SC6.3 Planning scheme policy for development works

SC6.3.1 Introduction

(1) Although drafted as one acceptable solution, the Planning scheme policy for development works also provides flexibility through the application of the relevant standards, policy documents and industry standards. It does not prevent or discourage alternate solutions for individual development sites.

(2) The Planning scheme policy for development works has been prepared as acceptable solutions to the performance outcomes mentioned in the relevant planning scheme codes.

(3) The Planning scheme policy for development works does not provide a solution for every proposal or for every situation encountered. Where the Planning scheme policy for development works does not provide a solution; does not provide an applicable solution; and/or where a different solution is proposed, the applicant or their Consultant must demonstrate that the proposed solution is in accordance with industry standards and is an acceptable solution for the performance outcomes.

(4) Professional judgement should be exercised by the Consultant in the application of this policy and the applicable industry standards. Council encourages consultation with Council officers early in the concept or design stages to facilitate early identification and resolution of matters and issues that may cause delays.

SC6.3.2 Environmental requirements

6.3.2.1 Nuisance

Construction must not cause nuisance to surrounding property owners or residents from water, dust, noise, vibration, odours, pollutants or any other material or action likely to cause nuisance or negative impact on surrounding properties.

6.3.2.2 Stormwater quality

(1) Development must incorporate the principles of Water Sensitive Urban Design (WSUD) in accordance with 'Urban Stormwater—Queensland Best Practice Environmental Management Guidelines' and current industry standards (e.g. Environmental Protection Policy, Water Act, State Planning Policy Queensland Water Quality Guidelines).

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

(3) Refer to Council's Water Sensitive Urban Design Guidelines for procedures and acceptable measures to achieve the water quality objectives.

6.3.2.3 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'.

(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; and

(c) Naturalised Plants in South East Queensland (Baitinoff and Butler – Queensland Herbarium, 2002).

(3) Trees requiring pruning are to be pruned in accordance with 'AS4373 - Pruning of amenity trees'.

(4) Planting with species which will be of short or long term detriment to existing vegetation must be avoided.

6.3.2.4 Landscaping environmental design standards

(1) Refer to **Appendix SC6.3B (Recommended plant list)** for the recommended plant lists for both introduced landscape treatments and land rehabilitation and bush regeneration projects.

(2) 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.

6.3.2.5 Construction and environmental management plan

(1) The preparation of a Construction and Environmental Management Plan (CEMP) may be required where the proposed development may have significant environmental impacts during construction phase of the development.

(2) A CEMP is to be prepared by a competent person in accordance with the following guidelines. Where vegetation and/or ecological areas are to be impacted on, a Fauna and Flora management Plan may also be required as part of the CEMP. As a minimum, the CEMP is to include the following:-

(a) a description of environmental issues and potential impacts;

(b) the proposed construction vehicle transport route(s); measures to ensure the safe and orderly ingress and egress of vehicles to and from the site;

(c) proposed location/s of all areas on-site and/or off-site to be used for staff and contractor parking (including owner's permission where on other land), storage of materials and soil stockpile handling;

(d) measures to discourage staff and contractor parking in designated visitor parking spaces within adjoining properties;

(e) the means by which the direction of traffic flows to and from parking areas will be controlled both on-site and off-site to ensure no damage is caused to Council's road infrastructure in any adjoining streets including the pavement, kerb, channel, crossovers to adjoining properties and verges;

(f) measures to ensure the appearance of building works or materials do not detrimentally affect surrounding amenity;

(g) proposed location/s and dimensions of site sheds and facilities (in the form of a scaled site plan);

(h) lawful source and disposal sites of any fill or excavated material;

(i) wheel wash-down and shake-down grids for construction vehicles at all access points to prevent the tracking of material onto roadways;

(j) measures to maintain the existing drainage pattern to avoid adverse impact on the downstream and upstream environments;

(k) measures to maintain water quality in accordance with the general environmental values and water quality objectives outlined in the in State Planning Policy;

(l) measures to minimise unacceptable risk to existing land uses from flooding and erosion;

(m) sediment retention measures to mitigate the transportation of sediment to the sensitive downstream aquatic environment;

(n) measures to control dust and other emissions such as fumes, sediments, light or odour to avoid nuisance;

(o) measures to manage and monitor groundwater levels and impacts of the development, including the management of impacts on groundwater levels affected by the creation of onsite detention systems and the mobilisation of acidic groundwater from dewatering;

(p) measures to minimise the leakage of existing dam/s and the prevention of the upward mobilisation of native saline groundwater which could lead to high salinity of the land and dam/s;

(q) acid sulfate soil management, in accordance with the results of an acid sulfate soils investigation under State Planning Policy;

(r) measures to mitigate noise impact on neighbouring activities;

(s) measures to minimise the spread of weeds to and from the site;

(t) contingency plans for emergency procedures for environmental incidents;

(u) measures for the periodic review of environmental performance and continual improvement including record keeping; and

(v) if required as part of the CEMP, a Vegetation and Fauna Management Plan (VFMP) is to include:-

(i) a site plan (minimum A3 size) which covers the area to be developed and areas designated for open space, park and drainage;
(ii) identify the proposed location for site access, vehicle parking and waste stockpile areas during vegetation removal works and how they will be managed to avoid impacts on vegetation or habitat areas to be protected;
(iii) a tree survey plan and schedule to identify the number and species of trees to be removed from the site;
(iv) a habitat tree plan to identify the trees that are to be retained;
(v) a plan of any areas to be affected by cut and fill associated with Civil Works, and identification of trees in proximity to affected areas;
(vi) details of the use of a wildlife spotter catcher to provide wildlife preservation efforts for significant species and general biodiversity during the disturbance of habitats associated with vegetation clearing;
(vii) details of works to comply with *Australian Standard – AS4970 – 2009 Protection of trees on development sites* to ensure the long term survival of all vegetation to be protected, and *AS4373-1996 – Pruning of amenity trees*;
(viii) outline the method of tree removal and disposal to minimise soil disturbance;
(ix) a weed control program with specific measures to ensure that declared weeds are controlled during and after construction and that weed seed does not leave the site;
(x) provisions for monitoring and control;
(xi) identify how the existing wildlife values on the site will be protected during the clearing and construction operations;
(xii) identify the provision for and location of nesting boxes where required to offset the loss of habitat, including a suitable mix appropriate for a range of native wildlife; and
(xiii) outline a proposal to offset the loss of native vegetation where required in accordance with the **Planning scheme policy for environmental and vegetation offsets**.

SC6.3.3 Earthworks

6.3.3.1 General

(1) All earthworks must be undertaken in accordance with 'AS3798 - Guidelines on earthworks for commercial and residential developments'.

(2) The minimum fall on Residential allotments including development in the low density residential zone must be 1 in 200 towards the street or other legal point of discharge.

(3) Rural Residential allotments <1ha must be free draining with a minimum grade of 1 in 400.

(4) The minimum fall on Commercial or Industrial allotments must be 1 in 400 toward the street or other stormwater legal point of discharge.

6.3.3.2 Haul routes

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

(2) 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 existing pavements along the haul route are unable to support the vehicle loadings. Alternatively, restoration and/or rehabilitation may be required where haulage vehicle have damaged the pavement or other infrastructure.

6.3.3.3 Batter treatments for Council owned or controlled land

(1) Cut and fill batters must not exceed 1 in 4, unless specified elsewhere in this Policy.

(2) 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.

(3) Where access to reserves maintained by Council a minimum 1m verge between the boundary and the top of batter must be provided.

6.3.3.4 Retaining walls and structures for reconfiguring a lot works

(1) All retaining walls and structures must be designed and constructed in accordance with 'AS4678 Earth-retaining structures'.

(2) Retaining walls that are not works for reconfiguring a lot are defined as building works in the *Planning Act 2016.* They are not operational works and must be assessed under the provisions of the *Building Act 1975.*

(3) In residential areas, where an acceptable outcome can be demonstrated with Performance outcome - PO1 of the Works, services and infrastructure code, retaining walls 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.

(4) All retaining walls and structures abutting existing or proposed road reserves, parkland or other public owned lands must be contained within the proposed allotments.

(5) Retaining walls and structures 1 metre or higher, subject to surcharge loadings or within 1.5 metres of a building or other retaining wall must be certified by a RPEQ.

(6) Where water, sewer, or stormwater infrastructure is located adjacent to proposed retaining walls, the retaining walls, including footings, shall be designed to ensure no load is imparted on the aforementioned infrastructure and that such horizontal clearance exists to allow excavation of the infrastructure to effect repair and/or maintenance without compromising the structural integrity of the retaining structure.

SC6.3.4 Roads and pathways

6.3.4.1 Road and pathway design requirements

General

(1) Roads, streets, car parking and pathways must be in accordance with the following documents except where otherwise specified in this document:-

(a) Institute of Public Works- Queensland Division (IPWEAQ) - Queensland Streets May 1993 (including amendments);

(b) Austroads Publications;

(c) Australian Roads Research Board – Sealed Local Roads Manual;

(d) Queensland Department of Transport and Main Roads – Road Planning and Design Manual;

(e) Queensland Department of Transport and Main Roads – Manual of Uniform Traffic Control Devices;

(f) Queensland Department of Transport and Main Roads 'Pavement Design Manual';

(g) Fraser Coast Road Hierarchy in **Appendix SC6.3A**; and

(h) Fraser Coast Regional Council Walk and Cycle Plan.

Street system

(2) The layout, configuration and geometry of new local urban streets including Commercial and Industrial streets must be in accordance with Queensland Streets.

(3) Higher order roads and consideration of existing roads within the Fraser Coast Regional Council area must be in accordance with the Fraser Coast Road Hierarchy.

(4) The safety of all road, pathway and open space users including cyclists and pedestrians is a primary consideration. Development must incorporate 'crime prevention through environmental design' (CPTED) principles, the latest standards and best practice to ensure that a safe environment is created in finished products.

(5) Development in greenfield areas must provide for suitable infrastructure for public transport to service the development.

(6) The development layout must, where possible, avoid the creation of narrow reserves between allotments for pedestrian or drainage purposes.

(7) Where a development has a lot yield or density lower than anticipated, new roads shall be sized to accommodate the highest lot yield or densities indicated in the planning scheme.

(8) For staged developments, temporary cul-de-sac turning heads must be provided. The standard of construction must be equivalent to the road that it connects to. Council may consider alternatives in special circumstances.

Table SC6.3.4.1a Road classifications and design criteria[1]

Development category[2] or zone	Road type	Max. no. of lots/ dwellings	Min. road reserve width (m)	Pavement width (m) (nom. kerb lines or pavement edge)	Edge treatment	Min. verge width (m)	Design speed
Rural/Rural residential lots ≥ 1ha	Access street	Up to 75	20.0	5.5	1.0m sealed shoulders	5.0	45
	Minor collector	Up to 100	20.0	6.0	1.0m sealed shoulders	5.0	60
	Major collector	Traffic impact assessment required	21.0	7.0	1.0m sealed shoulders	5.0	80min
Rural residential lots < 1ha	Access place	Up to 15	15.0	5.5	Mountable kerb	3.0	45*
	Access street	Up to 75	15.0	7.5	Mountable kerb	3.0	45*
	Minor collector	Up to 240	20.0	7.5	Mountable kerb	4.5	60*
	Major collector	Up to 1,000	21.0	10.0 m or 11.0m (bus route)	Barrier kerb	4.5	80min
Urban residential	Access place	Up to 15	15.0	5.5	Mountable kerb	3.0	30*
	Access street	Up to 75	15.0	7.5	Mountable kerb	3.0	30*
	Minor collector	Up to 300	17.0	7.5	Mountable kerb	3.5	40*
	Major collector	Up to 1,000	21.0	10.0 m or 11.0m (bus route)	Barrier kerb	4.5	80min
Industrial and commercial	Access street	Traffic impact assessment required	21.0	12.0	Barrier kerb	4.5	60min
	Collector	Traffic impact assessment required	23.0	14.0	Barrier kerb	4.5	60min
Rural	Rural arterial road	Traffic impact assessment required	24.0	7.0	1.5 m sealed shoulder	4.5	80min
Urban	Controlled distributer	Traffic impact assessment required	22.0	15.0	Barrier kerb	3.5	80min
	Traffic distributer type 2 (2 lane)	Traffic impact assessment required	24.0	2 x 5.5m	Median + barrier kerb	4.5	80min
	Traffic distributer type 1 (4 lane)	Traffic impact assessment required	40.0	2x8.5	Median + barrier kerb	8.5	80min
* Indicates maximum design speed in accordance with Queensland Streets							

Notes—

[1] Design standards may vary to be consistent with the existing infrastructure in the surrounding area and must transition into existing infrastructure adjoining the development. The minimum road reserve may need to be widened to accommodate alternative treatments, such as swale drains.

[2] The development categories used in this table are described in **Appendix SC6.3F (Glossary)**.

[3] Please contact Council for typical cross-sections of other road types identified in the road hierarchy.

[4] Minimum verge widths are subject to provision of services in accordance with the standard drawings.

Kerb and channel

(9) Kerb and channel grades must not be less than 0.5%, unless otherwise approved.

(10) Where pavement edge restraints are to be used adjacent to open space areas or in conjunction with swale drains, Kerb Type M should be used to prevent water ponding within the road. Refer to Standard Drawing No. FC-220-01.

(11) Where roads terminate at adjoining property boundaries the termination point must end with kerb and channel at the pavement limits.

Pathways

(12) Footpaths must be 1.3 metres in width. The widths of pathways, including shared paths and bikeways, are subject to individual assessment.

(13) Pathway surfaces should be non-slip. Clay pavers or other products that require regular surface treatment should be avoided.

(14) Pathways between allotments should be avoided but where provided must have a minimum reserve width of 3m and be constructed for the full width of the reserve.

(15) Infill development must provide a pathway fronting the development (or equivalent in an approved location), where identified in Council's local path network.

(16) Infill development may also be required to construct pathways where they are identified in the Plans for Trunk Infrastructure or are in a Principal, District, Local or Neighbourhood centre zone, High density residential precinct (HDR1), Mixed use zone or Specialised centre zone.

(17) Pathways in greenfield developments should generally be provided on new roads as shown in the following table:-

Table SC6.3.4.1b Pathway requirements

Development category[1]	Road type	Footpath (FP) Share bikepath (SP)
Urban residential	Access place	Nil[2]
	Access street	Nil[2]
	Minor collector	FP one side
	Major collector	SP one side[3]
Industry	Access street	Nil[2]
	Minor or major collector street	FP one side
Commercial	Access street	FP both sides[4]
	Minor or major collector street	

Notes—

[1] The development categories used in this table are described in **Appendix SC6.3F (Glossary)**, if not elsewhere defined in the Fraser Coast Planning Scheme.

[2] Except where a link is identified in Council's adopted Walk and Cycle Strategy or other plan adopted by Council for the provision of pedestrian or cycle facilities or to provide connectivity between pathways.

[3] The road pavement for Major Collectors in some cases may provide for informal bikepaths subject to Council approval. Where the bikeway component is approved on road, a 1.5 metre wide footpath shall be constructed on one side.

[4] A full width construction may be required in the Principal Activity Centre zone, Mixed use (Precinct MU1 – Urangan harbour) zone or High density residential (Precinct HDR1 – Hervey Bay Tourism Nodes).

(18) Considering the above table, a local walk and cycle plan to the satisfaction of Council must be developed for greenfield developments demonstrating the internal travel routes and connections to trunk infrastructure. A local walk and cycle plan can be diagrammatic but must be fit for purpose and identify travel paths to internal and external destinations and links to external infrastructure. The approved walk and cycle plan will inform the pathway infrastructure to be constructed.

Access and internal driveways

(19) Driveway crossovers are to be in accordance with the standard drawings.

(20) Driveway crossovers are to be provided from the kerb and channel or edge of pavement to property boundary for all commercial or industrial development prior to the commencement of the use.

(21) Driveway crossovers are to be provided from edge of pavement to property boundary for all residential development prior to endorsement of the survey plan, where kerb and channel is not provided.

(22) Driveway crossovers are to be provided from edge of pavement to property boundary for all residential development prior to occupation of the dwelling, where kerb and channel is provided.

(23) In all Residential, Commercial and Industrial developments where access is through an easement or access handle, a driveway must be constructed for the full length of the access handle or easement, including the driveway verge crossover.

(24) Internal driveways and access ways for Commercial, Industrial, Multi-unit or Group Title development must be in accordance with 'AS2890- Parking Facilities'. For private low density residential developments, the internal road system must be in accordance with Queensland Streets.

(25) 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, unless an alternate solution is approved by Council..

Truncations

(26) Truncations and road dedications to property boundaries must be provided as required to maintain minimum verge and roadway widths at any point, particularly at traffic calming devices, intersections, bends, cul-de-sac heads and roundabouts.

The minimum verge width around truncations must be 4.5m.

Public transport

(27) Development in greenfield development areas must provide suitable infrastructure to provide for a bus service to all parts of the development. The bus routes must consider existing and future development to maximise the efficiency of these routes. The bus route must consider the following:-

(a) an efficient bus route that also provides a maximum walking distance of 400 metres to the furthest dwelling;

(b) bus stops at regular intervals along the route; and

(c) bus stop shelters at locations where large numbers of travellers are likely to embark or disembark.

Note—the main purpose is to ensure that if or when a bus service is provided, the road system has been constructed to provide that service. The development must also design for bus stops and shelters but may not necessarily need to construct this infrastructure unless a bus service has been planned to service this development in the short term.

Roundabouts

(28) The central island of the roundabout is to be stencilled concrete or concrete with artificial turf (Enduroturf bliss or approved equivalent) glued to the concrete surface. The outer portion of the central island for oversized vehicle movements and splitter/median islands shall be stencil crete concrete, running bond brick pattern, coloured terracotta. Landscaping must not be used unless approved by Council.

6.3.4.2 Carpark requirements

(1) Off street car parks must be in accordance with 'AS2890 - Parking Facilities' except as otherwise specified in this document.

(2) The use of small car spaces will only be accepted where:-

(a) there is a localised design constraint that cannot be overcome; and

(b) where there has not been a reduction in the number of car parks (as required by planning scheme policies and codes) as offset by a contribution, cross utilisation or other reason; and

(c) the total number of small spaces does not exceed 7% of the total number of spaces.

6.3.4.3 Pavement design

Minimum pavement requirements

Table SC6.3.4.3 Pavement and surfacing requirements

Development category[1] or zone	Road type	Pavement design traffic 'equivalent standard axles' (ESA's)	Min. sub base course CBR	Min. base course CBR	Min. pavement thickness (including surfacing)[1]	Pavement surfacing
Rural/Rural residential Lots > 1ha (where no edge restraint)	Access Street	$1.0x10^5$	60	80	225	Prime & 2 Coat Seal [2]
	Minor Collector Street	$3.0x10^5$	60	80	225	Prime & 2 Coat Seal [2]
	Major Collector	$1.0x10^6$	60	80	225	Prime & 2 Coat Seal [2]
Rural residential lots < 1ha	Access Street/Place	$1.0x10^5$	60	80	255	30mm AC
	Minor Collector	$3.0x10^5$	60	80	255	30mm AC
Urban residential	Access Street/Place	$1.0x10^5$	60	80	255	30mm AC
	Minor Collector	$4.5x10^5$	60	80	255	30mm AC
	Major Collector	$1.0x10^6$	60	80	275	45mm AC
Commercial & industrial	Access street	$2.5x10^6$	60	80	275	45mm AC
	Collector	$7.5x10^6$	60	80	275	45mm AC
Arterial and distributer roads	Sub-arterial Main Street Traffic Distributer Controlled Distributer Rural Arterial[3]	Traffic Loading Assess Required Minimum $1.0x10^7$	60	80	275	45mm AC

Notes—

[1] The minimum pavement thickness does not include subgrade replacement materials. Testing and reporting on pavement construction shall be in accordance with Section SC6.3.12.

[2] A minimum 30mm AC surfacing is required for intersections, cul-de-sacs and other areas with the potential for high turning loads.

[3] Major Rural Roads may alternatively be constructed using a 2 coat seal subject to Council approval.

Subgrade replacement material

(1) Where subgrade replacement materials are proposed, a suitable material with a 'California Bearing Ratio' (CBR) value of not less than 15 must be used (subject to the requirements of 'Australian Roads Research Board' (ARRB) beneath the base and sub base courses to make up the total required pavement depth.

Surface treatments

(2) Bitumen seal:-

(a) bitumen seal must consist of a prime coat and two seal coats and be applied in accordance with Austroads Publications.

(3) Asphalt:-

(a) asphalt surfacing must be in accordance with dense graded 10mm nominal (AC10 or HM10); and

(b) pavements must be primed as for bitumen seals and tack coated immediately prior to laying asphalt.

Pavement widening

(4) The pavement design for road widening must be in accordance with **Table SC6.3.4.3 (Pavement and surfacing requirements)**. However, where the design pavement depth is less the existing pavement, the existing pavement depth must be adopted to provide for pavement drainage.

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

Subsoil drainage

(6) Subsoil Drainage must be provided in the following locations:-

(a) under all kerb, kerb and channel or edge restraint;

(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; and

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

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

(8) Subsoil drainage must ensure free draining outlet conditions. This may require extending subsoil drainage outside the development limits.

Pavement Service Crossings

(9) Under road boring must be used to cross existing roads unless otherwise approved by Council.

SC6.3.5 Stormwater

6.3.5.1 General

(1) All stormwater drainage must be in accordance with the Queensland Urban Design Manual (QUDM) except where outlined in this document.

(2) All structures and materials must be in accordance with Australian Standards, manufacturers' specifications and industry standards.
The design of the stormwater system must accommodate the future developed peak flows from the development site and upstream catchments based on land uses and development potential indicated in the Planning Scheme.

(3) The design must ensure that continuity with adjoining developments is taken into consideration.

(4) Development in flood prone areas or in overland flow paths must demonstrate no adverse impacts external to the development site.

