865678, 305 Bucca Road, Bucca
PARISH of NORTH KOLAN
COUNTY of Cook
CLIENT: John & Gilda Davis
SCALE 1:4000 at A3
PLAN REFERENCE No. GC18–189 –P3
Insite SJC
67 Borolin Street PO Box 1688 BUNDABERG QLD 4670
ABN 42 329 746 562 Phone: 07 4151 6677
admin@insitesjc.com.au www.insitesjc.com.au
PROPOSAL PLAN ONLY
Not to be used for contractual purposes.
Areas & Dimensions are approximate only & subject to Council's Conditions of approval & final survey.
PLANNING SCHEME: BUNDABERG 2015
LOCALITY: BUCCA
GOVERNMENT: BUNDABERG R.C.
DESIGN GC DATE Jan.2019
DRAWN JR DATE Jan.2019
CHECKED ES DATE Jan.2019
BUCCA ROAD
BUCCA ROAD
KLEIDONS ROAD
1 2.85 ha
2 19.43 ha
3 17.43 ha
RP865678
RP175023
N
Scale 1:4000 – Lengths are in Metres.
50 0 50 100 150 200 250 300 350 400 450 500 550
Sheet 1 of 3


Contours – AHD
Approximate only
derived from BRC ALS data
The developer reserves the right to create any lot plus balance (if relevant) in any order provided any infrastructure services required to service the particular lot/s is provided with that lot/s.
BUCCA ROAD
KLIEDONS ROAD
BUCCA ROAD
N
1
2·85 ha
2
19·43 ha
3
17·43 ha
3
RP865876
2
RP175023
Scale 1:4000 – Lengths are in Metres.
PLAN OF PROPOSED SUBDIVISION
Proposed Lots 1 – 3 cancelling Lot 1 on RP865876,
305 Bucca Road, Bucca
PARISH of NORTH KOLAN
COUNTY of Cook
CLIENT: John & Gilda Davis
SCALE 1:4000 at A3
PLAN REFERENCE No. GC18–189 –P3
DESIGN GC
DRAWN JR
CHECKED ES
DATE Jan.2019
PROPOSAL PLAN ONLY
Not to be used for contractual purposes.
Areas & Dimensions are approximate only & subject to Council's Conditions of approval & final survey.
PLANNING SCHEME: BUNDABERG 2015
LOCALITY: BUCCA
GOVERNMENT: BUNDABERG R.C.
Insite SJC
47 Boundary Street
PO Box 1488
BUNDABERG QLD 4670
Phone: 07 4151 6677
Sheet 2 of 3


Category B area (Remnant vegetation)
Category C area (High–value regrowth vegetation)
Category R area (Reef regrowth watercourse vegetation)
Water
Agricultural land class A & B
BUCCA ROAD
KLIEDONS ROAD
1
2·85 ha
2
19·43 ha
3
17·43 ha
RP865876
RP175023
N
Scale 1:4000 – Lengths are in Metres.
PLAN OF PROPOSED SUBDIVISION
Proposed Lots 1 – 3 cancelling Lot 1 on RP865676, 305 Bucca Road, Bucca
PARISH of NORTH KOLAN
COUNTY of Cook
CLIENT: John & Gilda Davis
SCALE 1:4000 at A3
PLAN REFERENCE No. GC18–189 –P3
PROPOSAL PLAN ONLY
Not to be used for contractual purposes.
Areas & Dimensions are approximate only & subject to Council's Conditions of approval & final survey.
PLANNING SCHEME: BUNDABERG 2015
LOCALITY: BUCCA
GOVERNMENT: BUNDABERG R.C.
DESIGN GC DATE July 2018
DRAWN JR DATE Jan 2019
CHECKED ES DATE Jan 2019
Insite SJC
67 Bonsin Street PO Box 1688 BUNDABERG QLD 4670
ABN 42 329 746 542 Phone: 07 4151 6577
admin@insitesjc.com.au www.insitesjc.com.au
Sheet 3 of 3

Item

25 June 2019

Item Number:	File Number:	Part:
N1	.	HEALTH & REGULATORY SERVICES

Portfolio:

Community & Environment

Subject:

Review of Fees for Display of Goods for Sale on Footpath

Report Author:

Gavin Steele, General Manager Community & Environment

Authorised by:

Gavin Steele, General Manager Community & Environment

Link to Corporate Plan:

Our Community - 1.1 Economic growth and prosperity - 1.1.3 Proactively advocate, attract and support economic development related opportunities across the region, specifically targeting priority industries.

Background:

In order to encourage local business activity, improve the vibrancy of core commercial areas (CBD's) and to capitalise on our favourable climate, Council approved a fee waiver for new footpath dining applications and also a 50% reduction in annual licence fees for footpath dining for the 2018/19 financial year. The fees for 2019/20 year reflect a continuation of this discount.

After Council's decision last year there was an enquiry raised by a business owner asking for Council consideration for Display of Goods on Footpath annual licence fees to also be discounted to support local businesses who use Council footpaths for display of their wares.

Advice was provided at the time to the local business owner that the fees for the year had already been adopted and whilst the focus for the current year was making the most of our local climate and encouraging footpath dining as a tourism driver, we would consider the request as part of the 2019/20 budget deliberations for Fees and Charges.