(5) Development must demonstrate no loss of flood storage (expect where specified in the planning scheme codes). Any cut earthworks to offset loss of storage must be in close proximity to the filling works.

(6) Provision must be made for climate change in accordance with State Government Policies and/or current industry practices.

6.3.5.2 Flood studies

(1) Flood studies, modelling and reporting must be in accordance with QUDM as modified by this section.

(2) Hydrographs will be produced from the 'Intensity-Frequency-Duration' (IFD) diagram for Fraser Coast using the Laurensen Method (refer to "Australian Rainfall and Runoff"). Derivation of hydrographs using the rational method must not be used.

(3) Parameters to be used in the model unless agreed otherwise are as follows:-

Surface condition	Rainfall losses
Impervious surfaces	I.L. 0mm C.L. 0mm/hr
Pervious surfaces (non-sand)	I.L. 15mm C.L. 2.5mm/hr
Pervious surfaces (sand)	I.L. 35mm C.L. 2.5mm/hr

(4) An electronic copy of flood modelling used must be provided to Council with the submission of the reports.

(5) The natural and existing surface formations used in hydraulic modelling must be derived from ground survey or from Light Detection and Ranging (LIDAR) mapping and verified for accuracy.

6.3.5.3 Catchment hydrology

Coefficients of runoff

Table SC6.3.5.3 Percentage impervious by zone

Zone		% Impervious
Low density residential[1]	Lots ≤ 450m^2	70%
	Lots 450 - 1,000m^2	60%
	Lots 1,000m^2 - 2,000m^2	40%
Medium density residential		80%
High density residential		90%
Principal centre		100%
District centre		100%
Local centre		100%
Neighbourhood centre		100%
Low impact industry		100%
Medium impact industry		100%
High impact industry		100%
Waterfront and marine industry		100%
Sport and recreation		10%
Open space		10%
Environmental management and conservation		0%
Community facilities		100%
Emerging community		Refer to equivalent use rates
Limited development (constrained land)		Refer to equivalent use rates
Mixed use		100%
Rural		2%
Rural residential	≥ 4,000m^2	20%
	≥ 1ha	15%
	≥ 2ha	10%
Specialised centre		100%
All roads		90%

Note—

[1] Where a development has a lot yield or density lower than anticipated, drainage infrastructure shall be sized to accommodate the highest lot yield or densities indicated in the planning scheme.

[2] All % impervious values exclude roads.

Rainfall intensity – frequency – duration data (IFD)

(1) Site specific Intensity - Frequency - Duration (IFD) data is to be obtained from the Bureau of Meteorology on the following link:-

http://www.bom.gov.au/hydro/has/cdirswebx/cdirswebx.shtml

6.3.5.4 Drainage systems

Design criteria

(1) The design criteria for average recurrence intervals for major and minor systems are outlined in the following table:-

Table SC6.3.5.4a Design criteria for major and minor systems

(i) MAJOR SYSTEM DESIGN ARI (years)	**100**	
(ii) MINOR SYSTEM DESIGN ARI (years)		
Development Category or Zone		
Commercial		10
Industrial		2
Medium and High density residential zones		10
Low density residential zones		2
Rural residential		2
Private open space		1
Major road	Kerb and channel flow	10[1]
	Cross drainage (culverts)	50[2]
Minor road	Kerb and channel flow	Refer to development category
	Cross drainage (culverts)	10[2]
Footpaths and shared bike paths	All	2
Recreation parks	All	1 Refer to section 6.3.7 for Flood Immunity Requirements

Notes—

[1] The design ARI for the minor drainage system in a major road shall be that indicated for the major road, not that for the Development Category of the adjacent area.

[2] Culverts under roads should be designed to accept the full flow for the minor system ARI shown. In addition the designer must ensure adequate public safety controls (e.g. d*V product) exist and that the nominated Major Storm flow does not cause unacceptable damage to adjacent properties, or adversely affect the use of the land. If upstream properties are at a relatively low elevation, it may be necessary to install culverts of capacity greater than that for the minor system ARI design storm to ensure unacceptable flooding of upstream properties does not occur. In addition, the downstream face of causeway embankments may need protection where overtopping is likely to occur.

[3] The terms used in this table are described in the Glossary and Table 7.02.2 of the *Queensland Urban Drainage Manual*.

Flood hazard

Table SC6.3.5.4b Degree of flood hazard by land use

Land use	Appropriate degree of hazard				
	Nil	**Low**	**Medium**	**High**	**Extreme**
Open Space/recreation	✔	✔	✔	✔	✔
Clubs/non-habitable buildings associated with enjoyment of public open space	✔	✔	✔	✔	
Commercial/industrial	✔	✔	✔		
Residential	✔	✔	✔		
Public Institutions	✔	✔	✔		

Car parking below buildings	✔	✔	✔	✔	
Caravan Parks	✔	✔	✔		
Council Offices	✔	✔			
Schools	✔	✔			
Homes for the elderly	✔	✔			
Hospitals	✔	✔			
Emergency services buildings	✔	✔			
Police/fire stations	✔	✔			
Museums/libraries/archives	✔				
Telephone exchanges	✔				

Table SC6.3.5.4c Defined degree of flood hazard

Criteria	Degree of flood hazard			
	Low	**Medium**	**High**	**Extreme**
Wading ability	Children and the elderly could wade (velocity x depth product <0.25)	Fit adults can wade (velocity x depth product <0.4)	Fit adults would have difficult wading (velocity x depth product <0.6)	Wading is not an option
Evacuation distances	<200m	200 - 400m	400 – 600m	>600m
Maximum flood depths	<0.3m	<0.6m	<1.2m	>1.2m
Maximum flood velocity	<0.4m/s	<0.8m/s	<1.5m/s	>1.5m/s
Typical means of egress	Sedan	Sedan early, but 4WD or trucks later	4WD or trucks only in early stages, boats, helicopters	Large trucks, boats, helicopters
Timing (requires evacuation times to be established in Council's counter disaster plan)	Ample for flood forecasting. Warning and evacuation routes remain passable for twice as long as evacuation time	Evacuation routes remain trafficable for 1.5 times as long as the evacuation time	Evacuation routes remain trafficable for only up to minimum evacuation time	Insufficient evacuation time

Allotments and building pads

(2) Flood levels for development in high and medium storm tide hazard areas as indicated in the coastal protection overlay must be in accordance with the current storm tide study adopted by Council. A Freeboard component is not required when filling to the storm tide level. Refer to Table **SC6.3.5.4e** for Lot and building pad immunity by use type.

(3) Flood levels for development must be in accordance with the flood level adopted by Council. Localised flood studies to determine a flood level for a particular development may be approved if the study provides a more accurate assessment of the flood level than the level adopted by Council.

(4) Council may require a localised flood study to demonstrate that a proposed development does not cause adverse impacts and that freeboard and flood free access requirements have been achieved.

(5) Where storm tide and terrestrial flooding impact on a development site, the higher fill level must be adopted.

(6) Vehicle and pedestrian access from the road to the building pad must be available in a 1 in 100 year ARI storm event. Depth of inundation of the evacuation route must not exceed 300mm.

(7) The minimum lot and building pad immunity and freeboard requirements for development impacted by terrestrial flooding are outlined in **Table SC6.3.5.4d** below:-

Table SC6.3.5.4d Terrestrial flooding - Lot and building pad immunity and freeboard by use type

Zone or use		Designated flood event	% of lot above the designated flood event	Minimum surface level
Low density residential		1 in 100 year ARI	For lots < 2,000m^2, 100% of lot For lots ≥ 2000m^2, min 1,200m^2 of lot	DFE + 300mm
Medium density residential, High density residential		1 in 100 year ARI	100% of Lot	DFE + 300mm
Rural residential	Lots < 1ha	1 in 10 year ARI	100% of Lot	DFE + 300mm
		1 in 100 year ARI	Min 1,200m^2	
	Lots ≥ 1ha	1 in 2 year ARI	100% of Lot	
		1 in 100 year ARI	Min 1,200m^2	
Principal centre District centre Local centre Neighbourhood centre		1 in 100 year ARI	Area dependant on the use	DFE + 300mm
Low impact industry Medium impact industry High impact industry		1 in 100 year ARI	Area dependant on the use	DFE + 300mm
Waterfront and marine industry		1 in 100 year ARI	Area dependant on the use	DFE + 300mm
Sport and recreation		1 in 5 year ARI	Area dependant on the use	DFE + 300mm
		1 in 100 year ARI	Area dependant on the use	
Open space		1 in 5 year ARI	Area dependant on the use	DFE + 300mm
		1 in 100 year ARI	Area dependant on the use	
Environmental management and conservation zone		N/A	N/A	N/A
Emerging community		1 in 100 year ARI	Area dependant on the use	DFE + 300mm
Limited development (constrained land)		1 in 100 year ARI	Area dependant on the use	DFE + 300mm
Mixed use		1 in 100 year ARI	Area dependant on the use	DFE + 300mm
Rural		N/A if no dwelling component	N/A if no dwelling component. 1,200m^2 of lot if containing a dwelling component.	DFE + 300mm
Specialised centre		1 in 100 year ARI	Area dependant on the use	DFE + 300mm
Community facilities		1 in 200 year ARI	Area dependant on the use	DFE + 300mm
Retirement village, equipment and vehicle depot, warehouse, childcare centre, minor public utility, police/fire stations, places of refuge, hazardous chemical storage (e.g. fuel depot)		1 in 200 year ARI	Area dependant on the use	DFE + 300mm
Medical centre, hospital, disaster management facilities, power stations, major electrical infrastructure, water and sewerage treatment plants, major telecommunications infrastructure		1 in 500 year ARI	Area dependant on the use	DFE + 300mm

Notes—

[1] Commercial or Industrial development subject to flooding from the Mary River or Storm Surge may be approved below the nominated flood level depending on the use and measures to mitigate flood impacts and damage.

(8) The minimum lot and building pad immunity requirements for development impacted by storm tide flooding are outlined in **Table SC6.3.5.4e** below:-

Table SC6.3.5.4e Storm tide flooding - Lot and building pad immunity by use type

Zone or use		% of lot above the minimum surface design level	Minimum surface level
Low density residential		For lots < 2,000m^2, 100% of lot For lots ≥ 2000m^2, min 1,200m^2 of lot	DSTE
Medium density residential, High density residential		100% of Lot	DSTE
Rural residential	Lots < 1ha	100% of Lot Min 1,200m^2	DSTE
	Lots ≥ 1ha	100% of Lot Min 1,200m^2	
Principal centre District centre Local centre Neighbourhood centre		Area dependant on the use	DSTE
Low impact industry Medium impact industry High impact industry		Area dependant on the use	DSTE
Waterfront and marine industry		Area dependant on the use	DSTE
Sport and recreation		Area dependant on the use	DSTE
Open space		Area dependant on the use	DSTE
Environmental management and conservation zone		N/A	N/A
Emerging community		Area dependant on the use	DSTE
Limited development (constrained land)		Area dependant on the use	DSTE
Mixed use		Area dependant on the use	DSTE
Rural		N/A if no dwelling component	DSTE
Specialised centre		Area dependant on the use	DSTE
Community facilities		Area dependant on the use	DSTE
Retirement village, equipment and vehicle depot, warehouse, childcare centre, minor public utility, police/fire stations, places of refuge, hazardous chemical storage (e.g. fuel depot)		Area dependant on the use	DSTE
Medical centre, hospital, disaster management facilities, power stations, major electrical infrastructure, water and sewerage treatment plants, major telecommunications infrastructure		Area dependant on the use	DSTE

Design tail water level

(9) The minimum design tail water level for pipe and channel outfalls to tidal waters for a minor storm event is Mean High Water Springs (MHWS).

(10) The minimum design tail water level for pipe and channel outfalls to tidal waters for a major storm event is Highest Astronomical Tide (HAT).

(11) The minimum design tail water level for connections to existing or future trunk infrastructure is to be based on Council's adopted drainage study reports where applicable.

Outlet levels

(12) All stormwater pipe systems must be free draining.

(13) For Tidal outlets (excluding controlled tidal lakes), the outlet invert level must not be less than Mean Sea Level (MSL).

(14) For permanent water bodies, the outlet invert level must be at or above the permanent water level.

Flow paths and pipework between allotments

(15) Flow paths and underground drainage between allotments should be avoided where possible. However, where they are provided, the reserve width must be not less than 4 metres and must be finished to minimise the maintenance burden on Council.

Pipe grade and flow velocity

(16) Minimum and maximum pipe grades must be in accordance with QUDM Table 7.12.1 - *Acceptable pipe grades for pipes flowing full*.

(17) Minimum and maximum flow velocities must be in accordance with QUDM Table 7.11.1 - Acceptable *flow velocities for pipes and box sections.*

(18) Open channels with a bed width greater than 1.5 metres and with longitudinal grades less than 1% must be provided with a low flow system. Typical systems include concrete invert "v-drains" or low-flow pipe systems with surcharge pits.

(19) Detention Basins and Bio-Retention Basins must be designed to include access ramps for cleaning and maintenance purposes. The access ramps must be designed to accommodate Council's maintenance equipment and service vehicles with appropriate driveway connections to the adjoining road reserve and or access easement.

(20) Bio-retention Basins must be designed with free draining outlets to the legal point of discharge. The sublayer drainage material must be designed to be free of tidal inundation and/or salt water intrusion.

(21) Detention Basins must have a minimum floor grade of 1% to achieve free draining conditions to the basin outlet structure.

6.3.5.5 Structures and materials

Stormwater pipe and box culvert materials

(1) Saltwater resistant concrete pipes and culverts must be used where the invert level is below HAT, or in areas suspected of having a high salt content.

(2) All pipes 300mm in diameter or greater must be a minimum of Class 3 Reinforced Concrete Pipes (RRJ) or an approved equivalent.

(3) Where minimum cover cannot be achieved, a higher pipe class capable of supporting increased loads must be used in accordance with manufacturers specifications.

Stormwater pits

(4) Gully pit tops must be precast with heavy duty lintels.

(5) Grates must not be used within road travel lanes or pathways.

(6) All hinged grates must be bolted down.

Field inlet pits

(7) Field inlets in parks, road reserves and drainage reserves must be raised grate or dome top inlets.

(8) In parks and areas subject to pedestrian traffic, raised grate inlet pits must be identified by an arch rail 1.2m high with reflectorised marking.

(9) All field inlets must have a minimum 300mm wide concrete apron surrounding the pit.

6.3.5.6 Inter-allotment drainage

(1) Urban residential lots that cannot wholly drain to the street must be provided with a Level III allotment drainage system.

(2) Commercial, industrial and multi-unit residential development with a land area exceeding 1,000m^2 must be provided with Level V drainage system.

(3) All commercial and industrial allotments and high or medium density residential allotments in excess of 1,000m^2 must be provided with an inter-allotment drainage system suitable for a Level V drainage system.

(4) Stormwater connections from commercial, industrial or multi-unit residential developments to Council's stormwater systems must be to an existing gully pit or field inlet to provide for surcharge flows. Where a relief structure is not available, a field inlet must be provided inside of the property at the closest point to the connection. Any surcharge from this pit must be directed towards the 1 in 100 year ARI flow paths.

(5) Inter-allotment drainage pits for residential lots must be sized according to the following table:-

Maximum Depth to Invert (mm)	Boxes – Internal Dimensions (mm)
< 900	600 x 600
> 900 < 1,200	600 x 900
>1,200	Standard 1,050mm dia manhole with 600 x 600 grate

Easements must be provided over all inter-allotment drainage systems within private property.

(6) A drainage easement shall be wide enough to contain the pipeline and provide working space on each side of the pipeline for future maintenance activities.

(7) Easements are to be provided in private property over pipe systems and overland flow paths. The minimum width of easement will generally be as follows:

Pipe Diameter	Easement Width
Interallotment drainage (up to 300mm pipe maximum)	1.5m
Pipes 375mm and 450mm	2.0m

(8) Where level 3 inter-allotment drainage is unable to be provided for infill development, alternate solutions that address adverse impacts on downstream properties may be considered subject to approval by Council. For the purpose of this clause, “infill development” is development on land no more than 2000sq.m in size.

6.3.5.7 Culverts

(1) Culverts must be extended clear of the standard road verge formations to maintain provision for services on standard alignments.

(2) Where multiple culverts are proposed, the invert of one culvert must be 100mm lower than the remaining culverts to provide for low flows and fauna movements.

SC6.3.6 Water supply and sewer

6.3.6.1 Preliminary

From a future planning perspective, where staged development is proposed, an overall concept plan and servicing strategy for the whole development must be provided before servicing of the first stage is considered. In this way, consideration can be given to future strategic planning/infrastructure requirements and possible adjoining developments. In addition, mains must be designed to provide for flows to/from contributing catchments and be extended to the boundaries of a proposed development to enable future extension.

A lot layout must be provided in a single AutoCAD layer (MGA zone 56) with a Development Application for Reconfiguring a Lot application.

6.3.6.2 Sewerage Code of Australia – Local requirements

(1) Sewerage infrastructure must be designed in accordance with the Gravity Sewerage Code of Australia, WSA 02-2014, Version 3.1, published by the Water Services Association of Australia, with the following local requirements. These requirements are in addition to those of the Gravity Sewerage Code except that where there is an inconsistency; **Table SC6.3.6.2 (Local changes to WSA 02- 2014version 3.1)** must take precedence over the Gravity Sewerage Code.

Local design requirements

Table SC6.3.6.2 Local changes to WSA 02-2014 version 3.1

Section	Local changes
0.1	The sewer reticulation system is defined as sewers of DN 150mm and DN 225mm, used to collect and convey sewage from properties. Design requirements for sewers larger than DN 225mm must be confirmed prior to design.
	Prior to proceeding with the design, the Consultant must obtain 'As Constructed' sewer information relevant to the proposed development and confirmation in writing of the approved point(s) for connection to existing sewerage infrastructure.
5.1 5.2.3	Where land terrain permits to gravitate sewage flow, gravity sewer must be provided as the conforming form of sewer. When the provision of gravity sewer is impractical, alternative forms of sewer proposal including pressure sewer may be discussed with Council to ensure any special requirements are identified and understood by all parties. Approval of alternative sewers shall be at Council's discretion.
3.3.2	Design average dry weather flow (ADWF) must be 450 L/ED/day. Refer to Table SC6.3.6.5 Water and Sewerage Demand for Development to determine the demand to be applied to a particular development.
	The peak instantaneous wet weather flow must be in accordance with the Queensland Department of Energy and Water supply "Planning Guidelines for Water Supply and Sewerage, April 2014" and in no case will be less than 5 x ADWF for catchments up to 1,000 ED. For larger catchments the peaking factor should be obtained from the Service Provider.
5.2.4.5 5.2.4.1 5.2.8	An easement must be provided over all sewers on Commercial and Industrial properties in favour of Council.
	Where a sewer main is constructed in private property (other than Commercial and Industrial) on an alignment other than the alignment specified in Clause 5, an easement in favour of Council must be provided over the sewer.
	The sewer easement must extend at least 2.0 metres each side of the sewer main or to the property boundary, whichever is the closer.
	Where a sewer main invert level is more than 4 metres below finished surface level a registered easement extending 3 metres each side of the sewer must be provided.

<table>
<tr><th>Section</th><th>Local changes</th></tr>
<tr><td>5.2.3 & 5.2.4.1</td><td>A sewer may cross a road at an angle to reduce the number of manholes to be used, provided house connections are not located within the road pavement.</td></tr>
<tr><td>5.2.4.1</td><td>Sewerage reticulation mains within private property must be located on an alignment 1.0 (+/- 0.2) metres from side or rear boundaries or 1.5 (+/- 0.2) metres from the front boundary. Sewers must not be located closer than 1.0 (+/- 0.2) metres from the property boundary.</td></tr>
<tr><td>5.2.4.4</td><td>Where residential lots are 600m2 or less sewers shall only be located within the front building setback.</td></tr>
<tr><td>5.3.8</td><td>Horizontal curves are not permitted in gravity sewers. Any change of direction must occur at a manhole.</td></tr>
<tr><td>5.4.4</td><td>Clearances between sewers and other underground services must be in accordance with the Gravity Sewerage Code of Australia WSA 02-2014.</td></tr>
<tr><td>2.3.4</td><td>The maximum allowable catchment that may be serviced by gravity reticulation sewers is:
<table>
<tr><th>Pipe nominal diameter</th><th>Maximum allowable equivalent dwellings (ED)</th></tr>
<tr><td>DN150</td><td>300</td></tr>
<tr><td>DN225</td><td>800</td></tr>
<tr><td>DN300</td><td>1,600</td></tr>
</table>
Sewers must be designed to accommodate a fully developed upstream catchment. For reconfiguring of lot development, sewers must be extended to the boundary of the adjoining upstream allotment to facilitate future extensions. For Material Change of Use development applications requiring a sewer extension, the sewer must be extended to the upstream boundary where external works for that development would otherwise need to be reconstructed or extended inside of the property where no other reasonable options are available external to the development site.
Note: The intention of this clause is to provide connectivity and ensure a logical and efficient roll out of sewer infrastructure without having to reconstruct the Service Provider's assets or be affected by property ownership and access issues. Additional Consideration of infill development will apply to accommodate existing constraints.</td></tr>
<tr><td rowspan="2">5.5.7.1</td><td>Note that the minimum grades specified in the Gravity Sewerage Code are the as-constructed grades. Design grades must allow for construction tolerances in accordance with the construction specification. The desirable minimum grade for a DN150 sewer is 0.67% (1:150).</td></tr>
<tr><td>Note that the minimum grade of any sewer with a developed catchment of ≤ 10 ED is 1.0%, and the minimum grade of property connection sewers is 1.2% for a DN150 connection and 1.65% for a DN100 connection.</td></tr>
<tr><td>7.1</td><td>The only maintenance structures approved are Maintenance Holes (manholes, MHs), except at the upstream terminus of a DN150 sewer which is less than 35 metres from a manhole in which case a Terminal Maintenance Shaft or IO may be used provided there are no more than 2 properties connected to the sewer, and the minimum grade of the sewer is 1.2%.</td></tr>
<tr><td rowspan="2">5.6.1</td><td>Sewers and house connections must be constructed at the shallowest possible depth such that:-
▪ All properties can be completely serviced;
▪ The minimum depth to the invert of a sewer at a manhole must be 1.2m;
▪ The minimum cover must be 600mm for all sewers located within private property unless specified otherwise by the manufacturer; and
▪ There is specified clearance from all other services.</td></tr>
<tr><td>The maximum depth of a sewer main from finished surface level to invert is 5.0 metres.</td></tr>
<tr><td>6.3.3</td><td>Sewers include the IO interface within the serviced property, extended to no more than 200mm below the finished ground surface. The buried IO must be clearly marked at the surface for asset data collection and location purposes, and marked below ground with a buried metallic disc or similar that can be located with a metal detector.</td></tr>
<tr><td>5.7</td><td>Combined house drains are not permitted. Shared road crossing connections are</td></tr>
</table>

Section	Local changes
	permitted as per WBW Standard Drawing.
6.3.2	The maximum spacing between consecutive manholes is 90 metres.
	Where maintenance holes are not located within a road reserve they must be finished 100mm to 150mm above the finished surface level.
7.6.3	All manholes greater than 3m from the surface level to the outlet invert shall be cast insitu.

Other sewerage requirements

(2) A concept plan and servicing strategy for the whole development must be provided before servicing of the first stage will be considered. In this way, consideration can be given to future strategic planning/infrastructure requirements and possible adjoining developments.

(3) Where a development has a lot yield or density lower than anticipated, sewerage infrastructure shall be sized to accommodate the highest lot yield or densities indicated in the planning scheme.

6.3.6.3 Sewerage Pumping Station Code of Australia – Local requirements

Sewerage infrastructure must be designed in accordance with the Sewerage Pumping Station Code of Australia, WSA 04-2005, Version 2.1, published by the Water Services Association of Australia, with the following local requirements. These requirements are in addition to those of the Sewerage Pumping Station Code except that where there is an inconsistency; **Table SC6.3.6.3 (Local changes to WSA 04-2005 version 2.1)** must take precedence over the Sewerage Pumping Station Code.

Local design requirements

Table SC6.3.6.3 Local changes to WSA 04-2005 version 2.1

Section	Local changes
3.7	Sewer pumping stations must be situated on their own Lot with the ownership of the lot transferred to Council. The lot shall have minimum dimensions of 10m x 10m and have legal access.
	Sewer pumping stations are to be constructed as per Wide Bay Water Standard Drawings

Other sewerage pumping station requirements

(1) Sewerage pumping stations shall be designed to comply with conditions 1 and 2 of 'Code of Environmental Compliance for Certain Aspects of Sewerage Treatment Activities (ERA 63) Version 1.

(2) Rising mains shall not be located within private property.

6.3.6.4 Water Supply Code of Australia – Local requirements

(1) Water supply infrastructure must be designed in accordance with the Water Supply Code of Australia, WSA 03-2011, Version 3.1, published by the Water Services Association of Australia, with the following local requirements. These requirements are in addition to those of the Water Supply Code except that where there is an inconsistency these requirements take precedence over the Water Supply Code.

Local design requirements

Table SC6.3.6.4 Local changes to WSA 03-2011 version 3.1

<table>
<tr><th>Section</th><th>Local changes</th></tr>
<tr><td>1.2.5.1</td><td>The designer must provide the Service Provider with the details of the development so that acceptable connection points and the other design parameters listed in the Water Supply Code can be determined.</td></tr>
<tr><td>1.2.3</td><td>A concept plan and servicing strategy for the whole development must be provided before servicing of the first stage will be considered. In this way, consideration can be given to future strategic planning/infrastructure requirements and possible adjoining developments.</td></tr>
<tr><td rowspan="2">2.3.1</td><td>An average day demand of 590 litres per ED (Equivalent Dwelling) will be adopted for design purposes</td></tr>
<tr><td>To calculate the demand for individual developments, refer to Table SC6.3.6.5– Water and Sewer Demand for Development.</td></tr>
<tr><td>2.4</td><td>The area supplied by a single water main must not exceed 100 ED. Once the supply area exceeds 100 ED an alternative feed main must be provided to limit the number of consumers that will be without water in the event of a mains failure or repair.</td></tr>
<tr><td>3.1.6.1</td><td>Designs for water mains DN300 or larger must be subject to specific criteria nominated by the Service Provider.</td></tr>
<tr><td>3.1.3</td><td>Reticulation mains must be sized in accordance with the following table, which has been derived from Table 3.1 in the Water Supply Code:-
<table>
<tr><th rowspan="2">Nominal diameter</th><th colspan="5">Maximum capacity of main (single direction feed only)</th></tr>
<tr><th>Residential (lots)</th><th>Residential (lots) Identified areas ≥2,000m^2</th><th>Rural Residential (lots)</th><th>General Industrial, Commercial (ha)</th><th>High usage Industrial, Commercial (ha)</th></tr>
<tr><td>DN100</td><td>40</td><td>30</td><td>10</td><td>-</td><td>-</td></tr>
<tr><td>DN150</td><td>160</td><td>140</td><td>125</td><td>23</td><td>-</td></tr>
<tr><td>DN200</td><td>400</td><td>350</td><td>290</td><td>52</td><td>10</td></tr>
<tr><td>DN250</td><td>650</td><td>570</td><td>470</td><td>84</td><td>24</td></tr>
</table>
Note that DN225 diameter pipe is not approved for water supply works.</td></tr>
<tr><td>3.1.5</td><td>Allowance for fire flows must be in accordance with the Queensland Department of Energy and Water “Planning Guidelines for Water Supply and Sewerage, April 2014”.</td></tr>
<tr><td rowspan="2">4.1</td><td>Minimum pressure class for pipes and fittings must be Class 16.</td></tr>
<tr><td>Ductile Iron Cement Lined (DICL), Mild Steel Cement Lined (MSCL) or Fibre Reinforced Plastic (FRP) pipes must be used for mains DN375 and above.</td></tr>
<tr><td rowspan="3">5.4.2
5.4.9</td><td>All water main crossings of new and existing roads must be constructed with a minimum of 600mm clearance (or as otherwise specified by the manufacturer) between the crown of the pipe and the road subgrade. The use of DICL pipe for road crossings is not mandatory, but if used, must be bedded in accordance with the requirements for a flexible pipe.</td></tr>
<tr><td>All water main crossings > DN200 must be DICL unless approved otherwise.</td></tr>
<tr><td>Brass or stainless steel indicator discs inscribed ‘W’ for water service conduits and ‘WM’ for water mains must be placed in the face of the kerb above the main. Where no kerb is provided a 150mm long cup head bolt must be driven into the pavement after bitumen sealing is completed.</td></tr>
<tr><td>5.7</td><td>A minimum of DN150 water main must be provided on both sides of the road for industrial/commercial developments.</td></tr>
<tr><td>5.10</td><td>Where a dead end is unavoidable (including temporary arrangements), the water main must be laid across the entire frontage of the last property ending with a flanged valve strapped down to a thrust block followed by a flanged hydrant tee assembly and flanged end plate, so that scouring, chlorination and possible future extension without interruption to supply for existing customers can be undertaken.
For cul-de-sacs WBWC Standard Drawing (Drawing No. WM01) must be used.</td></tr>
</table>

Section	Local changes
5.11.1	In low density residential or rural residential developments where a reticulation main is laid on only one side of the street, service conduits must be constructed across the street by the developer. The conduits must ▪ be at least DN100 Class 12 uPVC or equivalent approved by Council; ▪ be located from the Real Property boundary to the opposite Real Property boundary; ▪ extend 300mm behind the back of the kerb or beyond the concrete pathway where provided; ▪ have a minimum cover of 500mm (or as specified by the Manufacturer) below the pavement subgrade and be aligned where possible with the crown of the water main; and ▪ be located to avoid conflicts with electrical conduits and pillars. There must be a minimum horizontal clearance of 600mm between water and electricity conduits.
5.6	No other service must share a trench with the water main without the horizontal and vertical minimum separation distances specified in the Water Supply Code.
4.8.7 7.5.1	Polyethylene (PE) sleeving is required for all DICL and must be installed in accordance with the manufacturer's recommendations.
4.6.3	Joint deflections must be designed to no greater than the manufacturer's recommendations, or DICL bends must be provided at every change of direction. Where practical, bends must be located opposite property boundaries.
8.11.2	Hydrant posts are not required.
4.3.6	Unless approved otherwise by Council, all water main tees DN200 and above must have a flanged branch with a flanged sluice valve attached.
8.8.8	Hydrant spacing must be 80 metres maximum in all areas.
8.8.9	Hydrants must be located in line with the boundaries between properties
5.2	On request design long sections must be provided for all water mains, except DN63 HDPE Cul-de-sac loops, showing the design cover for the main and all service crossings/clearances. Consideration must be given to the vertical alignment of the main in the location of hydrants.
5.4.2 5.4.9	Where crossings are made using Polyethylene (PE) pipe, the connection between the PE and PVC or DICL shall be made in accordance with WBWC standard Drawing No. WM02.

Other water supply design criteria

(2) A concept plan and servicing strategy for the whole development must be provided before servicing of the first stage will be considered. In this way, consideration can be given to future strategic planning/infrastructure requirements and possible adjoining developments.

(3) Water mains must not be located within private property.

(4) Where a development has a lot yield or density lower than anticipated, Water Supply infrastructure shall be sized to accommodate the highest lot yield or densities indicated in the planning scheme.

(5) Water mains must be designed to accommodate a fully developed upstream catchment. For reconfiguring of lot development, water mains must be extended to the boundary of the adjoining upstream allotment to facilitate future extensions. For MCU applications requiring a water main extension, the water main should be extended to the upstream boundary where external works for that development would otherwise need to be reconstructed.

Note—the intention of this clause is to provide connectivity and ensure a logical and efficient roll out of water main infrastructure without having to reconstruct assets. Additional consideration of infill development will apply to accommodate existing constraints.

(6) Each property must have only one connection point. Any redevelopment of a property must amalgamate all connections and decommission any unused services.

(7) A separate water service must be provided for each allotment. Community title and multi-unit development must be serviced from a single metered water service (parent meter) before connecting to the internal private reticulation mains. Sub meters must be provided to all units or separate occupations in accordance with the Queensland Plumbing and Wastewater Code.

(8) Water meters and internal private mains must be located within the property being serviced. Where a property is not serviced by an existing main, a main must be extended to service the development and to provide a connection point "on and within the property".

(9) All water meters used must be a product approved by the Service Provider.

(10) Metered water services shall be sized less than the Service Providers infrastructure they are connecting to. Dedicated property Fire Services shall be sized no greater than the Service Providers infrastructure they are connecting to.

6.3.6.5 Water and sewer demand

Table SC6.3.6.4 Water and sewer demand for development

Use		Unit	Sewerage demand (ED)	Water demand (ED)
Accommodation building		Bed	0.25	0.25
Agriculture		First principles assessment		
Animal husbandry		First principles assessment		
Aquaculture		First principles assessment		
Bed and breakfast		Accommodation room	0.25	0.25
Car park (if no amenities)			NIL	NIL
Caravan park	Tent	Site	0.50	0.33
	Van	Site	0.83	0.50
Caretaker's residence		As per multiple residential		
Cemetery		First principles assessment		
Child care centre		Staff & pupils	0.15	0.15
Community care centre		Bed	0.25	0.25
Primary school		Staff & pupils	0.06	0.05
Secondary school		Staff & pupils	0.10	0.08
Tertiary institution		Staff & pupils	0.10	0.08
Hospital		Bed	1.50	1.25
Place of worship		100m^2 (GFA)	0.25	0.15
Correctional facility		Bed	0.33	0.33
Display home		As per house or unit		
Equipment and vehicle depot		100m^2 (GFA)	0.25	0.25
Extractive industry		First principles assessment		
Funeral parlour		100m^2 (GFA)	0.25	0.15
Home activity		As per house	1.00	1.00
Home business		100m^2 (GFA)	0.15	0.15
House		Detached dwelling or allotment	1.00	1.00
Indoor recreation		100m^2 (GFA)	0.50	0.33
Salvage yard		First principles assessment		
Industry		100m^2 (GFA)	0.40	0.25
Intensive animal keeping		First principles assessment		
Licensed premises		100m^2 (GFA)	0.70	0.50
Local shop		100m^2 (GFA)	0.70	0.40
Mechanical repair workshop		100m^2 (GFA)	0.40	0.25
Medical centre		100m^2 (GFA)	1.00	0.75

Use	Unit	Sewerage demand (ED)	Water demand (ED)
Minor public utility	First principles assessment		
Motel	Unit	0.50	0.50
Multiple residential	1 bed	0.50	0.45
	2 bed	0.70	0.60
	3 bed	0.80	0.70
Office	100m^2 (GFA)	0.25	0.15
Outdoor recreation	First principles assessment		
Landscaping supplies	100m^2 (GFA)	0.40	0.25
Retail plant nursery	First principles assessment		
Vehicle sales premises	100m^2 (GFA)	0.15	0.15
Outdoor sales premises	First principles assessment		
Park facility	First principles assessment		
Passenger terminal	First principles assessment		
Public utility	First principles assessment		
Relocatable home park	Site	0.70	0.70
Fast food store	100m^2 (GFA)	3.30	2.50
Restaurant	100m^2 (GFA)	1.70	1.30
Retirement village	Self-contained dwelling unit	0.53	0.53
Roadside stall	First principles assessment		
Service station	Site	1.50	1.33
Industrial retail outlet	100m^2 (GFA)	0.20	0.15
Major shopping development	100m^2 (GFA)	0.13	0.10
Retail showroom	100m^2 (GFA)	0.20	0.15
Liquid fuel depot	100m^2 (GFA)	0.40	0.25
Industry - Special use	First principles assessment		
Telecommunication facility	First principles assessment		
Veterinary facility	100m^2 (GFA)	1.00	0.75
Warehouse	100m^2 (GFA)	0.15	0.08
Other uses	First principles assessment		

SC6.3.7 Landscaping and embellishments

6.3.7.1 Preliminary

(1) This section is only applicable for landscaping and embellishments that will be transferred to Council's ownership or control, unless otherwise referenced in the planning scheme or a condition of approval.

(2) All design and documentation submitted to Council for approval is to be prepared by a suitably qualified or experienced person dependent on scale and intensity of the development.

(3) Parks and recreational areas should be developed to allow for minimal maintenance inputs and with a view to long-term economic and environmental sustainability. To achieve this, the following principles should apply;

(a) Minimise turfed / grassed areas that require regular mowing / irrigation;
(b) Plantings should focus on locally reliable and acclimatised drought tolerant species;
(c) The use of bollards to prevent unauthorised vehicle or pedestrian access should be minimised. Traffic regulation should be achieved through the use of dense vegetation planting or other natural barriers (slope, creek lines, rock outcrops etc.);
(d) Playground / exercise equipment should consist of elements with minimal moving components in order to minimise maintenance requirements; and
(e) Garden beds and horticultural features should be constructed and planted with appropriate species to minimise the need for on-going horticultural maintenance requirements, i.e. no requirements for regular maintenance hedging / trimming / pruning of vegetation. Garden beds are to be heavily mulched with an approved mulching material to conserve water, minimise erosion and reduce weed growth.

6.3.7.2 General

(1) The Consultant must investigate and research the following parameters when preparing a landscape design:-

(a) surrounding native flora and fauna;
(b) existing site vegetation;
(c) site soil types and characteristics;
(d) topography and slope stability;
(e) natural drainage patterns and catchments including overland flow paths;
(f) local climatic conditions;
(g) rainfall (annual precipitation and seasonal dominance or intensity);
(h) temperature (average);
(i) solar radiation (intensity and seasonal directional patterns);
(j) wind (prevailing direction and expected velocity);
(k) surrounding human influences and cultures;
(l) dominant local treatments and styles that have been developed or introduced;
(m) current Council and State Government requirements; and
(n) special or additional requirements of applicants and intended users of the site/landscape.

(2) The Consultant must ensure the design performs the functions of the intended use and purpose of the landscape. Functional elements include:-

(a) traffic flows (pedestrian, cyclist and vehicular);
(b) focus on site features and visual outlooks;
(c) provision of shade and shelter;
(d) retardation of undesirable visual or acoustic elements;
(e) provision of reasonable access to services for maintenance purposes;

(f) the creation of space and comfort;
(g) the provision of recreational facilities;
(h) the encouragement and nurture of environmental attributes;
(i) the promotion of aesthetic enhancement;
(j) short and long term maintenance requirements;
(k) incorporating CPTED principles; and
(l) disability access.

(3) When assessing plant species the following plant characteristics must be researched, in particular:-

(a) use of local native rather than exotic species;
(b) dimensions at maturity and potential conflicts with roads, pathways and community infrastructure;;
(c) rate of growth;
(d) form or pattern of growth;
(e) cultural and maintenance requirements;
(f) compatibility with aforementioned site, environmental and climatic elements;
(g) root growth and potential conflicts with adjacent roads, pathways, water, sewer mains and other underground infrastructure;
(h) potential to drop limbs, leaves, flowers, seed and fruit;
(i) shading effect of canopy on surrounding plants, grassed areas or buildings;
(j) ability to regenerate or spread;
(k) characteristics (size, shape and colour) of plants' aesthetic features: trunk, leaves, flowers, fragrance, etc;
(l) any restrictive characteristics - poisonous, noxious, allergenic, spiky or prickly, etc; and
(m) availability in local nurseries or from bush regeneration groups such as Landcare, Greening Australia, etc.

(4) Where it is proposed to grass an area steeper than 1 in 6, or where access is difficult or restricted, it must be demonstrated that the area can be efficiently and safely maintained using standard Council plant and equipment. Otherwise, the area shall be stabilised and landscaped in accordance with an approved landscaping plan to eliminate ongoing mowing..

Minimum planting requirements

(5) Planting material must comply with the following minimum pot sizes at the time of establishment:-

Plant type	Minimum pot size
Feature trees	100L
Street trees	45L
Other trees	45L
Shrubs	200mm
Ground covers	140mm
Macrophytes	Tube stock
Revegetation works	Tube stock

(6) Existing trees and shrubs over 4.0m from any building work or approved car parking area or access thereto must be retained, where possible (subject to species and condition), and included in a landscape plan. Appropriate action must be taken to minimise disturbance to this vegetation during on site building work.

(7) All trees incorporated into landscaping at the time of planting must comply with NATSPEC Guide: Specifying Trees- a guide to assessment of tree quality (Clark R. 2003) or Fraser Coast Regional Council (FCRC) Generic Nursery Stock Standards for the Supply of Container Grown or Bare Rooted Urban and Amenity Trees.

(8) Any required 'storm staking' of mature trees stock (45L and above) must be staked using a minimum of 2 appropriate wooden stakes per tree to provide support to the tree in very high winds. Tree straps / ties must be fitted to hang loose during normal conditions and not rub or cause damage to the tree.

Preferred gradients

Table SC6.3.7.2 Preferred gradients by landscape type

Landscape item	Absolute range %	Preferred range %	Minimum required crossfall
Pathways	0.5 - 12	1 - 8	
Entrance works	0.5 - 8	1 - 4	
Pedestrian ramps	up to 12	up to 8	
Stairs	25 - 50	33 - 50	
Ball play area	1 - 5	1 - 3	
Playground pad	1 - 4	1 - 3	
Paved gutters	0.25 - 100	1 - 50	
Grassed swales	1 - 15	2 - 10	
Terrace and sitting areas	0.5 - 3	1 - 2	
Grassed banks	up to 25 [1]	up to 16 [1]	
Planted banks	up to 50 [2]	up to 33 [2]	
Stone mulched areas			1:100
Grassed areas			1:50
Garden areas			1:25
Paved areas			1:100
Drainage pipe/trench base			1:100

Notes—

[1] Maximum recommended mowable slope.

[2] Dependent on soil type and slope stability.

Parks and landscaping project specification

(9) The Landscaping Project Specification must accompany the operational works submission for approval. The specification is required to reflect best practices and incorporate modifications as required by this policy and the conditions of approval, Council's Local laws, policies and codes and the relevant Australian Standard Codes of Practices and applicable authorities e.g. Australian Standards, DTMR Landscape Manual.

Firebreaks and trails

(10) Development where possible should utilise public roads to separate development from bushfire risk areas. However, where firebreaks and fire trails are unavoidable they must be constructed and landscaped on the development site and in accordance with Council's Bushfire Management Strategy (Docs No. 1082577).

6.3.7.3 Landscaping softworks

Topsoil and garden soil

(1) Landscape soils, including topsoils are to comply with NATSPEC Guide 0251 and 0251B Landscape-soils.

Fertilisers

(2) An establishment and routine fertiliser regime must form an integral component of the construction and maintenance programs.

(3) The fertiliser regime is to be as specified within Natspec guide- 0250 Landscape-gardening.

Mulches

(4) All garden beds and revegetation areas must be mulched.

(5) All mulched areas are to be free of weeds prior to the application of mulch.

(6) Loose particle mulches must comply with the following requirements:-

(a) complies with 'AS 4454-2003- Composts, soil conditioners and mulches';
(b) particle size range 5mm to 50mm;
(c) minimum depth of 100mm for garden beds and revegetation areas;
(d) final mulch grade 25mm below edge treatments;
(e) binding qualities to minimise dispersion by the elements or slope;
(f) durable - minimum 12 months effective longevity; and
(g) remains pervious.

(7) Organic mulch matting will be required as a substitute for loose particle mulches on steep or unstable slopes.

(8) Organic mulch matting must comply with the following requirements:-

(a) Natramat TM, 6mm coir fibre mat with latex bonding, or approved equivalent;
(b) biodegradable;
(c) durable - minimum 12 months effective longevity;
(d) installed to the manufacturer's instructions;
(e) holes cut to locate containerised plant stock; and
(f) accidental cuts repaired by staked patches.