Under Council's *Subordinate Local Law 1.2 (Commercial Use of Local Government Controlled Areas and Roads) 2011, Footpath Dining* and the *Display of Goods for Sale* on a Council owned footpath require approval. These approvals have associated fees that are due annually and are determined by the number of chairs for *Footpath Dining*; or the number of square metres for *Display of Goods for Sale*.

These fees are further categorised into different zones based on their location.

Zone	Footpath Dining Annual Fees (per chair) – less 50%	Display of Good for Sale (per square metre)
Zone A – Bundaberg Core CBD	$41.00	$85.00
Zone B – Bundaberg Frame, Bargara Central, Childers Central & Gin Gin Central CBD	$34.00	$70.00
Zone C – All other areas	$18.00	$48.00

Council's Environmental Health Services maintain nine *Display of Goods for Sale* approvals that will generate $4,610.00 in revenue for the 2019/2020 financial year. However, to provide consistency throughout the approvals under the sub-ordinate Local Law, it is proposed to offer the 50% reduction in fees to *Display of Good for Sale* approval holders. This would reduce the revenue for this prescribed activity to $2,305.00 for the 2019/2020 financial year.

Associated Person/Organization:

Nil

Consultation:

Giselle Parsons – Coordinator Environmental Health Services

Chief Legal Officer's Comments:

There appear to be no legal implications.

Policy Implications:

There appear to be no policy implications.

Financial and Resource Implications:

Based on the current number of Goods on Footpath Licence holders it is anticipated that the 50% discount on Annual Licence fees proposed in this report will result in a reduction of $2,305.00 in revenue for the 2019/20 financial year.

Risk Management Implications:

There appears to be no risk management implications.

Communications Strategy:

Communications Team consulted.

☒ Yes

☐ No

Attachments:

Nil

Recommendation:

That the annual licence fee for Display of Goods on Footpaths for the 2019/20 financial year be discounted by 50% and Council's Register of Fees & Charges be amended accordingly.

Further, that continuation of this discount be considered in future year's budget deliberations.

Item

25 June 2019

Item Number:	File Number:	Part:
O1	.	COMMUNITY & CULTURAL SERVICES

Portfolio:

Community & Environment

Subject:

Regional Arts Development Fund Recommendations for Funding

Report Author:

Rod Ainsworth, Coordinator Moncrieff Entertainment Centre

Authorised by:

Gavin Steele, General Manager Community & Environment

Link to Corporate Plan:

Our Community - 1.2 Safe, active, vibrant and inclusive community - 1.2.3 Support and facilitate community programs, networks, projects and events that promote social connectedness; and active and healthy community life.

Background:

The Regional Arts Development Fund (RADF) is a partnership between the State Government and BRC to deliver arts project funding to the region. The intent is to support professional artists in building the community. This report provides funding recommendations from the Assessment Committee to Council for this additional Round 2 from 2018-19 funding. It should be noted that the RADF Committee applied to Arts Queensland for changes to Round 2 2018-19 in order to ensure that the RADF funding was available to support key initiatives as part of the up-coming Milbi Festival.The amendments proposed by the Committee were approved by Arts Queensland as advised on 27/3/19.

Associated Person/Organization:

Rod Ainsworth, Manager Arts and Cultural Services

Consultation:

One-on-one advice was provided to potential applicants as they requested it either in person or by phone. The round was promoted through a media release, online and social media. Grants are made by application only.

Chief Legal Officer's Comments:

There appear to be no legal implications.

Policy Implications:

Connects to priorities identified in Council's Community Arts Policy OP-3-072 and Arts & Cultural Strategy adopted in December 2018.

Financial and Resource Implications:

The funding is budgeted for in 2018-19 Financial Year based on the funding agreement with Arts Queensland. It has been agreed with Arts Queensland that, while the agreement is financial year, delivery of funding in the region will be based on a calendar year to better respond to the community.

Risk Management Implications:

There appears to be no risk management implications.

Communications Strategy:

Communications Team consulted.

☒ Yes

☐ No

Attachments:

⇩1 List of Sucessfull Applicants

Recommendation:

That Council approve the release of $50,250 Regional Arts Development Funding in accordance with the recommendations of the RADF Advisory Committee as follows:-

1. **Beverly Whip (Recycled Jellyfish) - $1,200**
2. **Kathy Valks (Found, Foraged, Repurposed) - $1,200**
3. **Paul Perry (Makin' Milbis) - $1,500**
4. **Creative Regions Ltd (Cavern of Wonder) - $13,850**
5. **Topology (Video Production Strategic Project) - $22,500**
6. **Dylan Sarra (Emerging Arts Leader Intern) - $10,000**

Further, that the balance of funds available in both funding rounds be made available to support additional strategic programming for the Milbi Festival as the funds were intended. These amounts are $6,150 (General Funding Strand) and $6,100 (Pop Up Arts Festival Strand).