(9) Inorganic, nylon mesh or wire net binding mulch matting products must not be used.

Seeding

(10) Seeding is to be in accordance with Natspec Guide:0205 Landscape- Gardening.

(11) Failed seeded areas must be covered or resown promptly to ensure that adequate germination levels are likely to be attained. For plant species seed selection refer to **Appendix SC6.3B (Recommended plant list)**.

Turfing

(12) Turfing is to be undertaken in accordance with Natspec Guide: 0250 Landscape-gardening.

(13) Turfed areas will be specifically required in the following areas, as well as to frame or border the edge of treatments:-

(a) high traffic areas;
(b) passive recreation areas;
(c) slopes or overland flows; and
(d) cleared areas prone to erosion & siltation problems.

Planting

(14) In planting schemes, a minimum of 70% of total plant types and total plant numbers must be local native species.

(15) Palms must not be planted, except for the locally occurring *Livistona decipiens* and *Archontophoenix cunninghamiana* which may be planted as emergents in planting schemes or in informal naturalistic groupings rather than in sentinel rows.

(16) Planting shall be in accordance with Natspec guide -0250 Landscape- gardening.

(17) Only approved planting species are to be used – refer to **Appendix SC6.3B (Recommended plant list)**.

6.3.7.4 Landscaping hardworks

Edge treatments

(1) Edge treatments must comply with the following requirements:-

(a) edge treatments must be a minimum of 75mm wide and mountable, for ease of mowing and maintenance;
(b) turf or mulch must be 25mm below top grade of adjoining edge;
(c) minimum curvature radius at 3.0m;
(d) minimum access between edges and other treatments must be 3.0m;
(e) avoid restricting access into narrow corners; and
(f) Are required at the rear of a garden bed where it backs onto private property to prevent ingress of weeds and couch grass.

(2) Materials acceptable for paver (clay or concrete) edge treatments are:-

(a) minimum 60mm depth;
(b) minimum 110mm width (230mm preferred);
(c) mortar base & exposed edges (20MPa); and
(d) no cracking.

(3) Materials acceptable for timber edge treatments are:-

(a) minimum 150mm log (winged) or 200mm x 80mm sleeper (bevel edges);
(b) suitably treated for in ground use (H4 treated or Durability class 1 or 2 hardwood);
(c) finish end and joints neatly; and
(d) securely pin and fix.

(4) Materials acceptable for continuous concrete:-

(a) minimum width 150mm;
(b) minimum depth 100mm;
(c) placed on 100mm compacted subgrade;
(d) minimum 20MPa;
(e) may be coloured or patterned;
(f) finish ends neatly and flush;
(g) bolster cut control joints where required; and
(h) no cracking.

Paving and concreting

(5) Where a paved or plain or textured concrete surface finishing must be used, appropriate consideration must be given to its long term skid resistance.

(6) Construction details must clearly specify, and reference, particulars of paving and concrete works including:-

(a) colours;
(b) patterns;
(c) paver material, where applicable;
(d) exposed aggregate (size, colour and surface texture);
(e) widths, thickness, strength and reinforcement; and
(f) base preparation.

Entry statements

(7) Entry statements to developments must be fully contained within private property and must not revert to Council ownership.

Fences and barriers

(8) Barrier fences, bollards and or landscaping will be required to prevent vehicular trespass into parklands and other public open spaces.

(9) Construction Drawings must clearly reference and specify all fence treatments, including materials.

(10) Acoustic Fencing is to be designed and constructed in accordance with Transport and Main Roads Technical Standards MRTS 15-Noise Fences.

Landscape furniture and playground equipment

(11) All landscape furniture, playground equipment and associated infrastructure must be in accordance with all relevant statutory requirements and Australian Standards including the following:-

(a) AS 4685.1:2014- Playground equipment and surfacing- General safety requirements and test methods.
(b) AS4685.2:2014- Playground equipment and surfacing- Additional specific safety requirements and test methods for swings.
(c) AS4685.3:2014- Playground equipment and surfacing- Additional specific safety requirements and test methods for slides.
(d) AS4865.4: 2014- Playground equipment and surfacing- Additional specific safety requirements and test methods for cableways.
(e) AS4865.5:2014- Playground equipment and surfacing- Additional specific safety requirements and test methods for carousels.
(f) AS4865.6:2014- Playground equipment and surfacing- Additional specific safety requirements and test methods for rocking equipment.
(g) AS4865.11:2014- Playground equipment and surfacing- Additional specific safety requirements and test methods for spatial networks.
(h) DR AS4865.0.2015- Playground equipment and surfacing- Development, installation, inspection, maintenance and operation.

(12) All fittings to timber work must be of stainless steel.

(13) All furniture, playground equipment and surrounds must be durable, vandal resistant and low maintenance.

(14) All furniture and playground equipment must be subjected to a successful safety inspection by Council officers prior to acceptance of any infrastructure as a Council asset.

(15) Any special tools, equipment, keys, spare parts, parts manuals, warranties, instructions and maintenance requirements associated with any equipment must be provided to Council prior to acceptance of any infrastructure.

6.3.7.5 Embellishment of open space and community land

(1) The provision of recreation park, sports park or land for community services must be in accordance with the Local Government Infrastructure Plan. Land affected by flooding, vegetation, environmental or other constraints that cannot be developed must be retained in private ownership or dedicated as reserve for the required purpose. No infrastructure charge offsets are available for any land dedications that are not identified in the Local Government Infrastructure Plan.

Local recreation parks

(2) Land to be dedicated for a local recreation park, complies with the following standards and specifications:-

(a) minimum area 1ha;
(b) the park area must have a finished surface gradient of less than 1 in 6;
(c) park area must be flood free in a 1 in 5 year ARI storm event;
(d) at least 10% of the park area must be above the 1 in 100 year ARI flood level;
(e) infrastructure to be flood resistant or located above the 1 in 100 year ARI flood level;
(f) disability access must be in accordance with 'AS1428- Design for access and mobility'; and
(g) incorporate best practice CPTED principles.

(3) Refer to **Table SC6.3.7.5b (Standard facilities/embellishment for parks)** for levels of embellishment.

District recreation parks

(4) Land to be dedicated for a district recreation park, complies with the following standards and specifications:-

(a) minimum area 3ha;
(b) must have a finished surface gradient of less than 1 in 6;
(c) playing surfaces be graded in accordance with relevant specifications up to a maximum grade of 1 in 100 with allowances made for terracing batters at appropriate intervals;
(d) park area must be flood free in a 1 in 5 year ARI storm event;
(e) at least 10% of the park area must be above the 1 in 100 year ARI flood;
(f) infrastructure to be flood resistant or located above the 1 in 100 year ARI flood level;
(g) disability access must be in accordance with 'AS1428- Design for access and mobility'; and
(h) incorporate best practice CPTED principles.

(5) Refer to **Table SC6.3.7.5b** for levels of embellishment.

Regional recreation parks

(6) Land to be dedicated for a regional recreation park, complies with the following standards and specifications:-

(a) minimum area of 6ha;
(b) must have a finished surface gradient of less than 1 in 6;
(c) playing surfaces be graded in accordance with relevant specifications up to a maximum grade of 1 in 100 with allowances made for terracing batters at appropriate intervals;
(d) park area must be flood free in a 1 in 5 year ARI storm event;
(e) at least 10% of the park area must be above the 1 in 100 year ARI flood level;
(f) infrastructure to be flood resistant or located above the 1 in 100 year ARI flood level;
(g) disability access must be in accordance with 'AS1428- Design for access and mobility'; and
(h) incorporate best practice CPTED principles.

(7) Refer to **Table SC6.3.7.5b** for levels of embellishment.

District sport parks

(8) Land to be dedicated for a district sports park, complies with the following standards and specifications:-

(a) minimum area of 6ha;
(b) must have a finished surface gradient of less than 1 in 6;
(c) playing surfaces be graded in accordance with relevant specifications up to a maximum grade of 1 in 100 with allowances made for terracing batters at appropriate intervals;
(d) park area must be flood free in a 1 in 5 year ARI storm event;
(e) at least 10% of the park area must be above the 1 in 100 year ARI flood;
(f) infrastructure to be flood resistant or located above the 1 in 100 year ARI flood level;
(g) disability access must be in accordance with 'AS1428- Design for access and mobility'; and
(h) incorporate best practice CPTED principles.

(9) Refer to **Table SC6.3.7.5b**for levels of embellishment.

Regional sport parks

(10) Land to be dedicated for a regional sport park, complies with the following standards and specifications:-

(a) minimum area of 10ha;
(b) must have a finished surface gradient of less than 1 in 6;
(c) playing surfaces be graded in accordance with relevant specifications up to a maximum grade of 1 in 100 with allowances made for terracing batters at appropriate intervals;
(d) park area must be flood free in a 1 in 5 year ARI storm event;
(e) at least 10% of the park area must be above the 1 in 100 year ARI flood;
(f) infrastructure to be flood resistant or located above the 1 in 100 year ARI flood level;
(g) disability access must be in accordance with 'AS1428- Design for access and mobility'; and
(h) incorporate best practice CPTED principles.

(11) Refer to **Table SC6.3.7.5b** for levels of embellishment.

Land for community facilities

(12) Land to be dedicated for community facilities, complies with the following standards and specifications:-

(a) at least 90% of the land area must have a finished surface gradient of less than 1 in 30;
(b) land area must be above the 1 in 100 year ARI flood level; and
(c) incorporate best practice CPTED principles

Environmental reserves

(13) Land dedicated as reserve for environmental or drainage purposes may need to be rehabilitated or additional measures provided to minimise the maintenance burden on Council. The following table provides a guide to the level of works required.

Table SC6.3.7.5a Rehabilitation and protective works for environmental reserves

Rehabilitation or protective works	Unit	Quantity
1.5m Deco/ gravel	m^2	200
Signage - plank	each	1
Restoration / revegetation	m^2	3,200

Fencing / Bollarding (post and rail)	3.6 m	70

Levels of embellishment

(14) **Table SC6.3.7.5b** shows the required level of embellishment for Recreation and Sport Parks:-

Table SC6.3.7.5b Standard facilities/embellishment for parks[1]

Infrastructure type	Recreation parks			Sport parks	
	Local	District	Regional	District	Regional
Internal roads				•	•
Off-street parking		•	•	•	•
Fencing/bollards	•	•	•	•	•
Lighting		•	•	•	•
Toilet		•	•	•	•
Pathways (access to facilities)		•	•	•	•
Seating	•	•	•	•	•
Shade structures		•	•	•	•
Covered seating and table		•	•	•	•
Tap/bubbler	•	•	•	•	•
BBQ		•	•	•	•
Bins		•	•	•	•
Landscaping (including earthworks, and vegetation)	•	•	•	•	•
Turfing	•	•	•	•	•
Irrigation system		•	•	•	•
Signage	•	•	•	•	•
Activity areas[2]	•	•	•	•	•
Shade trees	•	•	•	•	•
Playground		•	•	•	•
Shower				•	•
Path/park lighting		•	•	•	•
Bicycle parking		•	•	•	•
Bus parking			•	•	•
Services (water, electricity, sewer, stormwater)	•	•	•	•	•

Notes—

[1] '•' in the table means normally provided.

[2] Activity areas are small active recreational facilities (e.g. half basketball court).

6.3.7.6 Road corridor treatments

General

(1) Refer to **Appendix SC6.3B (Recommended plant list)** for suitable species types for trees, shrubs and groundcovers.

(2) The provision of landscaped areas within road reserves and traffic calming devices must be reduced to a minimum except in the commercial business areas. Where landscaping must be installed specific low maintenance designs are required to ensure Council's continuing maintenance liability is kept to a minimum.

Design criteria

(3) Planting to be in scale with the streetscape.

(4) Street trees must be located such that when mature, they do not impact on the street lighting, future driveway locations or other infrastructure.

(5) Street trees and landscaping must not impact on vehicle sight distances in accordance with AS2890 or unduly restrict visibility to pedestrians and children in verge areas.

(6) Plants are not to be placed at access points.

(7) Plants do not obstruct access to services.

(8) The street tree alignment is within the corridor shown on Council's Standard Drawing.

(9) Earthworks are not to be carried out within close proximity of existing vegetation.

(10) All street gardens, including roundabouts and medians, must be provided with an automatic irrigation system (refer to Irrigation Systems section of this policy).

(11) Subsoil drainage must be provided between all street gardens and the road pavement.

(12) Pedestrian access must be maintained around and, where applicable, through all street planting.

(13) Visibility lines must be checked to ensure that the minimum stopping distance for vehicular traffic is maintained.

Medians and roundabouts

(14) Landscaping in medians and roundabouts must provide for sight distances in accordance with Austroads 'Guide to Road Design' and the Department of Transport and Main Roads 'Road Planning and Design Manual'.

(15) Unless the roundabout is on a major arterial road, no plantings are to occur and treatment is to be an approved hardstand treatment incorporating stamped concrete or artificial turf to minimise maintenance. Where the roundabout is on a major arterial road or functions as an entrance statement, then a detailed site specific landscape plan will be required as part of the overall landscape design. Medians with an area less than $5m^2$ or less than 1m in width must be of concrete of other approved material.

(16) Provide a 1m wide concrete surround or other approved surfacing between the traffic lanes and vegetation for maintenance purposes.

6.3.7.7 Site based landscaping

General

(1) Refer to **Appendix SC6.3B (Recommended plant list)** for suitable species types for trees, shrubs and groundcovers.

Car parks

(2) The landscape design for a car park must meet the following requirements:-

(a) minimum landscape area must be 10% of the car park area provided;
(b) car park areas include parking bays and access aisle, and exclude driveways that extend beyond the access aisles;
(c) landscape areas abut a parking bay or access aisle and include landscaped buffer strips, and the minimum $2.25m^2$ per shade tree to allow free circulation of air and water to the tree's root system and protection from pedestrian and vehicular traffic;
(d) a minimum of one medium size shade tree per 6 car parking spaces throughout the car park;
(e) shade trees are species that have a rounded or spreading form, medium to dense foliage and provide accessible shade for pedestrians and motorists. Local

palms may be included in the planting scheme but are not acceptable as shade trees;

(f) root guards must be used where tree roots will cause damage to surrounding hard surfaces; and

(g) an automatic irrigation system must be provided to all car park planting areas.

6.3.7.8 Power supply

(1) Power supply to Council managed land must be in accordance with 'AS3000- Electrical Installations'. All public access power must comply with Australian Standard 'AS/NZS3002- Electrical Installations- Shows and carnivals'.

(2) All required RCD checks need to be completed and recorded as per AS3000.

6.3.7.9 Irrigation systems

General

(1) Automatic irrigation systems must be provided to all garden beds constructed within road reserves, parks, sporting fields and open space as part of development works.

(2) Recycled water for irrigation purposes must be utilised where available. Recycled water use must comply with 'Australian guidelines for water recycling: managing health and environmental risks 1996'.

(3) The irrigation systems must comply with the requirements defined below and AS2698 and Urban Best Management Practise Guidelines.

(4) The Developer will be responsible for the cost of all irrigation water used and irrigation system maintenance costs incurred to establish plants and to maintain the planting during the maintenance period.

(5) Irrigation systems must be installed in accordance with the Manufacturers' Specifications.

(6) All irrigation systems connected to the public water supply must be metered.

(7) Irrigation plans identifying layout and components are to be submitted to Council for approval. All irrigation maintenance schedules associated with the irrigation system are to be presented to Council at time of handover.

Layout

(8) All irrigation systems must be fully automatic pop-up spray, drip emitter or subsurface microporous flexible pipe.

(9) Spray sprinklers must be located for head to head coverage and minimal over spray onto abutting hard finished surfaces.

(10) Irrigation layout of parkland grassed areas must include road verges along the parkland frontage with spray emitters located at the back of kerb.

(11) Appropriate filter screens must be placed within the system adjacent to the connection to the water main.

(12) All irrigation emitters must deliver sufficient precipitation for maximum soil absorption and water uptake by plants with minimum runoff.

(13) The design must prioritise deep, less frequent watering.

Backflow prevention devices

(14) Backflow prevention devices must be installed and serviced in accordance with AS 2845.

Controllers

(15) The controller must be installed in a metal cabinet that is lockable, dust proof and rust proof.

(16) It must be constructed so as to minimise the effects of vandalism.

(17) It must be easily accessible for maintenance and inspection.

(18) The controller must be connected to 240V, a solar system or other approved power supply

SC6.3.8 Rehabilitation and revegetation

6.3.8.1 Rehabilitation

(1) Rehabilitation must be undertaken in accordance with an approved rehabilitation plan as per the SEQ Ecological Restoration Framework..

(2) A rehabilitation plan must address the following:-

(a) Methodology – describe the process used to develop the plan. Include all field surveys, mapping data and literature used. Provide Background information and describe the complexity of the project.

(b) Environmental values – describe the key environmental values within and adjoining the rehabilitation area. Environmental values may include but not be limited to fauna or flora, vegetation communities, cultural heritage, geological, habitat, environmental corridors or biophysical values.

(c) Ecosystem threats – describe the current and future threats to ecosystem and environmental values. Threats may include but not be limited to weed infestation, illegal access, erosion, grazing, inappropriate fire or hydrological regimes, inappropriate access, sedimentation or salinity.

(d) Ecosystem condition – identify the condition of ecosystems within the rehabilitation area. The condition assessment will be used to determine management objectives and activities. The current condition should be accompanied by a series of photographs taken from established reference points.

(e) Rehabilitation targets – determine appropriate and realistic rehabilitation targets based on assessment of ecosystem threats and condition.

(f) Overall rehabilitation goals – provide an overarching statement of the desired outcome(s) for the rehabilitation plan.

(g) Rehabilitation objectives – develop objectives to meet rehabilitation goals. The objectives will form the basis of the rehabilitation plan. Objectives can be used to set milestones and determine rehabilitation progression.

(h) Rehabilitation activities – identify and describe all activities that are required to meet the objectives. It must be clear what activities will be undertaken during the project and how they will be implemented.

(i) Performance criteria – performance criteria must be measurable, specific and relate directly to rehabilitation goals, objectives and activities. The performance criteria may include but not be limited to floristic and structural vegetation parameters, weed abundance, erosion, natural revegetation, recruitment, vegetation condition and fauna populations an may be appropriate.

(j) Management zones – for clarity it is important to identify management zones based on rehabilitation activities. Define which parts of the rehabilitation area will be retained, regenerated and or revegetated. The management zones must be provided in a GIS spatial layer or a clearly annotated site map/aerial photograph.

(k) Implementation schedule – determine an appropriate implementation schedule stating what activities will be undertaken during development and what activities need to be continued once transferred to Council. To improve the handover process to Council it is necessary to identify at what stage Council will need to continue with rehabilitation activities.

(l) Monitoring and reporting – provide a monitoring and reporting schedule that will be implemented over the duration of the project. Work records of all activities including photos of the works must be submitted to Council quarterly for the duration of the project (includes the maintenance period).

6.3.8.2 Revegetation

(1) Species, density and relative abundance are consistent with an appropriate Regional Ecosystem and or Vegetation Association for the site. The following densities will be required: Forests-1.5-2.0m spacings, Heathlands- 2 plants per square metre, Sedgeland communities- as per the Water Sensitive Urban Design Technical Design Guidelines for South East Queensland. The revegetation planting is designed to achieve rapid canopy closure and 'site capture' to reduce short to medium term maintenance requirements.

(2) Revegetation works consider appropriate limitations to successful revegetation works including but not limited to:-

(a) soil types;
(b) soil contamination and soil amelioration/management;
(c) appropriate mulching;
(d) pests and disease;
(e) hydrology, roughness coefficient and layout when planting within floodplains;
(f) weeds;
(g) past and present site and adjoining land uses;
(h) ecosystem processes;
(i) fire regimes; and
(j) management/maintenance requirements to ensure successful vegetation establishment.

(3) Direct seeding for rehabilitation of native vegetation preservation areas may be approved where:-

(a) ground preparation is suitable;
(b) sound technical expertise is employed; and
(c) required plant species seed is available.

SC6.3.9 Electrical, street lighting and telecommunications

6.3.9.1 Electrical reticulation

General

(1) Electrical Reticulation must be in accordance with relevant service providers' requirements.

(2) Above ground infrastructure including power poles, lights etc. must not be located in vulnerable areas where there is a significant risk of high speed vehicle impact. In cases where this cannot be avoided, the infrastructure must be frangible or placed underground.

Underground reticulation

(3) Underground electrical reticulation must be provided in all new subdivisions and development within Urban Residential, Rural Residential (lots < 1ha), Commercial and Industrial areas.

(4) Existing overhead power within or fronting a development must be relocated underground where there is a significant change in the land use. This may include large developments or the development of existing vacant land.

(5) Conduit location and alignment:-

(a) joint trenching must not incorporate underground power with water supply;
(b) the service alignments must be as depicted on Council's standard drawings; and
(c) under road boring must be used to cross existing roads.

(6) Pillar locations:-

(a) pillars must be located within the road reserve on the standard alignment; and
(b) pillars must be located on alternate boundaries to hydrants.

Overhead reticulation

(7) The alignment and location of power poles must be in accordance with Council's Standard Drawings.

6.3.9.2 Street lighting

General

(1) Street lighting and open space lighting must be in accordance with 'AS1158- Lighting for Roads and Public Spaces' except where modified by this policy.

(2) All poles and luminaries must be standard service providers' equipment which will be supplied and maintained by the service provider at standard rate 2 tariff.

(3) Crime Prevention through Environmental Design (CPTED) principles must be incorporated into development layouts and lighting designs.

Table SC6.3.9.2 Street lighting requirements by development type

Development category[1] or zone	Road type	Street lighting
Rural/Rural residential lots > 1ha[2]	Access street	Flag lighting
	Minor collector	Flag lighting
	Major collector	Flag lighting
Rural residential lots ≤ 1ha	Access street	Flag lighting
	Minor collector	Flag lighting

Development category[1] or zone	Road type	Street lighting
Urban residential[3]	Access place	P5
	Access street	P5
Commercial[4]	Access street	P4
Industrial	Access street	P5
Urban roads	Minor collector	P3
	Major collector < 5000 vpd	P3
	Major collector and above > 5000 vpd	V5
	4 lane sub-arterial roads	V3

Notes—

[1] The development categories used in this table are described in **Appendix SC6.3F (Glossary)**.

[2] Major traffic routes in rural areas are only required to be lit to urban standards at intersections, pedestrian crossing points and hazardous locations.

[3] Category P2 is required in urban residential streets where pedestrian and cyclist volumes are high.

[4] Category P2 is required in Commercial areas where pedestrian and cyclist volumes are high.

Flag lighting

(4) Flag Lighting will include intersections, cul-de-sacs and low speed bends in the roadway.

Pathway lighting

(5) Pathways in Public Open Space Reserves or in separate pathway reserves must be provided with street lighting in accordance with the following table:-

Pathway location	Lighting category
Pathways between allotments	P4
Pathways in open space areas	P4
Commuter links	P3
Other locations	Subject to individual assessment

Alignment of street lighting

(6) Street lighting poles must be located opposite common allotment boundaries, to minimise potential interference with vehicle access and glare complaints from residents.

(7) Light poles must not be located in front of hatchet shaped allotments due to a high potential for vehicle collision.

Aeroscreen lighting

(8) Aeroscreen lanterns are required in Rural and Rural Residential areas to minimise disturbance to fauna.

(9) Aeroscreen lanterns may be required in urban areas where there is the potential for lighting to disturb existing residents.

6.3.9.3 Telecommunications

General

(1) A telephone reticulation approved plan is to be obtained and submitted to Council prior to any subgrade inspection and evidence of the telephone Authority's agreement to provide services is to be given to Council prior to sealing of plans of survey.

(2) Subject to relevant service providers' approval, joint use trenching will be adopted for telephone services.

SC6.3.10 Design requirements and supporting documents

6.3.10.1 Preliminary

(1) Council encourages early communications and meetings between designers/engineers and Council's Development staff before any detailed designs are undertaken or before operational applications are submitted.

(2) The aim of such meetings is to encourage communications, streamline the approval process and achieve better outcomes for both the developer and the community.

(3) Early communications will assist in the following:-

(a) promoting discussion and providing advice on non-standard proposals;
(b) greater confidence for developers when turning concept proposals into detailed applications;
(c) design Solutions for Technical issues;
(d) better information for Designers and Engineers;
(e) early flagging of constraints and issues;
(f) faster processing of applications;
(g) fewer information request items; and
(h) early agreements on design parameters.

6.3.10.2 Drafting standards

(1) All design drawings must have a quality standard acceptable for photocopying and scanning and all drafting must be in accordance with the relevant Australian Standards and accepted engineering standards and practices.

(2) The detail provided must be determined by the type, size and complexity of the works being detailed and in accordance with accepted engineering practices. Sufficient detail must be provided to adequately describe the works.

(3) Scales used for all plans are preferably those recommended by the Standards Association and AUSTROADS.

(4) Any reduced drawings submitted to Council must be clearly noted.

(5) All levels used must be to Australian Height Datum (AHD).

6.3.10.3 Supporting documentation

(1) All engineering documents submitted for approval must be checked and authorised by the Consultant. Council does not provide a comprehensive checking service for checking drawings in detail and it is the Consultant's responsibility though its Quality Assurance procedures to ensure that drawings are in accordance with State Government and Council Standards, Acts, Regulations and Local Laws.

(2) Engineering Designs must be fully documented and include appropriate calculations and support information to allow interpretation of the design decisions.

(3) Each and every drawing submitted for approval must be prepared under the supervision of and certified by a Registered Professional Engineer of Queensland (RPEQ) of the appropriate engineering discipline. The RPEQ number of the certifying engineer must be included with the certification.

(4) A design certificate must be completed and certified by a Registered Professional Engineer of Queensland (RPEQ) and included with the submission of any engineering designs for approval.

SC6.3.11 Construction

6.3.11.1 General

Construction supervision

(1) All construction works other than soft landscaping works must be undertaken under the supervision of a suitably qualified Registered Professional Engineer of Queensland (RPEQ). Council must be notified of the engineer responsible for the supervision prior to commencement of any works. Works involving State-controlled Roads must be referred to the Department of Transport and Main Roads.

Water for construction purposes

(2) Non-potable water or recycled water (Class A, B, or C to Qld Guidelines for Safe Use of Recycled Water) must be used for activities associated with road and pavement construction, compaction of fill and dust suppression.

Sediment and erosion control

(3) Sediment and Erosion control measures (including dust control) must be provided and maintained during construction.

(4) Turfing must be provided to the back of kerbs, edge strips and to the edges of pathways.

(5) All open drains and swales must be stablised to prevent scour and sediment transport. Turfing is suggested until the area has been embellished and stabilised; however, alternative sediment and erosion control may be used in accordance with section 6.3.2.2(2) of this policy.

Provision for traffic

(6) Traffic devices must be installed and maintained in accordance with the 'Manual of Uniform Traffic Control Devices'.

(7) Where works are occurring on or near a public road or in the vicinity of pedestrian or cyclist traffic, a traffic control plan must be submitted prior to commencement of works.

(8) All works must be carried out in a manner so that existing accesses to private properties are maintained in a useable condition or alternative arrangements are made with the property owners concerned.

6.3.11.2 Earthworks

Clearing

(1) All vegetated areas to be retained must be protected in accordance with 'AS4970-Protection of Trees on Construction Sites' to prevent accidental or unauthorised clearing.

(2) All felled trees and cleared vegetation must be mulched and used on site or removed to an approved off-site location.

Site stabilisation

(3) All disturbed or filled areas must be topsoiled and stabilised with approved grassing to achieve the minimum coverage for erosion control of 40% area coverage as early as practical. Once the minimum erosion control coverage is achieved, the grassing must be maintained by the developer for a further minimum period of six months to achieve

the minimum acceptance coverage of 60% area coverage before acceptance 'Off-maintenance'.

Compaction

(4) Compaction and test frequency for earthworks must be in accordance with Table 8.1 and Appendix B of 'AS3798- Guidelines and Earthworks for Commercial and Residential Developments'.

(5) For small scale filling operations (refer Table 8.1 and Appendix B AS3798) the minimum standard of supervision must be to Level 2 and a testing frequency as defined in that table.

(6) Where the depth of fill exceeds 600mm for an area of greater than 5000m^2 then these operations will be considered as a large scale operation and will require Level 1 supervision.

6.3.11.3 Roadworks

(1) Road construction methods and practices must be in accordance with the following:-

(a) the Standard Drawings in **Appendix SC6.3D**;
(b) DTMR 'Standard Specification Roads';
(c) DTMR 'Pavement Design Manual'; and
(d) DTMR 'Urban Road Design Manuals'; or
(e) Relevant Austroads Manuals when practices are outside the construction methods stated above.

6.3.11.4 Stormwater drainage

(1) Stormwater drainage materials, construction and testing must be in accordance with the relevant Australian Standards, Manufacturers specifications, Concrete Pipe Association publications and industry standards.

(2) Cast in-situ structural elements including gully pits, manholes, headwalls etc must be designed and constructed under the supervision of a suitably qualified engineer (RPEQ).

6.3.11.5 Sewer

Sewerage infrastructure must be constructed and tested in accordance with the Gravity Sewerage Code of Australia, WSA 02-2014, Version 3.1, published by the Water Services Association of Australia, with the local requirements nominated in the following table. The requirements in this table must be in addition to those of the Gravity Sewerage Code except that where there is an inconsistency this table must take precedence over the Gravity Sewerage Code.

Table SC6.3.11.5 Local changes to WSA 02-2014 version 3.1

Section	Local changes
12.7	Any alterations to existing services must be made by Council at the developer's expense. In accordance with the *Water Act 2000*, a person must not, without the written consent of Council, build over, interfere with access to, increase or reduce the cover over, or change the surface of land in a way causing ponding of water over Council's infrastructure.
2.4.1	Sewers must be tested by the vacuum method unless otherwise approved by Council.
12.7	All connections to existing sewers must be made by Council at the developer's expense.

6.3.11.6 Water supply

Water supply infrastructure must be constructed and tested in accordance with the Water Supply Code of Australia, WSA 03-2011, Version 3.1, published by the Water Services Association of Australia, with the local requirements nominated in the following table. The requirements in this table must be in addition to those of the Water Supply Code except that where there is an inconsistency this table must take precedence over the Water Supply Code.

Table SC6.3.11.6 Local changes to WSA 03-2011 version 3.1

Section	Local changes
5.9	Any alterations to Council infrastructure must be made by Council at the developer's expense. Where as a result of the development, existing mains are located on non-standard alignments or have less than minimum cover, the developer must bear the cost of relocation, replacement or lowering, subject to the approval of Council. Pavement widening associated with some developments would place existing mains under the new pavement and relocation will be required. In cases where the existing main is a non-preferred material, and alterations are required, the developer must bear the cost of its replacement in a material approved by Council.
11.2	Property services on live mains must only be connected by Council. Water service conduits must be minimum DN100, however larger diameters may be required for industrial and some commercial developments. Pipes used for water service conduits must conform to the latest revision of the following standard:- Rubber ring jointed or solvent welded uPVC Class 12 pipes complying with 'AS/NZ 1477- PVC pipes and fittings for pressure applications'.
5.4.16.2	Metallic marker tape must be installed above all non-metallic water mains. The maximum depth for installation of the marker tape must be 600mm and the tape must not deviate from the line of the main by more than 200mm.
8.10.13	Hydrant and valve covers to be rectangular. Surface surrounds to be coloured plastic (hydrant-blue; valve-yellow) shroud to be pipe or surface box (not bricks).
8.11.13	A brass or stainless steel service identification disk must be installed in kerb and/or the channel. Only when there is no kerbing, posts with marker notice plates must be located adjacent to each valve, hydrant, air valve and scour valve. The posts must be located 0.3m from the property alignment unless approved otherwise. (Refer to WSA Drawing WAT1300). Marker plates must be marked V, H, AV and S indicating sluice valve, hydrant, air valve and scour valve and installed on the posts. Blue retro reflective pavement markers must be fixed to road surface opposite all hydrants in accordance with Clause 8.11.3 Pavement Markers. Provide a painted arrow opposite the pavement marker to indicate the direction of the hydrant.
8.9.1	Disinfection of all new water supply infrastructure to be connected must be carried out by Council at the developer's expense.
5.9	All connections to live water mains must be done by Council at the developer's expense.

6.3.11.7 Landscaping

General

(1) Landscape works must be carried out by a suitably qualified and experienced landscaper. The landscaper must have a minimum AQF level 3 certificate of Horticulture (Landscaping) or equivalent.

Maintenance program

(2) The Contractor must examine, and take routine or preventative maintenance where necessary for:-
   (a) all plant stock, including grass;
   (b) irrigation systems;
   (c) weed, disease or pest infestation;
   (d) hardscape treatments; and
   (e) removal of temporary stakes and fixtures.

Table SC6.3.11.7 Recommended minimum maintenance program

Maintenance inspection program (minimum)		
Weeks after on maintenance	**Frequency of inspections**	**Number of inspections**
0 - 1	2 / week	2
1 - 8	1 / week	7
9 - 17	1 / 2 weeks	4
18 - 52	1 / 4 weeks	8
Total Inspections		21

(3) Street trees and landscaping must be watered as necessary during the maintenance period.

Inspections and testing

(4) Council officers may undertake inspections or testing at any stage during construction to ensure compliance with conditions of approval.

(5) Council officers will evaluate 'satisfactory plant stock establishment' on the following criteria:-

   (a) turf and grass seeded - survival indicated by 60% showing of green leaf; and
   (b) containerised plant stock - maximum 20% initial leaf drop & showing strong signs of new growth with good root development.

SC6.3.12 Procedures, testing and inspections

6.3.12.1 Pre-start meeting

(1) Prior to construction work commencing, an on-site prestart meeting must be arranged with Council officers, the supervising engineer and the contractor.

Prerequisites

(2) Notification by the Consultant of the following:-

(a) principal contractor's name and on-site and after hours telephone number;
(b) supervision engineer's office and after hours telephone number and name of representative;
(c) date of commencement of works;
(d) program of works showing major components; and
(e) confirmation of relevant approvals in accordance with conditions of the development.

(3) An invitation to Council Officers to attend the pre-start meeting on a specified date. One (1) week minimum notice required.

(4) Payment of any performance bonds required by the conditions of approval.

(5) The consent of any property owners where works encroach on their land.

6.3.12.2 Inspections

(1) The construction of Council assets will require regular inspections from Council Officers to monitor progress and ensure the quality of the works. These inspections and hold points are detailed below.

Subgrade inspection

(2) A subgrade inspection will be undertaken with Council Officers prior to the placement of any pavement materials or subgrade replacement materials.

(3) This inspection will include:-

(a) checking service conduit locations against markers, if kerb and channel is in place;
(b) checking backfill of service trenches;
(c) checking location of mitre and subsoil drains;
(d) proof rolling the bottom of the box after compaction by load testing of pavement subgrade with a single axle loaded water truck or similar (minimum load on rear wheels must be 8 tonne). Deflections detected in the subgrade indicating weakness may require rectification and re-inspection;
(e) checking of subgrade level and crossfall. (Reduced levels must be taken at a minimum of four locations across the pavement at pegged intervals prior to the inspection);
(f) checking all related civil works;
(g) confirming the proposed limits of different pavement depths by visual inspections of subgrade material or identify the need for further testing;
(h) an approved pavement design must be available at the time of the inspection;
(i) checking that the location of the tests must be representative of the subgrade; and
(j) checking to ensure that all unsuitable material (including organic matter) has been removed.

(4) If Council Officers consider that a unique case exists which requires further examination, they may require further testing to be performed.

(5) Survey of the completed subgrade surface shall be undertaken to verify pavement layer levels are consistent with the approved pavement design. A copy of the survey and pavement depth verifications is to be submitted to and approved by Council prior to placing the next level of pavement.

(6) All subgrade CBR and compaction test results must be submitted to and approved by Council Officers prior to placing any pavement materials. The test results will be made available to Council at or prior to the inspection.

(7) Where Council Officers have identified significant defects or where the inspection is deemed to be premature, reinspection will be required once the works have been rectified or completed. A reinspection fee may apply.

Subgrade replacement inspection

(8) A subgrade replacement inspection will be undertaken with Council Officers prior to the placement of any sub-base or base pavement materials.

(9) This inspection will include:-

(a) proof rolling after compaction by load testing of pavement subgrade replacement with a single axle loaded water truck or similar (minimum load on rear wheels must be 8 tonne). Deflections detected in the subgrade replacement indicating weakness may require rectification and re-inspection;
(b) checking of level and crossfall. (Reduced levels must be taken at a minimum of four locations across the pavement at pegged intervals prior to the inspection);
(c) checking all related civil works; and
(d) an approved pavement design must be available at the time of the inspection.

(10) If Council Officers consider that a unique case exists which requires further examination, they may require further testing to be performed.

(11) Survey of the completed subgrade replacement surface shall be undertaken to verify pavement layer levels and depths are consistent with the approved pavement design. A copy of the survey and pavement depth verifications is to be submitted to and approved by Council prior to placing the next level of pavement.

(12) All subgrade replacement CBR and compaction test results must be submitted to and approved by Council Officers prior to placing any sub-base materials. The test results will be made available to Council at or prior to the inspection.

(13) Where Council Officers have identified significant defects or where the inspection is deemed to be premature, reinspection will be required once the works have been rectified or completed. A reinspection fee may apply.

Underground drainage inspection

(14) An inspection of underground stormwater drainage will be undertaken with Council Officers prior to backfilling.

(15) This inspection will include:-

(a) visual inspection of bedding materials; and
(b) visual inspection of the condition of precast components used; and
(c) visual inspection of formwork prior to pouring concrete; and
(d) visual inspection of the alignment and jointing of pipes and culverts; and
(e) visual inspection of joins to manholes, gully pits and outlet structures.

(16) If Council Officers consider that a unique case exists which requires further examination, they may require testing or further inspections to be performed.

(17) Where Council Officers have identified significant defects or where the inspection is deemed to be premature, reinspection will be required once the works have been rectified or completed. A reinspection fee may apply.

Water and Sewer

(18) Inspection of first sewer manhole constructed.

(19) Notification of pressure test schedule.

Sub-base inspection (Prekerb)

(20) A sub-base inspection will be undertaken with Council Officers prior to the placement of any base pavement materials or prior to the placement of any kerb.

(21) This inspection will include:-

(a) proof rolling after compaction by load testing of pavement sub-base with a single axle loaded water truck or similar (minimum load on rear wheels must be 8 tonne). Deflections detected in the sub-base indicating weakness may require rectification and re-inspection;
(b) checking of level and crossfall. (Reduced levels must be taken at a minimum of four locations across the pavement at pegged intervals prior to the inspection);
(c) checking all related civil works; and
(d) an approved pavement design must be available at the time of the inspection.

(22) If Council Officers consider that a unique case exists which requires further examination, they may require further testing to be performed.

(23) Survey of the completed sub-base surface shall be undertaken to verify pavement layer levels are consistent with the approved pavement design. A copy of the survey and pavement depth verifications is to be submitted to and approved by Council prior to placing the next level of pavement.

(24) All sub-base CBR and compaction test results must be submitted to and approved by Council Officers prior to placing any base materials. The test results will be made available to Council at or prior to the inspection.

(25) Where Council Officers have identified significant defects or where the inspection is deemed to be premature, reinspection will be required once the works have been rectified or completed. A reinspection fee may apply.

Pre-seal inspection

(26) A pre-seal inspection will be undertaken with Council Officers prior to sealing.

(27) This inspection will include:-

(a) checking base course gravel after compaction;
(b) compaction test results and gravel quality test results of the base, sub-base and select fill courses must be available for the inspection if required. Final approval is dependent upon satisfactory pavement test results being submitted to Council;
(c) if the engineer deems that the location of the tests are not representative of the pavement layer they may require further testing with payment being made as detailed above;

(d) pre-prime inspection of the pavement surface to ensure the profile complies with the approved engineering drawings and has even and acceptable crossfalls with sufficient depth available for the required thickness of finished surface. (Finished surface levels must be taken at a minimum of four locations across the pavement prior to the inspection);
(e) pre-prime inspection to check that the surface is suitable for priming; and
(f) proof rolling the top of the base course with a single rear axle loaded water truck or similar (minimum load on rear wheels must be 8 tonne). Deflections detected will require rectification and subsequent reinspection.

(28) Before priming the conduit markers are checked against the service conduits.

(29) Check pavement profile for rounding and minimum depths for AC surfacing.

(30) Before priming the proposed application rates of prime and binder and spread rates of pre-coated aggregate must have been approved prior to the inspection. Where there is no kerb and channel the edge of the pavement will be marked prior to priming.

(31) Before priming, the proposed application rates of prime and results of mix acceptance tests must have been approved prior to the inspections.

(32) All pipe and service crossings of the roads completed, and determined to be correctly located by the Consultant.

(33) Kerb and channel line and levels checked and determined to be within tolerances by Consultant.

(34) Check intersection contouring.

(35) Survey of the completed base course surface shall be undertaken to verify pavement layer levels and depths are consistent with the approved pavement design. A copy of the survey and pavement depth verifications is to be submitted to and approved by Council prior to placing any bitumen seal layers.

(36) All base CBR and compaction test results must be submitted to and approved by Council Officers prior to placing any bitumen seal layers. The test results will be made available to Council at or prior to the inspection.

(37) Where Council Officers have identified significant defects or where the inspection is deemed to be premature, reinspection will be required once the works have been rectified or completed. A reinspection fee may apply.

On maintenance inspection

(38) The Consultant is responsible for ensuring that the approved works have been completed in accordance with the approved drawings and this policy prior to requesting an on maintenance inspection.

(39) Where an on maintenance inspection reveals incomplete works or a significant number of defects, reinspection may be required once the works are complete. A reinspection fee may be applicable.

(40) Following a satisfactory on maintenance inspection, the Consultant must submit a written request to Council for acceptance of the works on maintenance. The on maintenance documentation must accompany the request.

(41) Following a request for bonding of incomplete works, an interim on maintenance inspection of any completed works must be made prior to acceptance of any bonding. Fees will be charged for any additional inspections required for incomplete works bonding.

(42) All works must be complete (including any bonded works) and to a satisfactory standard and all documentation provided to Council before the works can be accepted on maintenance.

Off maintenance inspection

(43) The Consultant is responsible for ensuring that the works are presented in accordance with the approved drawings and accepted engineering best practice prior to requesting an off maintenance inspection.

(44) At the time of the off maintenance inspection, all aspects of the works must indicate that they are performing in accordance with the design intent.

(45) Where an off maintenance inspection reveals a significant number of defects, reinspection may be required once the defects are rectified. A reinspection fee may be applicable.

(46) Where an inspection raises concerns regarding the long term performance of any infrastructure, Council Officers may require an investigation into the infrastructure to demonstrate that it is in accordance with the Planning scheme policy for development works. If the investigation identifies any defects or long term maintenance issues, the report must recommend corrective measures. The investigation must be undertaken by a suitably qualified engineer (RPEQ) with expertise in the area in question and the results presented to Council prior to acceptance of the work off maintenance.

(47) Where there is indication that the works are not performing or may be subject to a reduced design life, rectification works must be required to be carried out before the development is accepted off maintenance.

(48) Following a satisfactory off maintenance inspection, the Consultant must submit a written request to Council for acceptance of the works off maintenance, and release of the maintenance security bond.

(49) Once the works have been accepted and any outstanding items have been addressed, the works will be accepted off maintenance and any maintenance securities will be returned.