Applicant	Project	Full Cost of Project	Amount Requested	Recommendation	Notes
Beverley Whip	Recycled Jellyfish	$4,289	$2,000	$1,200	**Pop Up Arts Festival Funding Strand:** A free public workshop offered as part of the Art Trail and Family Fun Day being planned for 16 November. The workshop will focus on making jellyfish from recycled products and will include a central workshop to make large jellyfish and additional workshops to make smaller jellyfish for younger people.
Kathy Valks	Found, Foraged, Repurposed	$3,312	$2,000	$1,200	**Pop Up Arts Festival Funding Strand:** A free public workshop offered as part of the Art Trail and Family Fun Day being planned for 16 November. The workshop will focus on making large collaborative clay and woven vessels from found/foraged materials with additional workshops to make smaller woven works for younger people.
Paul Perry	Makin' Milbis	$4,345	$3,030	$1,500	**Pop Up Arts Festival Funding Strand:** A free public workshop offered as part of the Art Trail and Family Fun Day being planned for 16 November. The workshop will focus on making collaborative mosaics from reused crockery. The central workshop will focus on small turtle mosaics of various designs. A more open, accessible workshop option will be made available for people passing by and for younger people who may not wish to engage in making a full turtle mosaic. ***NOTE:*** *Council should note that the small milbi mosaics are proposed to be installed in Bargara in a similar fashion to other small mosaics that have been installed on rocks and other spaces.*

Applicant	Project	Full Cost of Project	Amount Requested	Recommendation	Notes
Creative Regions Ltd	Cavern of Wonder	$47,975	$13,850	$13,850	**General Funding Strand:** The *Cavern of Wonder* is an illuminated, sculptural and digital installation representing an underwater cavern which might be seen in our Southern Great Barrier Reef. The project will engage an architect, a digital producer and 6 local artists. The project has been developed with a broad range of partners. This event will be programmed as part of the Milbi Festival in November.
Topology	Video Production Strategic Project	N/A (Strategic Project approved by Arts Queensland)	$22,500	$22,500	**Strategic Project:** As part of Topology's engagement with the Milbi Festival as company in residence, they will engage local videographers to work with them in five smaller communities towards production of mini festivals in small halls as part of the larger Festival program. These videographers will work over several months in community engagement, storytelling and videography work, connecting with schools, young people and other interested community members who wish to become involved in the project. The outcomes of these workshops will culminate in new film and music works to be presented at the small halls events during the Festival.
Dylan Sarra	Emerging Arts Leader Intern	N/A (Strategic Project approved by Arts Queensland)	$10,000	$10,000	**Emerging Arts Leader Intern:** Dylan was the successful applicant under this strand which will see him contracted as an artist to the Galleries team to work as Intern Curator under Anita Holtsclaw in the development of a new exhibition focusing on Indigenous Artists for the Milbi Festival. The selection committee commended Dylan on his application and his interview which clearly considered the benefits to Council and the Gallery as well as to the community.

Use of Remaining Funds:

The Committee proposes that the balance of funds available in both funding rounds are made available to support additional strategic programming for the Milbi Festival as the funds were intended. These amounts are $6,150 (General Funding Strand) and $6,100 (Pop Up Arts Festival Strand).

Item

25 June 2019

Item Number:	File Number:	Part:
P1	.	WASTE & RECYCLING

Portfolio:

Community & Environment

Subject:

Lease - Cleanaway Operations Pty Ltd - University Drive, Branyan

Report Author:

Gavin Crawford, Manager Waste & Health Services

Authorised by:

Gavin Steele, General Manager Community & Environment

Link to Corporate Plan:

Our Environment - 2.1 Infrastructure that meets our current and future needs - 2.1.4 Manage and maintain Council owned buildings, facilities and assets that support and facilitate social connectedness and community life.

Background:

Transpacific Industries Pty Ltd (ACN 010 745 383) commenced a ten year lease of part of the Waste Reserve operated by the Bundaberg Regional Council on 1 July 2009. The area of land in the lease is approximately 2,843 m^2 in area and is used for the storage and transfer of grease trap/oily waters and waste oils.

Cleanaway Operations Pty Ltd (ACN 010 745 383) wish to renew the lease for the land for a further 3 year period commencing from 1 July 2019. The facility has operated successfully in the location with minimal issues to surrounding land uses. The facility supports a valued commercial service to many Bundaberg Regional businesses.

The initial rent is set at $39,043.40 plus GST which is the current rental fee with a 3% increase applied and the rental fees will increase 3% per annum. The remaining term and conditions of the lease will be similar to the current lease.

Council proposes to apply the exception to the tender/auction requirement contained in section 236(1)(c)(iii) of the *Local Government Regulation 2012* given that the disposal is for the purposes of renewing the lease of land to an existing tenant of the land.

Associated Person/Organization:

Christine Large – Legal Officer, Gavin Crawford Manager of Waste and Health Services

Consultation:

Portfolio Spokesperson: Cr Scott Rowleson

Divisional Councillor: Cr Steve Cooper

Chief Legal Officer's Comments:

Local Government Regulation 2012 - Section 236(1)(c)(iii) provides:

"236 Exceptions for valuable non-current asset contracts

(1) Subject to subsections (2) to (4), a local government may dispose of a valuable non-current asset other than by tender or auction if -

(c) for the disposal of land or an interest in land –

(iii) the disposal is for the purpose of renewing the lease of land to the existing tenant of the land."

Council is able to rely on this exception to enter into a renewal lease with the current tenant without first offering the lease through a tender/auction process.