Practical completion inspection (Private infrastructure works)

(50) Private infrastructure works that will not become a Council asset are not subject to the inspections indicated in the preceding paragraphs of section 6.3.12.2 or the requirements in sections 6.3.12.3 to 6.3.12.5 unless specifically conditioned in a development permit. However, appropriate testing and quality control measures should still be implemented to ensure a quality finished product.

(51) Prior to the issue of a certificate of practical completion and prior to the return of any performance bonds for private infrastructure works, the completed works must be inspected by Council Officers for compliance with the conditions of the development approval.

(52) Where an inspection reveals significant incomplete or non-compliant works, reinspection may be required to reassess the completed works. A reinspection fee may be applicable.

(53) Additional information from the developer or Consultant may be required by Council to verify compliance with the conditions of approval.

(54) Once the works have been inspected and deemed to be in accordance with the conditions of the development permit, the works will be accepted as complete and any maintenance securities will be returned.

6.3.12.3 Testing

(1) Materials and product testing must be carried out by qualified operators within National Association of Testing Authorities, Australia (NATA) registered laboratories.

(2) Appropriate 28 day load testing of kerb and structural concrete must be undertaken in accordance with the relevant standards.

(3) All pavement quality testing must be carried out on samples from the compacted pavement materials.

(4) The testing of concrete, soils, pavement materials, filling works etc. must be undertaken in accordance with relevant standards.

(5) The supplier's Quality Assurance documentation must be submitted to Council as part of the on maintenance documentation.

(6) The consulting engineer is required to certify that the constructed works comply with Council's Planning scheme policy for development works prior to acceptance of the works on maintenance.

(7) It is the consulting engineer's responsibility to assure themselves that all materials used in the construction of the works comply with minimum requirements.

(8) In certain cases where there is reason to doubt the quality of the materials being used for the works, the Consultant may also need to arrange independent testing of the materials to verify their quality.

(9) Compaction testing of crushed rock and earth materials must be carried out at the minimum intervals detailed in the inspection check sheets which are in accordance with Australian Standards.

(10) Prior to acceptance of any works on maintenance, all materials test results must be submitted to Council. Should any of the test results not meet the desired standard, Council must be notified as soon as is practical and details of proposed remedial action must be submitted for approval.

(11) All sewer and stormwater pipes must be subject to a CCTV inspection and defect report from a suitably qualified person.

(12) Ensure that all water main work is pressure-tested and complies with the Water Supply Code of Australia (WSA 03-2014). Testing must be undertaken by a NATA accredited organisation that holds current listing for the pressure testing of water mains. Test results must be forwarded to Council prior to acceptance of the works ‘on maintenance’.

Ensure that all sewer main work is vacuum-tested and complies with the Sewer Code of Australia (WSA 02-2014). Testing must be undertaken by a NATA accredited organisation that holds current listing for the vacuum testing of sewer mains. Test results must be forwarded to Council prior to acceptance of the works ‘on maintenance’.

(13) Source rock testing is required to be carried out on pavement materials to demonstrate compliance with MRTS05 Table 7.2.1. These tests shall be in addition to standard Quality Assurance tests for pavement materials, such as CBR, PSD and Atterberg limits. The proposed tests are shown in the table below.

Table SC6.3.12.3 Source Rock Testing Regime

Test	Frequency (Desired)	Frequency (Minimum)	Requirement*	Standard
Stage 1				
Ten Percent Fines Value (Wet), kN	1 per 2500T	1 per 5000T	>135 for Type 2.1 >115 for Type 2.2	Q205B
Wet/ Dry Strength Variation, %	1 per 2500T	1 per 5000T	<30 for Type 2.1 <30 for Type 2.3	Q205C
Degradation Factor	1 per 2500T	1 per 5000T	>50 for Type 2.1 >50 for Type 2.2	Q208B
Stage 2- to be undertaken if any of the stage 1 tests do not conform to requirements				
Secondary Minerals Content	1 per 2500T	1 per 5000T	<25	AS1141.26
Accelerated Soundness Index	1 per 2500T	1 per 5000T	>94	AS1141.29

***Note- For requirements for other material types, refer to MRTS05 Table 7.2.1**

6.3.12.4 On maintenance documentation

Prior to a development being accepted on maintenance, all works must be satisfactorily completed (including bonded works), all relevant conditions must be complied with and the following documentation must be provided:-

(a) a formal request for on maintenance;

(b) all relevant forms located in **Appendix SC6.3C (Forms and checklists)** of this policy, completed by an appropriate person;

(c) technical manuals, maintenance schedules and product guarantee and warranty documentation for all sewer pumping stations, street furniture, structures, playground equipment, park furniture, irrigation systems, electrical works, bio retention swales, rain gardens, proprietary products and machinery;

(d) copy of an agreement with a contractor for the maintenance of the works and open space areas during the maintenance period;

(e) written advice indicating the consulting engineer (RPEQ) responsible to monitor the site during the maintenance period;

(f) a copy of the plan of survey showing easements etc;

(g) copy of the CCTV video and technical report of sewer and stormwater pipes;

(h) certification from geotechnical testing company of any Level 1 supervision works;

(i) certifications from the contractor, supervising engineer (RPEQ) and supervising landscaper as required;

(j) written advice or approval documentation from other authorities that works within their jurisdiction has been completed satisfactorily;

(k) completed asset data and Digital 'As Constructed' Information and Certifications in accordance with Council's document titled 'Submission of As Constructed Information';

(l) Provide a plan of finished surface levels from a Licensed Surveyor and certification from a RPEQ that the development has been constructed to meet Q100 flood immunity in accordance with the approved design drainage strategy for the development.

(m) a paper copy of the as constructed information with appropriate certification.

(n) pressure test results for all water mains and sewer rising mains;

(o) vacuum test results for all gravity sewer mains;

(p) all materials test results including copies of any failed tests;

(q) copies of final building inspection certificates for any shelters or structures; and

(r) master keys and any copies for any locks.

6.3.12.5 Maintenance period

General

(1) All development works and works that will be transferred to Council control are subject to a minimum 12 month maintenance period during which time the developer must maintain the works, and any defects relating to materials, workmanship and design errors or omissions must be corrected at the developer's expense.

(2) A maintenance period longer than 12 months may be specified for significant structures or where environmental areas or parks may be impacted on by future stages and future construction activities.

(3) Maintenance will include all aspects of the development works including sediment and erosion controls, desilting of stormwater systems, maintenance of verges, repair of defects, subsidence of trenches damage or loss from builders, wayward vehicles, unknown persons etc.

(4) The maintenance does not include the day to day operation of any sewer pumping station although defects or faults will be required to be rectified at the developers cost.

(5) The maintenance period will be extended until all identified defects are rectified and the works deemed to be satisfactory.

(6) The developer will be responsible for the maintenance of all works until the development works have been accepted off maintenance.

(7) During the maintenance period, the supervising engineer must monitor the site for defects and construction activities associated with the development. The engineer must also ensure that the defects do not compromise the safety of persons in road reserves and public open space areas and ensure the development does not cause any environmental harm to sensitive areas. The consulting engineer must take immediate action where required to correct any safety or environmental matters that may arise.

(8) At any time during the maintenance period Council Officers may undertake random inspections to determine the satisfactory maintenance of the works.

(9) Where Council Officers advise the supervising engineer of any defects, appropriate rectification works must be completed within 30 days. Where these defects are likely to

be safety, environmental or health risks, immediate action must be undertaken to make the area safe.

(10) Where public safety or health is at risk or there is the potential for environmental harm, Council Officers may undertake necessary remedial works to make the area safe. All costs will be the responsibility of the developer and may be recovered from any bonds held by Council.

(11) Rehabilitation projects may be subject to extended maintenance periods and obligations as indicated in an approved rehabilitation plan. The maintenance periods on such projects are likely to be performance based and subject to periodic review on progress.

(12) Where a developer is constructing a subdivision and dwellings as part of a package and those dwellings are intended to be complete prior to the subdivision works being accepted off maintenance, Council may approve minor works such a footpaths and landscaping that front the dwellings to be completed during the maintenance period. Any frontage works however must be completed prior to occupation of the dwelling and prior to off maintenance. Where Council approves such works, the estimated cost must be added to the value of the maintenance bond. Council may also require additional requirements during the maintenance period to facilitate these works.

Construction and design defects and omissions

(13) The repair of construction defects or the rectification of design errors and omissions will be required to be undertaken as they are identified.

(14) Where after approval of the design and the acceptance of the project 'On-maintenance', it is identified that an aspect of the works does not comply as a result of either an error or omission in the design or construction or as a result of below standard construction materials, that portion of the works will be required to be rectified.

(15) The civil works are also required to perform in accordance with the design intent.

(16) Where Council Officers raise concerns that a portion of the civil infrastructure provided as part of the works is not performing in accordance with the design intent, the Supervising Engineer must investigate the matter and submit a formal report identifying the causes for the failure to perform, and recommending any rectification works that may be needed.

(17) These reports must be submitted within 30 days of any request.

Maintenance requirements

(18) The following is a list of the maintenance works considered applicable to development work:-

(a) maintain grassed areas to achieve the minimum acceptance coverage of 60% before the works are due for acceptance 'Off-maintenance';

(b) water, fertilise and weed all landscaped areas provided as part of the development works;

(c) slash all private property remaining in control of the developer and drainage reserves to maintain a grass length of less than 300mm;

(d) mow road verges, pathways and park areas to maintain a grass length of less than 150mm;

(e) sweep roads to maintain a surface free of loose stones and excessive dirt deposits;

(f) remove silt and debris washed into kerb and channel, stormwater pipes and structures by stormwater runoff;

(g) temporary and permanent stormwater quality control structures must be cleared of silt and debris when filled to 50% capacity;

(h) repair scours; replace topsoil and grassing to areas eroded by stormwater;

(i) severe scouring may indicate the need for the installation of permanent erosion control structures;

(j) repair all trench subsidence to water, sewer, stormwater, and power and telephone trenches;

(k) maintain all fire hydrants and valves free of silt and in an operable condition;

(l) maintain traffic control devices and road line marking as necessary; and

(m) specific works may however have special maintenance requirements that may also need to be carried out during the maintenance period.

SC6.3.13 Bonding requirements

6.3.13.1 Preliminary

Bonding is the submission of a financial security to Council by the developer, and is used in the following circumstances:-

(a) to cover incomplete development obligations in order to obtain early approval of the plan of survey or to commence the use; or

(b) to cover all development construction works during the maintenance period; or

(c) as security to ensure compliance with environmental requirements and conditions of approval.

6.3.13.2 General

(1) The submission of a cash bond must be accompanied by details of the bond and the development project on Council's standard lodgement form. A copy of the receipt needs to be retained as proof of lodgement. Return of any unused portions of cash bonds will only be made to the person or company nominated on the receipt unless specifically directed in writing by the lodger of the bond to make alternate payment.

(2) A Bank Guarantee may be lodged in lieu of a cash bond. Bank Guarantees must:-

(a) be irrevocable guarantees from a recognised trading bank (Guarantees from finance companies and merchant banks are not acceptable); and
(b) be open ended with no expiry date; and
(c) be the original document (photocopies or facsimiles are not acceptable); and
(d) identify the land, the developer, the development and the purpose.

(3) Bank Guarantees are not transferrable for other purposes or projects.

(4) Other forms of security, such as mortgages, holding Titles to land, shares, insurance bonds, etc. will not be accepted.

(5) Marketing names and stage numbers should not be used as primary identification for bonding.

6.3.13.3 General performance bond

(1) Where a general performance bond is required, it must be paid to Council before any development works commence.

(2) The bond must cover the cost of any remedial action undertaken by Council to:-

(a) ensure compliance with the conditions of the development permit;
(b) control dust, smoke or noise nuisance emanating from a development site;
(c) clean silt from downstream waterways or stormwater drains that has resulted from erosion attributed to the development works;
(d) repair upstream or downstream erosion attributed to the development works;
(e) rectify damage to adjacent private property or common fencing; and
(f) repair damage to Council infrastructure.

(3) Council costs will include administration costs and overtime costs where urgent remedial works are required to be undertaken outside of normal work hours.

(4) Remedial works may be undertaken at the direction of Council Officers.

(5) The general performance bond will be required to be submitted for all developments that have the potential to have negative environmental impacts, cause nuisance to residents or works within road reserves or other open space areas.

(6) The bond for earthworks must be calculated at $5,000/ha with a minimum value of $10,000 unless determined otherwise depending on the construction activities, environmental sensitivities or other considerations relevant to the site.

(7) The value of the bond for other construction works and activities will be determined by Council Officers based on the individual circumstances and likely costs to Council to remedy non-compliance matters.

(8) The release of performance bonds will not occur until the development works are complete, the site has been rehabilitated, all conditions have been satisfied and all compliance matters have been resolved.

(9) Where a security bond is required to ensure the protection of vegetation during development works, the value of the bond must be commensurate with the estimated monetary value of the tree(s) to be protected as determined by industry standard valuation methods with a minimum of $10,000 or a bond value. The bond will be released upon the submission of certification to Council from a suitably qualified arborist or ecologist demonstrating that suitable tree protection measures / program was implemented and maintained for the duration of the construction works and that the bonded trees are unlikely in their professional opinion to have been negatively impacted in any way to cause death, de-stabilisation or decline in health or visual amenity.

6.3.13.4 Maintenance bond

(1) A maintenance bond will be required for all works that will become a Council asset and for any works within a road reserve or other open space area that Council is or will be responsible for.

(2) The maintenance bond valued at 5% of the total value of works with a minimum of $5,000 must be submitted to Council prior to acceptance for the works on maintenance. Council Officers may require another amount depending on the circumstances.

(3) Where landscaping works are considered to be separate from the civil works, an Open Space Maintenance bond valued at 20% of the total value of landscape works with a minimum $10,000 must be submitted to Council prior to acceptance of the works on maintenance.

(4) The bond from the developer must be accompanied by details of the bond and the development project on Council's standard lodgement form.

(5) Council Officers may agree to undertake the maintenance of soft landscaping works (mowing, weeding etc) during the maintenance period if all costs are paid by the developer. If Council Officers agree to undertake the maintenance responsibilities, a quotation for the work will be provided and must be paid prior to the works being accepted on maintenance and prior to the approval of the plan of survey.

6.3.13.5 Incomplete works bonding

(1) Works should be completed prior to the approval of the plan of survey. However where exceptional circumstances exist, Council Officers may accept a bond to secure incomplete works associated with reconfiguring a lot and approve the plan of survey prior to the completion of the works.

Prerequisites

(2) Prior to the approval of the plan of survey:-

(a) all water supply and sewerage works must be completed and connected to Council's network;

(b) all stormwater drainage works must be completed;
(c) as constructed information of the completed works must be submitted to and accepted by Council Officers;
(d) all works within the proposed lots must be completed;
(e) all relevant documentation must be submitted to Council;
(f) all earthworks within the private property and open space areas must be completed and substantially revegetated in accordance with Part 6.2 of this policy;
(g) an interim on maintenance inspection of the completed works has been successfully undertaken and all associated documentation for 'on maintenance' has been provided to Council; and
(h) a works programme detailing all outstanding works and their programmed completion dates must be submitted and approved by Council Officers. All works are required to be completed within six (6) weeks of the date of approval of the plan of survey.

General

(3) If the developers default on the completion of outstanding works within the set time frames, the Security Deposit will be drawn on to complete the works.

(4) Where the bonding of incomplete works is approved, the land owner must enter into a Bond Agreement with Council setting out the terms of the Agreement.

Bond value

(5) If the developers default on the completion of outstanding works within the set time frames, the Security Deposit will be drawn on to complete the works.

(6) For works that have not been subject to a tender process and a contract has not been signed, security must be lodged to the value of 150% of the approved value of the works including supervision and management costs. The developer's consulting engineer must submit a certified schedule of quantities for the outstanding works together with the contract rates as verification of the value of the outstanding works.

(7) For works that are subject to a signed fixed price contract, security must be lodged to the value of 125% of the value of the contract price plus supervision and management costs. A copy of the contract together with the schedule of quantities and rates must be provided to Council as verification of the value of the works.

(8) For works that are subject to a signed fixed price contract and are partially complete, security must be lodged to the value of 125% of the outstanding works plus supervision and management costs. A copy of the contract together with the schedule of quantities and rates of the outstanding works must be provided to Council as verification of the value of the works.

(9) The minimum value of the incomplete works bond in any case must be $50,000.

(10) Where the works involve Council assets, the maintenance bond must also be provided in addition to the incomplete works bond.

Reduction of bonds

(11) The full value of the incomplete works bond and maintenance bond will be held by Council until all works have been completed and accepted on maintenance. However, staged release of bonding for vegetation rehabilitation works may be approved where such works are staged and in accordance with an approved rehabilitation plan.

(12) On completion and acceptance of the works on maintenance, the bond amount may be reduced to the value of the maintenance bond.

Realisation of bonds

(13) Works that remain incomplete after the agreed timeframes may be undertaken by Council or by a contractor under the direction of Council Officers.

(14) All costs incurred by Council in undertaking the works, including supervision and management costs will be recovered from the security bond.

(15) Where costs incurred by Council exceed the value of the security, Council will take all necessary legal action to recover the additional costs from the developer.

6.3.13.6 Release of bonds

(1) Unless otherwise notified by the applicant the maintenance bond will be refunded after acceptance of the works formally 'Off Maintenance'.

(2) All bonds will be returned to the payer unless the payer has advised Council otherwise in writing.

(3) The Principal Consultant must lodge a formal request for the return of any bonds outlining the reasons and including the following details:-

(a) description of development;
(b) Council file reference for development;
(c) bond amount originally lodged with Council;
(d) name of Trading Bank (Bank Guarantee Bond only);
(e) Council receipt number (Cash/Cheque Bonds only);
(f) date bond lodged with Council; and
(g) payer.

Appendix SC6.3A Fraser Coast Road Hierarchy

Road hierarchy element and their objectives

<table>
<tr><th colspan="10">Tier 1: Function</th></tr>
<tr><th colspan="5">Roads</th><th colspan="5">Streets</th></tr>
<tr><td colspan="5">• To carry through traffic</td><td colspan="5">• To provide local property access
• To collect local traffic</td></tr>
<tr><th colspan="10">Tier 2: Role</th></tr>
<tr><th colspan="3">Arterial Roads</th><th colspan="3">Sub Arterial Roads</th><th colspan="2">Collector Streets</th><th colspan="2">Local Streets</th></tr>
<tr><td colspan="3">• Through traffic movements between settled areas
• Longer distance traffic movements within settled areas
• Line haul public transport task
• Primary freight and dangerous goods routes
• Regional cycle movements (off road)</td><td colspan="3">• Connections between local areas and arterial roads
• Connections for through traffic between arterial roads
• Access to public transport
• Through movement of public transport
• Regional – local cycle movements (off road)
• Pedestrian movements
• Access to developments</td><td colspan="2">• Carry traffic having a trip end within the local area
• Direct access to properties
• Access to public transport
• Pedestrian movements
• Local cycle movements</td><td colspan="2">• Direct access to properties
• Pedestrian movements
• Local cycle movements
• Access to community based public transport</td></tr>
<tr><th colspan="10">Tier 3: Management</th></tr>
<tr><th>Highway/ Motorway</th><th>Arterial Road</th><th>Arterial Main Street</th><th>Traffic Distributor</th><th>Controlled Distributor</th><th>Sub Arterial Main Street</th><th>Major Collector</th><th>Minor Collector</th><th>Access Street</th><th>Access Place</th></tr>
<tr><td colspan="10">The aim of management policies for these categories will be to facilitate:-</td></tr>
<tr><td>• Longer distance traffic movements
• Regionally and nationally significant movements</td><td>• Longer distance traffic movements</td><td>• Longer distance traffic movements
• Access to commercial properties</td><td>• Connection of local areas to arterial roads
• Access to major developments</td><td>• Connection of local areas to arterial roads
• Access to properties (certain existing cases)
• Control of some aspects of traffic operations to ameliorate impacts</td><td>• Connection of local areas to arterial roads
• Access to commercial properties
• Preservation of aspects of local amenity in balance with traffic operations</td><td>• Connection of residential streets with traffic carrying roads
• Access to grouped properties</td><td>• Connection of residential streets with traffic carrying roads
• Access to individual adjacent properties</td><td>• Access to individual adjacent properties
• Access to local area</td><td>• Access to individual adjacent properties</td></tr>
</table>

Schedule 6

Road hierarchy desirable performance criteria – Urban areas

Criterion	Roads						Streets			
	Arterial Roads			Sub Arterial Roads			Collector Streets		Local Streets	
	Highway /Motorway	Urban Arterial	Arterial Main Street	Traffic Distributor	Controlled Distributor	Sub Arterial Main Street	Major Collector	Minor Collector	Access Street	Access Place
Functional Characteristics										
Traffic carrying function	Volumes not restricted	Volumes not restricted	Volumes not restricted	Volumes not restricted	preferably <15,000vpd	preferably <10,000vpd	preferably <10,000vpd (up to 1000 lots)	preferably <3,000vpd (up to 300 lots)	preferably <750vpd (up to 75 lots)	preferably <150vpd (up to 15 lots)
Residential access function	Nil	Nil	Nil	Nil	Nil desirable, no new access	Preferably consolidated	Consolidated unless >20m frontages	Individual	Individual	Individual
Commercial access function	Nil	Nil	Site specific	Consolidated	Consolidated	Site specific	Direct possible for large sites	Individual	Individual	Individual
Industrial access function	Nil	Nil	Nil	Nil	Nil	Nil	Direct possible for large sites	Individual	Individual	Individual
Traffic speed environment	≥100km/hr	70-80 km/h	40-60km/h	60-80km/h	May be controlled to 50-70km/h	25-20km/h	60km/h	50km/h	≤40km/h	≤15km/h
Heavy Traffic movement	Primary freight routes	Primary/secondary freight routes	Should bypass except for access	Secondary routes	Should bypass except for access	Should bypass except for access	Access only	Access only	Access only	Access only
Dangerous goods movement	Primary routes	Selected routes only	Inappropriate except for access	Selected routes only	Selected routes only	Inappropriate except for access	Inappropriate except for access	Inappropriate except for access	Inappropriate except for access	Inappropriate except for access
Public transport facilities	Line haul, priority treatments	Line haul, priority treatments	Bus route	Bus route	Bus route	Bus route	Bus route	Bus route	Community bus access	Community bus access
Cycle facilities	Regional, off carriageway	Regional, generally, off carriageway	Regional/local, cycle lanes on road	Regional/local, cycle lanes on road	Regional/local, cycle lanes on road	Regional/local, cycle lanes on road	Local, shared road space with cars	Local, shared road space with cars	Local, shared road space with cars	Local, shared road space with cars
Pedestrian movement facilities	Only where linkage required, separate from road	Only where linkage required, pathways	Pathways both sides	Pathways both sides	Pathways both sides	Pathways both sides	Refer to **Table SC6.3.4.1b (Pathway requirements)**			