Policy Implications:

There appear to be no policy implications.

Financial and Resource Implications:

There appear to be no financial or resource implications.

Risk Management Implications:

There appears to be no risk management implications.

Communications Strategy:

Communications Team consulted.

☒ Yes

☐ No

Attachments:

⇩1 Aerial Image of Lease Area

Recommendation:

That:

1. **Council apply the exception contained in section 236(1)(c)(iii) of the *Local Government Regulation 2012*; and**
2. **the Chief Executive Officer be authorised to enter into a three year lease with Cleanaway Operations Pty Ltd (ACN 010 745 383) for Lease B and C on SP207684 being part of Lot 292 on CK2976 and Lot 89 on SP147971.**

Aerial image of lease area

(Blue area)

Item

25 June 2019

Item Number:	File Number:	Part:
R1	.	SPORT, RECREATION, VENUES & DISASTER MANAGEMENT

Portfolio:

Community & Environment

Subject:

Bundaberg Gin Gin Trail Development Plan

Report Author:

Geordie Lascelles, Branch Manager - Parks, Sport & Natural Areas

Authorised by:

Gavin Steele, General Manager Community & Environment

Link to Corporate Plan:

Our Community - 1.2 Safe, active, vibrant and inclusive community - 1.2.1 Provide facilities, parks, open spaces, services, and programs that promote and support our community's safety and physical wellbeing.

Background:

Council received $92,000 (QLD Government) to undertake the feasibility of the Bundaberg – Gin Gin Rail Corridor as a rail trail. Mike Halliburton & Associates were engaged to undertake the study.

The Bundaberg to Gin Gin Feasibility Report was presented to Council on 18 February 2019 recommending that Council notes the contents of the report and that the Bundaberg-Gin Gin Rail Trail is feasible and to undertake the Trail Development Plan.

The Bundaberg to Gin Gin Trail Development Plan Report (draft) has been completed outlining the following:

- Scope of Works
- Trail Design and Development considerations
- Works Lists and Probable costs
- Construction Management
- Implementation Plan
- Corridor Management and Operations Plan

The Executive Summary provides:

- Estimated overall cost (comparison with the Feasibility Report)
- Construction Stages costs

- Bridgework – in particular Splitters Creek Bridge – Report analysis
- Clearing and Fencing
- Landowner concerns (mitigation)

The development of the Rail Trail will attract local users, day trippers and visitors. Under a relatively conservative scenario, the following outcomes are achievable:

- Significant local use – 312,000 local users/year is a reasonable expectation. This will result in an economic injection of $670,800/year;
- Expansion of the existing day tripper market to the region. 3,000 new day trippers/year injection $435,300/year into the regional economy.
- With a new significant recreation attraction, some day-trippers may stay overnight, generating a new income stream. If the trail converted 2,000 day trippers into overnight visitors, this would inject an additional $418,080/year into the regional economy.
- If 5,000 visitors stay an extra day to use the trail (or use a package of trails including the Bundaberg Gin Gin Rail Trail), an additional $1,045,200/year would be injected into the regional economy.
- If 1,000 new visitors come to the region solely (or primarily) to do the trail, an additional $418,080/year would be injected into the regional economy.

Further benefits from developing the trail include:

- Improvements to community connectivity
- Attractive and healthy communities
- Increasing recreational options for local people
- Creating opportunities to build on existing industries and enterprises of the area
- Building on Council's Vision to build Australia's Best Regional Community.

The Development Plan recommends that Council use the Trail Development Plan and associated documentation to assist with future funding opportunities to progress the development of the trail.

Associated Person/Organization:

David Field, Coordinator Sport and Recreation

Consultation:

Gavin Steele, General Manager, Community and Environment, Geordie Lascelles, Manager Parks, Sport and Natural Areas

Chief Legal Officer's Comments:

There appear to be no legal implications.

Policy Implications:

There appear to be no policy implications.

Financial and Resource Implications:

Future budgets may need to reflect matching funding.

Risk Management Implications:

There appears to be no risk management implications.

Communications Strategy:

Communications Team consulted.

☒ Yes

☐ No

Attachments:

⇨1 Bundaberg Gin Gin Rail Trail Development Plan_draft report (reduced).
⇨2 Bundaberg Gin Gin Rail Trail_draft report reduced

Recommendation:

That the Bundaberg Gin Gin Rail Trail Development Plan (attached) be adopted and Council investigate funding opportunities to progress the development of the Rail Trail.

Item

25 June 2019

Item Number:	File Number:	Part:
R2	.	SPORT, RECREATION, VENUES & DISASTER MANAGEMENT

Portfolio:

Community & Environment

Subject:

Nitro Circus Live 2020 Bundaberg

Report Author:

Geordie Lascelles, Branch Manager - Parks, Sport & Natural Areas

Authorised by:

Gavin Steele, General Manager Community & Environment

Link to Corporate Plan:

Our Community - 1.2 Safe, active, vibrant and inclusive community - 1.2.1 Provide facilities, parks, open spaces, services, and programs that promote and support our community's safety and physical wellbeing.

Background:

Bundaberg Regional Council has been approached by Sports Marketing Australia Pty Ltd on behalf of Nitro Circus Touring Australia Pty Ltd to potentially bring the Nitro Circus Live to Bundaberg in 2020 (proposed date – Saturday 28 March 2020).

The 2020 Nitro Circus Live Regional Tour will be different to other previous tours in that each show will have a world record attempt that is unique to that show. This will be part of the promotion for each show and will give the region a unique world record to hold.

Nitro Circus Live transforms MTV's international smash hit TV series into a fully choreographed live spectacular that has captured the imagination of hundreds of thousands of fans around the world. Nitro Circus Live targets the 12 –35 age demographic and blends extreme sports such as freestyle motocross, BMX, skateboarding and crazy stunts with the excitement and raw power of a stadium rock concert.

Crowd Expected: Minimum of 7,000 - 8,000 based on the last regional tour around Australia. 2,660 spectators are expected to be non-locals who travel to the event (based on 38% of spectators from outside the region).

Approximate economic impact based on 2,660 spectators who will travel to the show is $731,500 direct spend (Average local spend of $275 per person, Tourism Research Australia – December 2019).

Duration: Show will take place over a 2.5 hour period in the evening finishing around 9:30pm.

Venue Requirements:

- Secure venue that can be ticketed
- Ability to hold a crowd of 8,000 - 10,000. Please note that Nitro Circus Live only require a small section of the surface and we could allow general admission spectators to sit on the oval around the performance area.
- Seating (grandstand or similar) is not 100% necessary as the action happens in the air and on top of the ramps. Plastic chairs are usually set up on the grass around the performance area. Depending on the venue, grandstand seating is desirable as it can be sold at a premium price by the promoter
- Bump in/Bump out can be done quickly due to the ramps that are used instead of dirt. Approximately 18hrs will be required for bump in and 12 hours bump out.

Support Requested from Council: Cash hosting fee of $10,000 + GST. Free venue hire

- Food and Beverage rights to the promoter
- Waste management
- Traffic management (if applicable)

Benefits to Council:

- Branding through signage at the show and logo recognition,
- Complimentary tickets to the show,
- Access to IP for local promotion,
- Media opportunities with Mayor and athletes,
- Message on the video screen and recognition by the show MC that Council was instrumental in securing the show for the city.

Associated Person/Organization:

David Field, Coordinator Sport and Recreation

Consultation:

Gavin Steele, General Manager, Community and Environment

Chief Legal Officer's Comments:

Council may resolve to provide the funding and should enter into an agreement to determine the terms and conditions of the funding.

Policy Implications:

There appear to be no policy implications.

Financial and Resource Implications:

If approved, the financial sponsorship will need be reflected in the 2019/2020 budget.

Risk Management Implications:

There appears to be no risk management implications.

Communications Strategy:

Communications Team consulted.

☒ Yes

☐ No

Attachments:

⇩1 Ground Protection, Nitro Recommendation, Images

Recommendation:

That Council enter into a Sponsorship Agreement with Nitro Circus Touring Australia Pty Ltd with financial support of $10,000 cash and $5,000 In-kind to host Nitro Circus 2020 - Bundaberg.

13 May 2015

Craig Gibson
Director
Sports Marketing Australia Pty Ltd
(Incorporating Complete Sports Marketing Pty Ltd)
PO Box 170
Coffs Harbour NSW 2450

Dear Craig,

Nitro Circus at Adelaide Oval

The first-ever staging of Nitro Circus at the redeveloped Adelaide Oval – considered the best stadium in Australia – was a resounding success. Held on Easter Thursday, 2 April 2015, the event set a ticket sales and attendance record of 21,400 making it the biggest ever Nitro Circus event in Australian history and the fifth largest Nitro Circus event in the world.

As a world-class stadium that prides itself on an immaculate playing field, is home ground to two Australian Football League teams and three cricket teams, hosts international concerts and a range of other major events each year and is constantly under the media spotlight, it was with a lot of faith, solid research and regular assurances from the organisers that we undertook to host Nitro Circus two days before the first AFL game of the year.

I am thrilled to say that the event was a highlight of the Adelaide Oval major event calendar. The organisation was smooth, professional and without fuss. The Nitro Circus team were clearly dedicated to delivering a quality, safe and highly entertaining event. The team provided thorough documentation well in advance which assisted us with the planning and delivery of the venue. The consideration and respect that was paid to the venue and the turf was well received and the impacts to the turf were negligible. The bump-out was incredibly fast and efficient leaving the stadium clear by the morning after the event.

It is without hesitation that I recommend Nitro Circus as an event to be added to any world-class venue's calendar of events.