Criterion	Roads						Streets			
	Arterial Roads			Sub Arterial Roads			Collector Streets		Local Streets	
	Highway /Motorway	Urban Arterial	Arterial Main Street	Traffic Distributor	Controlled Distributor	Sub Arterial Main Street	Major Collector	Minor Collector	Access Street	Access Place
Frictional Characteristics										
Preferred access control	No access	No access	Selective access control	Combined sites only	Selective access control	Selective access control	Combined site access preferred	Individual sites	Individual sites	Individual sites
Parking provision	No parking on roadway	No parking on roadway	Keep clear of through lanes	No parking on roadway	Keep clear of through lanes	Keep clear of through lanes	Provide for kerbside parking	Provide for kerbside parking	No specific provision	No specific provision
Bus stopping provision	None on road	Indented bays where appropriate	Indented bays where appropriate	Indented bays where appropriate	Indented bays where appropriate	Indented bays where appropriate	Kerbside	Kerbside	No provision	No provision
Pedestrian crossings	Grade separated	Signalised	Controlled points	Controlled points	Controlled points	Controlled points	Some controlled points	Some controlled points	No specific provision	No specific provision
Typ. Intersection spacing	1-2km highway ≥2km motorway	500-1000m	500m desirable, 150m minimum	300m	300m	150-300m	80-100m	40-60m	10m	Nil
Intersection treatments	Grade separated	Signal/ roundabout	Signal/ roundabout	Signal/roundabout /priority T	Signal/roundabout / priority T	Roundabout/ priority T	Roundabout/ priority	Roundabout/ priority	Priority	Priority
Cross Section	Volume driven, could be divided	Volume driven, could be divided	4 or 2 lanes, could be divided	4 or 2 lanes, could be divided	4 or 2 lanes, could be divided	Generally 2 lanes	2 lanes, could be divided	2 lanes	2 lanes	1 or 2 lanes
Impact Characteristics										
Abutting land use types	Non sensitive	Non sensitive, vehicle associated	Retail/ commercial	Non sensitive to traffic	Preferably non sensitive to traffic	Retail/ commercial/ tourism based	As specified under zoning	As specified under zoning	As specified under zoning	As specified under zoning
Land use impact amelioration	Barriers/buffers/ set backs	Buffers/ streetscaping/ setbacks	Streetscaping	Streetscaping/ setbacks	Streetscaping	LATM/ streetscaping	LATM/ street-scaping	LATM/ street-scaping	LATM/ street-scaping	LATM/ street-scaping

Road hierarchy desirable performance criteria – Rural areas

Criterion	Roads						Streets			
	Arterial Roads			Sub Arterial Roads			Collector Streets		Local Streets	
	Highway /Motorway	Rural Arterial	Arterial Main Street	Traffic Distributor	Controlled Distributor	Sub Arterial Main Street	Major Collector	Minor Collector	Access Street	Access Place[1]
Functional Characteristics										
Traffic carrying function	Volumes not restricted	Volumes not restricted	Not Applicable	Volumes not restricted	<15,000vpd	Not Applicable	<10,000vpd (up to 1000 lots)	<2,400vpd (up to 240 lots)	<750vpd (up to 75 lots)	<150vpd (up to 15 lots)
Residential access function	Nil	Nil		May be individual	May be individual		May be individual	Individual	Individual	Individual
Commercial access function	Nil	Nil		Consolidated	Consolidated		Consolidated	Individual	Individual	Individual
Industrial access function	Nil	Nil		May be individual	May be individual		May be individual	Individual	Individual	Individual
Traffic speed environment	≥100km/h	80-100km/h		80-100km/h	May be controlled to 50-70km/h		60-80km/h	50-70km/h	50-60km/h	≤50km/h
Heavy traffic movement	Primary freight routes	Primary/secondary freight routes		Secondary routes	Should bypass except for access		Access only	Access only	Access only	Access only
Dangerous goods movement	Primary routes	Selected routes only		Selected routes only	Selected routes only		Inappropriate except for access	Inappropriate except for access	Inappropriate except for access	Inappropriate except for access
Public transport facilities	Line haul, priority treatments	Line haul, priority treatments		Bus route	Bus route		Bus route	Bus route	Bus route	Community bus access
Cycle facilities	Regional, off carriageway	Regional, generally, off carriageway		Regional/local, cycle lanes on road	Regional/local, cycle lanes on road		No specific provision	No specific provision	No specific provision	No specific provision
Pedestrian movement facilities	Only where linkage required, separate from road	Only where linkage required, pathways		Only where linkage required, pathways	Only where linkage required, pathways		No specific provision	No specific provision	No specific provision	No specific provision

Criterion	Roads						Streets			
	Arterial Roads			Sub Arterial Roads			Collector Streets		Local Streets	
	Highway /Motorway	Rural Arterial	Arterial Main Street	Traffic Distributor	Controlled Distributor	Sub Arterial Main Street	Major Collector	Minor Collector	Access Street	Access Place[1]
Frictional Characteristics										
Preferred access control	No access	No access	Not Applicable	Combined sites only	Selective access control	Not Applicable	Combined site access	Individual sites	Individual sites	Individual sites
Parking provision	No parking on roadway	No parking on roadway		No parking on roadway	Keep clear of through lanes		No specific provision	No specific provision	No specific provision	No specific provision
Bus stopping provision	None on road	Indented bays where appropriate		Indented bays where appropriate	Indented bays where appropriate		Kerbside	Kerbside	Kerbside	Nil
Pedestrian crossings	Grade separated	Signalised		Controlled points	Controlled points		Some controlled points	Some controlled points	No specific provision	No specific provision
Typ. Intersection spacing	4-8km (maximum 12km)	>1000m		>300m	>300m		>100m	>100m	>100m	Nil
Intersection treatments	Grade separated/ priority	Roundabout/ priority		Roundabout/ priority	Roundabout/ priority		Roundabout/ priority	Roundabout/ priority	Priority	Priority
Cross Section	Volume driven, could be divided	Volume driven, could be divided		4 or 2 lanes, could be divided	4 or 2 lanes, could be divided		2 lanes, could be divided	2 lanes	2 lanes	2 lanes
Impact Characteristics										
Abutting land use types	Non sensitive, vehicle associated	Non sensitive, vehicle associated	Not Applicable	Non sensitive to traffic	Preferably non sensitive to traffic	Not Applicable	As specified under zoning	As specified under zoning	As specified under zoning	As specified under zoning
Land use impact amelioration	Setbacks	Setbacks		Setbacks	Setbacks		Setbacks	Setbacks	Setbacks	Setbacks

Appendix SC6.3B Recommended plant list

General Notes
Plants have been categorised according to their most likely purpose, but some will be multi-purpose: e.g. most street trees can also be used in parks, and some of the smaller, compact street or park trees will also be useful screening plants.

Plant List Legend

Origin (O)
- * Australian native plant - native to Fraser Coast Region
- + Australian native plant – mostly native to Queensland
- E exotic plant

Size
- H estimated mature height (m)
- W estimated mature canopy (m)

Note: size of plant in cultivation. Wild plants, or those grown by direct seeding or natural regeneration, may be larger.

Cultural
- M prefers moist soil conditions
- D prefers light, well-drained soil conditions
- S tolerates or prefers shaded or protected positions
- C withstands salt spray, good for coastal planting

Note: Further research may be required for individual plant requirements.

Table SC6.3B1 - Verge / street trees plant list

O	Botanical Name	Common Name	H	W	M	D	S	C
*	Acacia bakeri	Marblewood	10-20	5-8	x			
*	Acmena smithii	Lillypilly Satinash	6-20	3-12	x	x	x	x
*	Acronychia imperforata	Coastal Aspen. Logan Apple	< 12					x
*	Alectryon coriaceus	Beach Alectryon / Birds Eye	4-8	2-5				x
*	Alphitonia excelsa	Red Ash , Soap Tree	6-12	4-6		x		x
*	Alstonia constricta	Bitterbark, Quinine Bush	4-12	4		x		
*	Arytera divaricata	Rose Tamarind, Coogera	7-12	6		x		x
*	Auranticarpa rhombifolia	Queensland Laurel	6-12	3-6	x	x		x
+	Backhousia citriodora	Lemon-scented Myrtle	6-12	5-6	x	x		
+	Barklya syringifolia	Golden Shower Tree	6-12	3-5		x		
+	Brachychiton acerifolius	Flame Tree	8-15	4-8	x	x		
+	Brachychiton bidwilli	Little Kurrajong	3-5	1.5-4		x		
*	Brachychiton populneus	Kurrajong	7-12	4-10		x		
+	Buckinghamia celsissima	Ivory Curl Flower	4-10	2-6		x		
*	Callistemon salignus	Willow or White Bottlebrush	3-9	2-4	x	x		x
*	Callistemon viminalis	Weeping Bottlebrush	4-8	3-5	x	x		x
+	Calophyllum inophyllum	Beauty Leaf, Ball Nut Alexandrian Laurel	9-15	9-15	x	x		x
+	Cassia brewsteri	Leichhardt Bean	5-9	4-6		x		
*	Celtis paniculata	Australian Celtis	4-10	3-6			x	
*	Clausena smyrelliana	Hervey Bay Clausena	6	3	x		x	
*	Commersonia bartramia	Brown Kurrajong	5-10	3-4	x	x	x	
*	Cupaniopsis anacardioides	Tuckeroo	8-12	5-10	x	x		x
*	Diospyros fasciculosa	Grey Ebony	10-20	4-7				
*	Diospyros pentamera	Black or Myrtle Ebony	10-20	4-7				
*	Drypetes deplanchei	Grey Boxwood, Yellow Tulip	10-20	4	x		x	
*	Elaeocarpus eumundi	Eumundi Quandong	10-15	6-8	x		x	
*	Elaeocarpus reticulatus	Blueberry Ash	4-10	2-5	x	x	x	x
*	Endiandra sieberi	Hard Corkwood, Pink Walnut	8-15	3-6		x		x
+	Eucalyptus curtsii	Plunkett Mallee	4-8	3-7		x		x
*	Flindersia australis	Crows Ash, Aust. Teak	10-20	4-8	x		x	
*	Flindersia bennettiana	Bennetts Ash	12-22	7-12		x	x	
*	Flindersia schottiana	Bumpy Ash, Cudgerie	20-40	10-20			x	
*	Glochidion ferdinandi	Cheese tree	5-12	6	x	x		x
*	Guioa semiglauca	Guioa, Wild Quince	6-12	4-5	x			
*	Harpullia hillii	Blunt-leaved Tulip	7-10	6	x	x	x	
*	Harpullia pendula	Queensland Tulipwood	6-15	4-10	x	x		x
*	Hibiscus tiliaceus	Coast Cotton Tree	4-8	3-8	x	x		x
*	Hymenosporum flavum	Native Frangipani	5-12	3-5	x		x	
*	Jagera pseudorhus	Foambark	4-10	2-8	x	x		
*	Lophostemon confertus	Brush Box	8-20	6-12	x	x		

O	Botanical Name	Common Name	H	W	M	D	S	C
*	Lophostemon suaveolens	Swamp Box / Turpentine	6-12	2-4	x			
*	Mallotus discolor	Yellow Kamala	6-15	4-8		x		
*	Mallotus philippensis	Red Kamala	8-18	4-8		x		
*	Melaleuca quinquenervia	Broad-leaved Paperbark	9-20	3-9	x	x		x
*	Melaleuca styphelioides	Prickly-leaved Tea Tree	5-12	3-7	x	x		x
*	Melicope elleryana	Pink-flowered Euodia or Corkwood	8-20	6-15	x	x	x	
*	Mischarytera lautereriana	Corduroy Tamarind	10-20	6-8		x		x
+	Nauclea orientalis	Leichhardt Tree	8-20	6-15	x	x		
*	Pararchidendron pruinosum	Snow Wood, Monkeys Earrings	6-10	3-6	x		x	
+	Peltophorum pterocarpum	Yellow Flame Tree	8-18	10-15	x	x		x
*	Pleiogynium timorense	Burdekin Plum	6-20	> 10	x	x		x
*	Polyalthia nitidissima	Canary Beech	10-18					
*	Pouteria pohlmaniana	Yellow Boxwood	10-20		x	x	x	
*	Pouteria queenslandica	Blush Coondoo	15-30					
+	Rhodosphaera rhodanthema	Deep Yellow Wood, Tulip Satinwood	10-15		x	x	x	
*	Stenocarpus sinuatus	Firewheel Tree	9-20	4-8		x	x	x
*	Sterculia quadrifida	Peanut Tree	6-18			x		x
*	Syzygium luehmannii	Small-leaved Lilly Pilly	6-20	4-8	x		x	
*	Syzygium oleosum	Blue Cherry, Blue Lilly Pilly	4-12	3-8	x		x	
E	Tabebuia rosea	Pink Trumpet Tree	5-8			x		
*	Tristaniopsis laurina	Water Gum, Kanooka	5-15	3-8	x	x	x	x
+	Xanthostemon chrysanthus	Golden Penda	8-15	3-6	x	x	x	

Table SC6.3B2 - Large and/or park trees plant list

O	Botanical Name	Common Name	H	W	M	D	S	C
*	Agathis robusta	Queensland Kauri Pine	20-40	8-15	x	x		
+	Alloxylon flammeum	Scarlet Silky Oak, Tree Waratah	6-15	4-6	x	x	x	
*	Angophora leiocarpa	Smooth-barked Apple	10-20	8-12		x		
*	Araucaria cunninghamii	Hoop Pine	15-30	8-15		x		x
*	Brachychiton discolor	Lacebark Kurrajong	6-15	4-8		x		
*	Castanospermum australe	Blackbean	10-20	6-15	x	x	x	
*	Casuarina cunninghamiana	River She-oak	10-25	8-12	x	x		x
*	Casuarina glauca	Swamp She-oak	5-15	3-8	x	x		x
+	Corymbia citriodora ssp citriodora	Lemon-scented Gum	10-30	8-15		x		
*	Corymbia citriodora ssp variegata	Spotted Gum	15-30	10-15		x		x
*	Corymbia intermedia	Pink Bloodwood	10-25	8-15	x	x		x
+	Corymbia ptychocarpa	Swamp Bloodwood	6-15	3-8	x	x		x
*	Corymbia tessellaris	Moreton Bay Ash, Carbeen	10-25	8-15		x		x
*	Davidsonia pruriens	Davidson's Plum	3-10	1.5-5	x		x	
E	Delonix regia	Royal Poinciana	10-12	10-20		x		x
*	Diploglottis australis	Native Tamarind	8-20	3-8	x		x	
*	Dysoxylum rufum	Hairy or False Rosewood	< 15		x			
*	Elaeocarpus grandis	Blue Quandong	10-20	6-12	x	x	x	
*	Elaeocarpus obovatus	Hard Quandong	6-25	6-15	x		x	x
*	Eucalyptus crebra	Narrow-leaved Ironbark	15-30	8-15		x		x
*	Eucalyptus exserta	Queensland Peppermint				x		
*	Eucalyptus moluccana	Grey or Gum-topped Box	15-25	10-15	x	x		
*	Eucalyptus robusta	Swamp Mahogany	15-20	6-15	x			x
*	Eucalyptus siderophloia	Northern Grey Ironbark	30			x		
+	Eucalyptus sideroxylon	Red Ironbark, Mugga	10-25	8-15		x		x
*	Eucalyptus tereticornis	Queensland Blue Gum	20-30	10-20	x	x		x
*	Eucalyptus umbra	Broad-leaved White Mahogany	5-10		x	x		x
E	Ficus benjamina	Benjamins Fig, Weeping Chinese Banyan	10-20	8-15	x	x		
+	Ficus microcarpa var hillii	Small-fruited Fig, Hills Fig	10-15	10-15		x		x
*	Ficus macrophylla	Moreton Bay Fig	15-30	15-25	x	x		x
*	Ficus obliqua	Small-leaved Fig (strangler)	15-30	15-25		x		
*	Ficus rubiginosa	Port Jackson Fig, Rusty-leaf Fig	10-20	10-20		x		x
*	Ficus virens	White or Grey Fig (banyan)	15-30	15-30	x	x		x
*	Gmelina leichhardtii	White Beech	8-20	4-8				
*	Melaleuca dealbata	Blue-leaved Paperbark	9-20	6-15	x	x		x
+	Melaleuca leucadendron	Cajeput / Weeping Paperbark	10-25	6-15	x			x
*	Melaleuca linariifolia	Flax-leaved Paperbark	5-10	3-8	x	x		x
*	Melaleuca quinquenervia	Broad-leaved Paperbark	9-20	3-9	x	x		x
*	Podocarpus elatus	Plum Pine / Brown Pine	8-20	4-12		x	x	
E	Schotia brachypetala	Parrot Tree, Tree Fuchsia,	10-15	10-15	x	x		

O	Botanical Name	Common Name	H	W	M	D	S	C
		African Walnut						
*	Scolopia braunii	Flintwood, Brown Birch	15	10				
*	Syncarpia hillii	Satinay, Fraser Island Turpentine	20-30	8-15		x		
*	Syzygium francisii	Giant Water Gum	10-25	8-20	x			
+	Syzygium moorei	Coolamon, Rose Apple	8-20	4-9	x		x	
+	Terminalia catappa	Tropical Almond, Kotamba	8-15	10-20		x		x
*	Toona ciliata	Red Cedar	10-30	6-15	x	x	x	
*	Waterhousia floribunda	Giant Weeping Lilly Pilly	8-30	4-12	x		x	

Table SC6.3B3 - Small trees, large screening shrubs and windbreaks plant list

O	Botanical Name	Common Name	H	W	M	D	S	C
*	Acacia concurrens	Curracabah	4-7	3-4		x		
*	Acacia fimbriata	Brisbane Golden Wattle, Fringed Wattle	7	3-6		x		x
*	Acacia flavescens	Toothed Wattle	6-10	4-5	x	x		x
+	Acacia longifolia var sophorae	Sydney Golden Wattle	1-4	3		x		x
*	Acmena hemilampra	Broad-leaved Lilly Pilly	5-10	3-5	x	x	x	x
*	Allocasuarina littoralis	Black She-oak	4-10	3-5		x		x
*	Allocasuarina torulosa	Forest She-oak	8-15	4-6		x		x
*	Backhousia myrtifolia	Grey Myrtle	3-6	2-4	x			
*	Baeckea frutescens	Weeping Baeckea	3	1				
*	Baeckea virgata	Twiggy Heath Myrtle	2-4	1-3	x	x		x
*	Banksia aemula	Wallum Banksia	1-5	1-3	x	x		x
*	Banksia integrifolia	Coast Banksia	5-12	2-7		x		x
+	Banksia serrata	Old Man Banksia	4-12	4-8		x		x
*	Banksia spinulosa var collina	Hills or Hairpin Banksia	1-3	1-3	x	x		x
*	Callistemon formosus	White Cliff Bottlebrush	3-5	2-4	x	x		
*	Callistemon salignus	White Bottlebrush	3-9	2-4	x	x		x
+	Callistemon spp (varieties)	Bottlebrushes						
*	Callitris collumellaris	Coast Cypress	10-20	5-7		x		x
*	Casuarina equisetifolia	Coast or Horsetail She-oak	6-18	3-8		x		x
*	Dodonaea triquetra	Large-leaf Hop Bush	2-3	1-2		x		
*	Dodonaea viscosa	Sticky Hop Bush	2-4	1-3		x		x
*	Ficus coronata	Creek Sandpaper Fig	5-10	3-5	x		x	
+	Grevillea baileyana	Brown Silky Oak	6-12	3-6		x	x	
*	Grevillea banksii	Banks Grevillea, Red Silky Oak	3-8	2-3		x		x
+	Grevillea spp (varieties)	Grevilleas, Spider Flowers				x		
*	Hakea plurinervia	Broad-leaved Hakea	2-3	1.5-2		x		
+	Hakea salicifolia	Willow-leaf Hakea	4-7	3	x	x		x
*	Hibiscus heterophyllus	Native Rosella	3-8		x			
*	Jacksonia scoparia	Dogwood	3-5	1-2.5	x	x		
*	Leptospermum brachyandrum	Weeping Tea Tree	2-6	2-4	x	x	x	x
+	Leptospermum petersonii	Lemon-scented Tea Tree	2-7	1.5-4	x	x		x
*	Leptospermum polygalifolium	Yellow Tea Tree	1-4	1-2.5	x	x		x
*	Leptospermum speciosum		2	3	x	x		
*	Leptospermum trinervium	Woolly Tea Tree	2-6	1.5-3	x			
*	Mallotus claoxyloides	Green Kamala	4-6			x	x	x
*	Melaleuca bracteata	Black or River Tea Tree	4-8	2-5	x	x		x
*	Melaleuca cheelii	Paperbark	6	3		x		
*	Melaleuca diosmatifolia	Pink or Mauve Honey Myrtle	1.5-3	2	x			
*	Melaleuca nodosa	Ball Honey Myrtle	3-7	2-4	x	x		x
*	Melaleuca sieberi	Sieber's Paperbark	5-15		x			
*	Melaleuca viridiflora (red form)	Red-flowering Paperbark	4-10	3-5	x	x		x
E	Metrosideros excelsus	NZ Christmas Bush	5-10			x		x
E	Michelia figo	Port Wine Magnolia	3-5	2-3		x	x	
*	Myoporum acuminatum	Mangrove Boobialla	2-4	2-3	x	x		x
*	Pilidiostigma rhytisperma	Small-leaved Plum Myrtle	2-5	2-3	x	x	x	
*	Pittosporum venulosum	Mock Orange, Brown Pittosporum	6-10	2-4	x	x		x
*	Planchonia careya	Cocky Apple	5-10			x		
*	Randia fitzalani	Native Gardenia	3-6				x	
*	Rapanea variabilis	Muttonwood	2-8					
*	Sophora tomentosa	Silver Bush	2-3			x		x
+	Syzygium paniculatum	Magenta Lilly Pilly	3-10	2-7	x		x	
E	Viburnum odoratissimum	Sweet Viburnum	4.5-6	2		x		
E	Viburnum tinus	Viburnum, Laurustinus	3-5	2-5		x	x	x
*	Vitex trifolia	Coastal Vitex	2-3	2-3		x		x