Lesley Magill
Manager Major Events

Adelaide Oval SMA Ltd
PO Box 900
North Adelaide SA 5006
Phone: (08) 8211 1100
Email: enquiries@adelaideoval.com.au
www.adelaideoval.com.au
ABN: 46 141 259 538


NITRO CIRCUS
LIVE

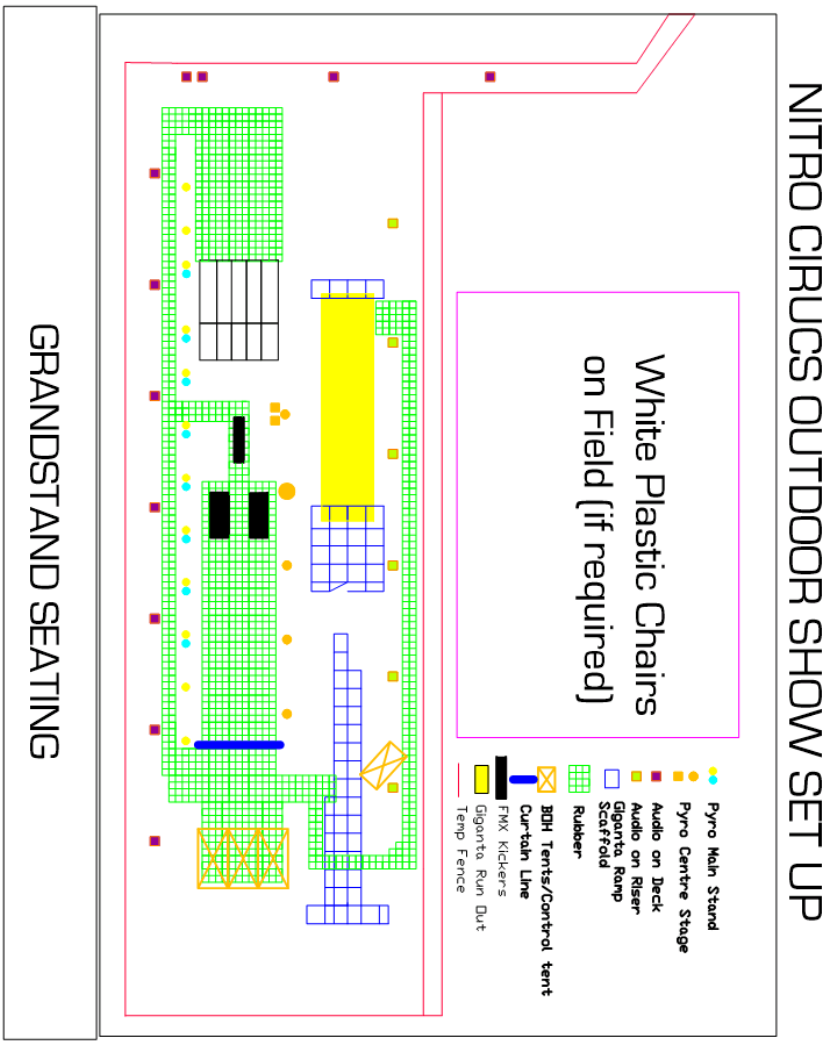

OREGON

NITRO CIRCUS LIVE
GROUND PROTECTION DOCUMENT

This document outlines the methods taken by Nitro Circus Live (NCL) to ensure there is no damage to the turf. The methods employed by have been used at many International sports stadiums, with many grounds hosting International grade Rugby Union, Cricket and Football games within days of the NCL show.

All the methods outlined below work to prevent all forms of turf damage including;
- Compaction
- Discolouration
- Scuffing and tyremarks
- Burning

We are able to provide contact details of referees on request.

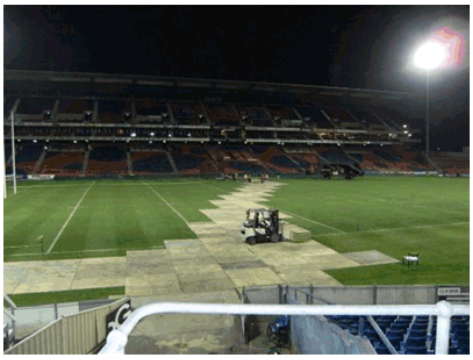

NITRO CIRUCS OUTDOOR SHOW SET UP
White Plastic Chairs
on Field (if required)
Pyro Main Stand
Pyro Centre Stage
Audio on Deck
Audio on Riser
Gigantx Ramp
Scaffold
Rubber
BOH Tents/Control tent
Curtain Line
FMX Kickers
Gigantx Run Out
Temp Fence
GRANDSTAND SEATING

CONSTRUCTION PHASE

During the construction phase there is quite a lot of material that needs to be taken out onto the ground. This done by using a combination of forklifts, tractors (which have a forklift attachment) with turf tyres and hand-pushed pallet jacks with turf tyres.

Tractor
The tractor is driven on the turf in the same way as they are used for ground maintenance. The tractor is only used for carrying lighter equipment so that the impact on the turf is minimal.

Forklift
For the forklift a plywood road is laid wherever needed. There is no time when a forklift will drive directly onto the turf. Over many years we have found the plywood road to be the most effective and versatile material to use. As soon as all the equipment is taken out onto the field the plywood road is taken back up meaning it is only on the field for a maximum of 4-8 hours on the bump-in and 4-6 hours on the bump-out. We put the track as close as possible to the loading dock of the stadium so that there is minimal distance required to be travelled



Pallet jacks
For lighter items or items that can be pushed by hand we use a pallet jack with turf tyres, these are low-pressure tyres similar to those used on a tractor and do not damage the turf in anyway

Protection Under Structures
All of the ramps/landers and assocaited equipement that is built on the field are protected at every point at which they touch the ground. Nothing is ever layed straight onto the truf. All foot plates will have Atlantis drain cell laid onto this turf. This protective matting allows the grass to breath and reduces compaction by speading the load. On top of the protective drain cell are placed the sole boards.

The product used under all the feet is Atlantis Drain cell, which spreads the weight whilst still allowing the grass to breath.

Rubber Matting

A high-density engineers rubber mat protects the area where the bikes ride. The mat also has holes in it to allow airflow and prevent the build up of moisture and temperature. This product has been tested and used extensively throughout international standard stadiums in Australia with no damage ever being done to the truf.

T

Protection under Gigant-a-Ramp Resi-Mat

The material that is on the surface of the Gigant-a-ramp Landing ramp is called Resi Mat. This mat runs off the lander and along the grass for approximately 50feet. This material is a high compound plastic which provides protection for both riders and the turf. Underneath the resi mat is placed terraflor, which ensures that there is ample ventilation, and again reduces compaction on the turf.

Protection under Pyrotechnics

Howards place tarps down (shown in the photo) at the last minute before the show to stop any grass damage around the firing area. There is also terraflor placed underneath these tarpaulins as an extra precaution. We have had no issues with this method in the past. Howards will provide a full document on the type of pyrotechnics and safety procedures for each show.

Item

25 June 2019

Item Number:	File Number:	Part:
R3	.	SPORT, RECREATION, VENUES & DISASTER MANAGEMENT

Portfolio:

Community & Environment

Subject:

Bundaberg Basketball - Bulls Sponsorship

Report Author:

Geordie Lascelles, Branch Manager - Parks, Sport & Natural Areas

Authorised by:

Gavin Steele, General Manager Community & Environment

Link to Corporate Plan:

Our Community - 1.2 Safe, active, vibrant and inclusive community - 1.2.3 Support and facilitate community programs, networks, projects and events that promote social connectedness; and active and healthy community life.

Background:

Bundaberg Basketball provided a sponsorship overview to council on the 27 March 2019 which formally invited the Bundaberg Regional Council to become a major partner and be an integral driver to bring the Queensland Basketball League (QBL) competition back to Bundaberg in 2020.

The proposal to the Bundaberg Regional Council:

- Use (in-kind) of the Multiplex as a quality playing environment for QBL teams including a full entertainment program.
- QBL and Central Queensland Basketball games to be held at the Multiplex
- Host 8 QBL home games (not including finals) – potential crowd of 500+ per game
- Financial contribution
- 5 year agreement
- Signage approval at the venue
- Potential NBL pre-season game

Benefits to the Bundaberg Regional Council:

- Show case Multiplex as a major sporting asset
- Access to Bulls and Bears Players for community/corporate events
- BRC Logo on marketing/media etc

- Tickets to games/promotion

Considerations for Proposal:

- The Multiplex is a popular venue on Friday's and weekends for community events which may be impacted by 8 basketball games
- Bundaberg has two facilities that could cater for the proposed games, Bundaberg Basketball Stadium and Multiplex.

It is recommended that Bundaberg Basketball be supported to get a team into the 2020 QBL and that four (4) games be offered to be hosted at the Bundaberg Multiplex initially, with annual reviews to be undertaken thereafter.

Associated Person/Organization:

David Field, Coordinator Sport and Recreation

Consultation:

Gavin Steele, General Manager, Community and Environment, Geordie Lascelles, Branch Manager Parks, Sport and Natural Areas

Chief Legal Officer's Comments:

Council may resolve to provide the funding and should enter into a sponsorship agreement to determine the terms and conditions of the funding.

Policy Implications:

There appear to be no policy implications.

Financial and Resource Implications:

If approved, the financial sponsorship will need be reflected in the yearly budgets.

Risk Management Implications:

There appears to be no risk management implications.

Communications Strategy:

Communications Team consulted.

☒ Yes

☐ No

Attachments:

⇩1 Bundaberg Basketball Sponsorship Proposal 2020.

Recommendation:

That Council enter into a three year Sponsorship Agreement with Bundaberg Basketball Inc with cash sponsorship and in-kind use of the Bundaberg Multiplex to host four home games with a total sponsorship value of $52,860 to be allocated as follows:

- **Year 1 (2020) - $15,000 cash + $7,620 (In-kind)**
- **Year 2 (2021) - $10,000 cash + $7,620 (In-kind)**
- **Year 3 (2022) - $5,000 cash + $7,620 (In-kind)**

BUNDABERG
REGIONAL COUNCIL

SPONSORSHIP PROPOSAL 2020

BUNDABERG BULLS

BUNDABERG BEARS

Building a foundation for the future
with players for the future

Bundaberg Basketball Incorporate (BBI) would like to formally invite the Bundaberg Regional Council (BRC) to become a major sponsor and be an integral driver to bring the Queensland Basketball League competition back to Bundaberg. This will be a major boost to the Bundaberg economy and will bring the game of Basketball back as a major sporting event for this region.
As a major sponsor of the Bundaberg Bulls and Bears, BRC will be showing that they support growth in the sporting industry in Bundaberg and value its role in developing the younger generation of basketball enthusiasts.

The proposal for the BRC is as follows:

BRC to allow full use of the Multiplex in order to provide a quality playing environment for the QBL teams to play at in order to provide a fully entertaining program (such as seen on television at NBL level games) to encourage 700+ local supporters to attend.

- The QBL and CQBL games to be held at the Multiplex
- No charge for the full use of the Multiplex facilities
- One-time instruction and set up session on how to use the facilities (including chairs, tables and divider stands), new scoreboard and big screen for advertising sponsors.
- Huge promotions to entice Bundaberg locals to attend the games and bring the sense of pride back to the local community. Each game has the potential to draw a home crowd of 700+ people which has huge financial benefits to the region.
- Bundaberg will be required to host 8 QBL home games (not including finals) in-turn bringing a minimum of 500+ people to the region annually. For each home game, players and coaches will travel to Bundaberg requiring accommodation, food and entertainment.
- Possibility of having an NBL pre-season game in Bundaberg due to the relationship Coach Mick Catlin has with the Brisbane Bullets, which utilised correctly, can be a massive promotion for the Bundaberg Region and Bundaberg Basketball.

BRC to sponsor the purchasing of uniforms for the teams which will display the BRC logo.

- Sponsorship of $20K will go towards ensuring that BBI have a professional image to take into the community.
- BRC logo will be situated on all team uniforms

A five year agreement initially with a review every three years.

- Contract to be drawn up by September 2019
- Council liaison officer to guide and support the BBI committee in order to ensure that the organisation is up to the BRC's standard of operation.

Approval to put removable sponsor signage in and around the Multiplex to maximise sponsorship advertising.

Benefits to the BRC

- BRC will be able to utilise the Bulls and Bears players in attending a variety of community events throughout the year and to assist with promoting these events.
- BRC will have their logo on Bundaberg Bulls and Bears uniforms (to be purchased locally), team gear, YouTube Chanel, all social media sights and Bundaberg Basketball website as a major sponsor.
- BRC will receive a certain number of free tickets to each home game (to be negotiated).

BUNDABERG BASKETBALL INC

Thank you

Thank you for considering supporting Bundaberg Basketball by reviewing a sponsorship package to re-enter the QBL in 2020. Our members and players are extremely appreciative of the local community's continued support.

While the Club has worked hard to establish its current position, the challenge is to maintain and improve on our current status. Bundaberg Basketball will be applying for entry into the QBL competition at the end of 2019 for the 2020 season. This will include having not only Bundaberg competing at a higher level, but will also include Bundaberg having 8 home games and 8 away games, which means more exposure for our sponsors.

Any queries please don't hesitate to contact us.

For further details, information and general enquiries
please contact Bundaberg Basketball
BBI Comittee Member
Bulls Head Coach

Michael Catlin

0409 219 224

michaelcatlin@bigpond.com
www.bundabergbasketball.com.au

BUNDABERG BASKETBALL INC.

Item

25 June 2019

Item Number:	File Number:	Part:
R4	.	SPORT, RECREATION, VENUES & DISASTER MANAGEMENT

Portfolio:

Community & Environment

Subject:

Request for Finanical Support for Ms Keziah Mitchell to attend the London International Youth Science Forum

Report Author:

Gavin Steele, General Manager Community & Environment

Authorised by:

Gavin Steele, General Manager Community & Environment

Link to Corporate Plan:

Our Community - 1.3 An empowered and creative place - 1.3.2 Provide leadership in creative innovation and opportunities for learning and community social and cultural development.

Background:

Ms Keziah Mitchell, School Captain at Gin Gin High School, has been successful in being selected as one of 30 students representing Australia at the London International Youth Science Forum (LIYSF) to be held from 24 July to 7 August 2019 at the Imperial College, London.

The LIYSF is expected to attract over 500 students aged 16-21 years from 70 countries for the two week residential program and it incorporates lectures from leading scientists, visits to world class laboratories and universities and cultural exchange.

Ms Mitchell requests Council to consider providing some financial support towards the estimated $7,000.00 required to cover all expenses for the program including travel.

School based activities are not eligible for funding under Council's Community Grants program and as such a decision on financial support requires a Council resolution. Council has previously resolved to provide financial support to local students in cases of exceptional performance where students were representing the region at an international event.

An example of this was last year when Council resolved to provide financial support of $500 per student for three students from Bundaberg High School to attend an international challenge at NASA in the USA. The three students who attended this event ended up winning the challenge.

In line with this precedent and given Ms Keziah Mitchell will also be representing Australia, it is recommended that Council provide financial support of $500 to Ms Mitchell to assist with her costs in attending the 2019 LIYSF to be held in London

Associated Person/Organization:

Nil

Consultation:

Councillors

Chief Legal Officer's Comments:

There appear to be no legal implications.

Policy Implications:

This request for financial assistance is outside Council Policy for Community Grants and therefore requires a Council resolution if it is to be approved.

Financial and Resource Implications:

A total of $500 will be required from the Sport and Recreation budget if approved.

Risk Management Implications:

There appears to be no risk management implications.

Communications Strategy:

Communications Team consulted.

☐ Yes

☐ No

Attachments:

Nil

Recommendation:

That Council provide $500.00 in financial support to Ms Keziah Mitchell, School Captain at Gin Gin High School, towards program expenses and travel to represent Australia at the London International Youth Science Forum to be held from 24 July – 7 August 2019 at the Imperial College London.