Table SC6.3B4 - Small to medium shrubs plant list

O	Botanical Name	Common Name	H	W	M	D	S	C
*	Acacia suaveolens	Sweet-scented Wattle	1.5	1-1.5		x		x
*	Alpina arundelliana	Dwarf Native Ginger	1.5	1-2	x		x	
*	Alpinia caerulea	Native Ginger	1-2.5	1-2	x		x	
*	Alyxia ruscifolia	Chain Fruit, Sea Box	1.5-3	1-2		x	x	x
*	Atractocarpus chartaceus	Narrow-leaved Gardenia	6					
+	Austromyrtus inophloia 'Blushing Beauty'	Austromyrtus	1-1.5	1				
*	Austromyrtus dulcis	Midgenberry. Midyim	0.3-1	1-1.5			x	x
*	Backea virgata (varieties)	Twiggy Health Myrtle	< 1	< 1	x	x		
*	Banksia oblongifolia	Dwarf / Fern-leaved Banksia	1-2	1-2		x		x
*	Banksia robur	Swamp Banksia	0.5-2	0.5-2	x			x
*	Breynia oblongifolia	Coffee Bush	1.5-3	1-2		x	x	
*	Callistemon pachyphyllus	Wallum Bottlebrush	1-2	0.5-1	x	x		x
*	Callistemon pachyphyllus viridis	Green Wallum Bottlebrush	1.5	1.5	x	x		x
+	Callistemon subulatus		1-2	1-2	x	x	x	
+	Callistemon viminalis var 'Little John' and 'Captain Cook'	Dwarf Bottlebrushes	1-1.5	1-1.5	x	x		
+	Callistemon spp (varieties)	Bottlebrushes						
*	Cordyline rubra	Red-fruited Palm Lily	2-4	1-2	x		x	
+	Cordyline stricta	Slender Palm Lily	2-4	1-2	x		x	
E	Cordyline fruticosa	Palm Lily, Ti Plant	2-5	1-2.5				
E	Dracaena fragrans	Corn Plant	1-5		x		x	
E	Dracaena marginata	Red-edge Dracaena	3-5			x	x	
+	Eriostemon myoporoides and Eriostemon verrucosus hybrids	Wax Flowers	1-2	1-1.5		x	x	
E	Gardenia augusta 'Magnifica'	Gardenia	1-2	1-1.5		x	x	
+	Graptophyllum excelsum	Scarlet Fuchsia	1-3	1.5-2	x	x	x	
+	Grevillea spp (varieties)	Grevilleas, Spider Flowers				x		
*	Hovea acutifolia	Pointed-leaved Hovea	1-2.5	0.6-1		x	x	x
E	Ixora spp (varieties)	Ixora, Jungle Flame	1-2.5	1-1.5		x		
+	Kunzea opposita	Honey Myrtle	1.5	1.5		x		
*	Leptospermum liversidgei	Olive Tea Tree	1-2	0.6-1.5	x			x
+	Melaleuca linariifolia (cultivars) eg M 'Claret Tops'. M 'Snowfire', M 'purpurea compacta'	Honey Myrtle	0.5-1.5 (usually 1m)	0.5-1.5	x	x		
*	Melaleuca thymifolia	Thyme/Feather Honey Myrtle	0.6-1.2	0.3-0.8	x	x		x
+	Melastoma affine	Native Lassiandra	0.5-2.5	1-2.5	x		x	
E	Metrosideros spp (varieties)	New Zealand Xmas Bushes				x		x
*	Pavetta australiensis	Butterfly Bush	2	1.5	x		x	
E	Philodendron 'Xanadu'	Dwarf Elephant Ears	0.6-1	0.6-1	x	x	x	
*	Pultenaea villosa	Hairy Bush Pea	1-2	1-2		x		
*	Ricinocarpus pinifolius	Wedding Bush	1-2	1		x		
*	Sauropus albiflorus	Snow Bush	0.4	0.4			x	
+	Syzygium australe / paniculatum (hybrids)	Magenta Lilly Pilly	2-3		x		x	
+	Syzygium wilsonii	Powderpuff Lilly Pilly	2-3	2	x		x	
*	Tabernaemontana pandacaqui	Banana Bush	2-4	1.5-3			x	
*	Westringia eremicola	Coast Rosemary	1.5	1		x		
+	Westringia fruticosa	Coast Rosemary	1-1.5	1.5		x		x
+	Xanthostemon verticillatus	Little Penda	1.5 (<5)	1-1.5	x			
*	Zieria smithii	Sandfly Bush	1.5-2	1.5		x	x	

Table SC6.3B5 - Groundcover, borders, and tufted or clumping plants plant list

O	Botanical Name	Common Name	H	W	M	D	S	C
+	Anigozanthus spp (varieties)	Kangaroo Paws	0.3-2	0.3-1.5	x	x		
+	Brachyscome spp (varieties)	Rock or Cut-leaf Daisy	< 0.3	0.5-1		x		
*	Carpobrotus glaucescens	Pigface	< 0.15	1.5-3				x
E	Convolvulus sabatius	Ground Morning Glory	0.15	2.0		x		x
*	Crinum pedunculatum	Swamp, Beach or River Lily	1-1.5	1	x		x	x
*	Cymbopogon refractus	Native Lemon Grass	0.3-1	0.1-0.3		x		
+	Dampiera diversifolia	Dampiera	< 0.15	0.5-1.5		x		
+	Dampiera purpurea	Dampiera	0.75-1	0.5-1	x	x		
*	Dianella brevipedunculata	Clumping Flax Lily	0.5-1	0.6-1	x	x	x	x

O	Botanical Name	Common Name	H	W	M	D	S	C
*	Dianella caerulea	Paroo or Blue Flax Lily	0.5	0.5	x		x	
+	Dianella caerulea 'Breeze'		0.7	0.6	x	x	x	
+	Dianella caerulea 'Little Jess'		0.4	0.4	x	x	x	
*	Dianella congesta	Coastal Flax Lily	0.8	0.5	x	x	x	
+	Dianella tasmanica 'Tas Red'		0.3	0.3		x	x	
E	Dietes bicolor	Yellow Wild Iris	0.7	0.6		x		
E	Dietes grandiflora	Wild Iris	0.8	0.8		x	x	
E	Evolvulus spp (varieties)	Blue Eyes	< 0.3	1		x		
E	Gardenia radicans	Gardenia	< 0.3	< 1		x	x	
E	Gazania (varieties)	Gazania	< 0.25	0.5		x		x
*	Goodenia rotundifolia	Round-leaved Goodenia	0.1-0.4	1		x		
+	Grevillea spp (prostrate varieties) eg G biternata, G 'Sunshine', G 'Fanfare', G 'Bronze Rambler'	Grevillea, Spider Flowers	< 0.3	> 1		x		
*	Hardenbergia violacea	Native Sarsparilla	< 0.3	2	x	x		
+	Helichrysum spp (varieties)	Paper Daisies	varies	varies		x		
*	Hibbertia aspera	Rough Guinea Flower	0.3-0.5	0.5-1		x		
E	Hypericum moseranum 'tricolor'	Hypericum	0.45			x		
E	Juniperus conferta	Japanese Shore Juniper	< 0.3	1-2.5		x		x
E	Liriope muscari 'Evergreen Giant' and 'Majestic'	Giant Liriope or Lily Turf	0.3-0.6	0.3-0.6		x	x	
*	Lomandra confertifolia ssp confertifolia	Mat Rush	0.2-0.6			x		
*	Lomandra filiformis ssp coriaceca	Wattle Mat Rush, Iron Grass	0.3			x		
*	Lomandra hystrix	Creek Mat Rush, River Reed	<1.3		x	x	x	
*	Lomandra longifolia	Spiny Mat Rush	0.5-1	0.6-1.2		x	x	x
+	Lomandra longfolia 'Tanika'		0.5-0.7		x	x	x	x
*	Lomandra multiflora	Many-flowered Mat Rush	0.3-0.8			x		
+	Myoporum parvifolium	Creeping Boobialla	< 0.2	1.5	x	x		x
E	Ophiopogon spp (varieties)	Mondo Grass	< 0.2	< 0.2	x	x	x	
*	Oplismenus aemulus O hirtellus	Creeping Shade Grass	0.1-0.4		x		x	
*	Phebalium woombye	Wallum Phebalium	1-2	1-1.5		x	x	
+	Poa labillardieri	Common Tussock Grass	0.5-1	0.6	x	x		x
+	Scaevola aemula 'Purple Fanfare'	Purple Fan Flower	< 0.3	1		x		x
*	Spinifex sericeus/ hirsutus	Beach Spinifex	<0.3			x		x
E	Strelitzia reginae	Bird of Paradise	1.5	1.5		x		x
*	Themeda triandra	Kangaroo Grass	0.3-1			x		
*	Viola hederacea	Native Violet	< 0.15	0.5-1	x		x	

Table SC6.3B6 - Palms, pandans, cycads and grass trees plant list

O	Botanical Name	Common Name	H	W	M	D	S	C
+	Archontophoenix alexandrae	Alexandra Palm	6-15	3-7	x		x	
*	Archontophoenix cunninghamiana	Bangalow or Picabeen Palm	6-15	3-7	x		x	
+	Carpentaria acuminata	Carpentaria Palm	8-15	4-6	x	x	x	
E	Caryota mitis	Fishtail Palm (clustered)	9	3-5	x			
E	Caryota rumphiana	Fishtail Palm	10-15	6	x			x
+	Cycas media	Zamia Palm, Nut Palm	2-6	1.5-3		x	x	
E	Cycas revoluta	Japanese Sago Palm	1-3			x	x	
+	Freycinetta excelsa	Climbing Pandanus			x		x	
+	Laccospadix australasica	Atherton Palm	3-7				x	
+	Lepidozamia peroffskyana	Pineapple Palm, Scaly Zamia	2-5	2-3.5		x	x	
+	Licuala ramsayi	Wedge-leaf Fan Palm	5-15	3.5	x		x	
+	Linospadix minor	Jakarungle	1-4		x	x	x	
+	Linospadix monostachya	Walking Stick Palm	2-3	1-1.5	x	x	x	
+	Livistona australis	Cabbage Tree Palm	10-20	3-5	x	x		
*	Livistona decipiens	Small or Weeping Cabbage Palm	5-12	2-4	x			x
+	Livistona muelleri	Dwarf Fan Palm	6-10			x		
+	Macrozamia douglasii		< 3	< 3	x	x	x	
*?	Macrozamia moorei	Zamia Palm, Giant Burrawang	2-6	3-5		x	x	
+	Normanbya normanbyi	Queensland Black Palm	9-15	3-5	x			

O	Botanical Name	Common Name	H	W	M	D	S	C
+	Pandanus spiralis	Screw Palm	10					x
*	Pandanus tectorius	Beach or Hala Screw Pine	6-10	3-8	x	x		x
+	Ptychosperma elegans	Solitaire Palm	6-12	3	x			x
+	Ptychosperma macarthurii	Macarthur Palm	5-10	3	x	x		
+	Wodyetia bifurcata	Foxtail Palm	6-12	3-5	x	x		
*	Xanthorrhoea johnsonii	Forest / Northern Grass Tree	1.5-3	0.6-1.2	x	x		
*	Xanthorrhoea latifolia ssp latifolia							
+	Xanthorrhoea resinosa		2.5		x			
+	Xanthorrhoea spp (varieties)	Grass Trees						

Table SC6.3B7 – Fern plant list

O	Botanical Name	Common Name	H	W	M	D	S	C
*	Adiantum hispidulum	Rough Maidenhair Fern	0.3-0.4	0.4-1	x	x	x	
*	Angiopteris evecta	Giant or King Fern	3-5	3-6	x		x	
*	Asplenium australasicum	Birds Nest Fern	0.6-2	1-1.5		x	x	
	Blechnum camfieldii, B cartilagineum, B indicum, B nudum, B wattsii							
+	Cyathea australis	Rough Tree Fern	4-9	3.5-5	x	x	x	
*	Cyathea cooperi	Coopers or Scaly Tree Fern	5-10	3.5-6	x		x	
*	Cyathea leichhardtiana	Prickly Tree Fern	3-7	3	x		x	
+	Cyathea woollsiana	Woolly Tree Fern	3-6	3	x		x	
+	Dennstaedtia davallioides	Lacy Ground Fern	0.4-0.6	1.5-3	x		x	
*	Doodia caudata	Small Rasp Fern	0.1-0.3	0.3	x	x	x	
*	Microsorum scandens	Fragrant Climbing Fern	<0.4				x	
*	Platycerium bifurcatum	Elkhorn Fern	0.7-1	0.7-1			x	
*	Platycerium superbum	Staghorn Fern	1.5-2.5	1-1.5			x	
*	Pteris tremula	Tender Brake	2		x		x	

Table SC6.3B8 - Climbers and creepers plant list

O	Botanical Name	Common Name	H	W	M	D	S	C
*	Cissus antarctica	Native Grape, Water Vine	5-8	1-3	x		x	
*	Clematis glycinoides	Forest Clematis				x	x	
*	Geitonoplesium cymosum	Scrambling Lily			x	x	x	
*	Hardenbdergia violacea	Native Sarsparilla	1-3	1-2		x		x
*	Hibbertia scandens	Twining Guinea Flower				x		x
*	Ipomoea pes-caprae ssp brasiliensis	Goats Foot, Coastal Morning Glory		3		x		x
*	Kennedia rubicunda	Dusky Coral Pea	3	2-3		x		x
*	Morinda jasminoides	Sweet Morinda			x		x	
*	Pandorea jasminoides	Bower of Beauty	3-8	3-6	x		x	
*	Pandorea pandorana	Wonga Vine	3-10	3-6	x	x	x	x
*	Passiflora aurantia	Red or Native Passionflower	3-5	1-3				x
*	Tecomanthe hillii	Fraser Island Creeper			x	x	x	x
*	Vigna marina	Beach Pea, Dune Pea				x		x

Table SC6.3B9 – Grasses plant list

O	Botanical Name	Common Name	H	W	M	D	S	C
E	Axonopus affinis	Carpet Grass						
	Cynodon dactylon	Common Couch	< 0.2		x	x		x
	C dactylon 'Greenleaf Park'							
	C dactylon 'Plateau'	Plateau Grass						
	Dactyloctenium australe	Sweet Smother Grass, Durban Grass					x	
E	Digitaria didactyla	Queensland Blue Couch						x
E	Lolium multiflorum	Italian Rye Grass				x		
E	Lolium perenne	Perennial Rye Grass	0.45	0.3		x	x	
*	Microlaena stipoides	Weeping or Meadow Rice Grass	0.15-0.7		x		x	
E	Stenotaphrum secundatum	Buffalo	< 0.15			x	x	x
	S. secundatum 'Soft'	Soft Leaf Buffalo						
	S. secundatum 'Sir Walter'							
	Zoysia spp	No Mow Grass				x	x	x

Table SC6.3B10 - Sedges, reeds, rushes and other wetland plants plant list

O	Botanical Name	Common Name	H	W	M	D	S	C
*	Baloskian (syn Restio) tetraphyllum ssp meiostachyum	Tassel Cord Rush	1-1.5		x			
*	Baumea articulata	Jointed Twig Rush	1-2	0.9	x			x
*	Baumea juncea	Bare Twig Rush	0.4-0.7		x			x
*	Baumea rubiginosa	Soft Twig Rush	1		x			
*	Bolboschoenus fluviatilis	Marsh Club Rush	0.5-1		x			x
*	Carex appressa	Tall or Tussock Sedge	0.5-1	0.6	x		x	
*	Carex fascicularis	Tassel Sedge	0.5-1	0.6	x			
*	Carex gaudichaudiana	Tufted Sedge	0.1-0.5		x			
*	Centella asiatica	Pennywort	< 0.1		x	x	x	x
*	Chorizandra sphaerocephala	Round-headed Bristle Rush	0.5-0.8		x			
*	Cyperus difformis	Rice Sedge	0.3-0.5		x			
*	Cyperus exaltatus	Tall Flat Sedge	1		x			
*	Cyperus polystachyos	Common or Bunchy Sedge	0.3-0.7		x			
*	Cyperus cyperoides, C haspan, C pedunculatus	Flat Sedges						
*	Eleocharis dulcis	Spike Rush, Water Chestnut	0.8-1.5	0.3-0.6	x			
*	Eleocharis sphacelata	Tall Spike Rush	0.5-2		x			
*	Eleocharis cylindrostachys, E pallens	Spike Rushes	0.3-0.5		x			
*	Eleocharis dietrichiana, E equisetina, geniculata, minuta, ochrostachys, plana, spiralis, tetraquetra	Spike Rushes						
*	Fimbristylis dichotoma	Common Fringe Rush	0.2-0.5		x	x		
*	Fimbristylis ferruginea	Fringe Rush	0.3-0.6		x			x
*	Fimbristylis cinnamometorum F polytrichoides	Fringe Rushes						
*	Gahnia aspera	Rough-leaved Saw Sedge	0.4-0.9	0.6-1.2		x		
*	Gahnia sieberiana	Red-fruited Saw Sedge	1.5-3	1.5-3	x	x	x	x
*	Hibiscus diversifolius	Swamp Hibiscus	1.5-2	0.9-1.2	x			
*	Isolepis inundata	Swamp Club Rush	0.1-0.3		x		x	
*	Isolepis nodosa	Knobby Club Rush	0.4-0.9	0.3-0.6	x	x		x
*	Juncus continuus	Pithy Rush	0.5-1.5		x			
*	Juncus kraussii	Sea Rush	0.6-2		x			x
*	Juncus polyanthemus	Common Tussock Rush	0.6-1.5 usually 0.8		x	x		
*	Juncus usitatus	Common Rush	0.3-1.2		x	x		
*	Lepidosperma laterale	Variable Saw Sedge	0.5-1		x			
*	Lepidosperma longitudinale	Pithy Sword Sedge	1-2		x			
*	Lepironia articulata	Pin Rush	0.5-3		x			
*	Ludwigia octovalvis	Willow Primrose						
*	Nymphoides indica	Water Snowflake	0.15	0.9-2	x			
*	Philydrum lanuginosum	Woolly Frogmouth	0.6-1.2	<0.5	x			
*	Phragmites australis	Common Reed	1.5-3	1-2	x			x
*	Restio pallens		0.3-1	1	x			
*	Schoenoplectus litoralis		1		x			
*	Schoenoplectus mucronatus	Club Rush	0.3-0.7		x			
*	Schoenoplectus validus	River Club Rush	1-2		x			
*	Schoenus apogon	Fluke Bog Rush	< 0.25		x			
*	Schoenus brevifolius	Zig-zag Bog Rush	< 0.7		x			
*	Schoenus calostachyus, S melanostachys, S. moorei, nitens, paludosus, sparteus, turbinatus, vaginatus, yarrabensis	Bog Rush			x			
*	Sporobolus virginicus	Marine Couch			x			x
*	Typha domingensis	Bull Rush, Cumbungi	1-2		x			

Land rehabilitation and bush regeneration plant lists

Refer Council document titled 'Fraser Coast Regional Ecosystems and lists of typical flora species' (Docs#907075) for suitable species for the rehabilitation of natural areas.

Appendix SC6.3C Forms and checklists

Fraser Coast REGIONAL COUNCIL

APPLICATION FOR APPROVAL OF ENGINEERING DRAWINGS
DEVELOPMENT & PLANNING

Development Details		
Development Name:		
Stage No:		
Council File Number:		
Related Approval Number:		
Property Details		
Real Property Description:		
Address:		
Developer		
Name:		
Consultant		
Company Name:		
Contact Name:		
Address:		
Phone Number:		
Email Address:		
Engineering Design?	☐ Yes	☐ No
Contract Administration?	☐ Yes	☐ No
Quality Assurance Accreditation ?	☐ Yes	☐ No

Required Information	
This Application Form must be fully completed and accompanied by:	
(a)	Two (2) complete sets of Engineering Drawings
(b)	One (1) set of the Job Specification
(c)	Any information requested in the Development Approval Conditions
(d)	Any relevant supporting documents; and
(e)	Details of a non-conforming design and reasons for its use (subject to approval).
Certification	
I / We hereby certify that I / We have exercised reasonable skill, care and diligence in the design of the works in accordance with:	
1.	Relevant Development Approvals
2.	Council's Planning Scheme Policy for Development Works and Standard Drawings
3.	Relevant Australian Standards and Codes of Practice

Engineer Name:	RPEQ No:
Signature:	
Date:	

PO Box 1943, Hervey Bay Q 4655
Hervey Bay 77 Tavistock Street, Torquay Q 4655 I **Maryborough** 431 – 433 Kent Street, Maryborough Q 4650
Telephone: 1300 79 49 29 I **Facsimile:** 07 4197 4455 I **Website:** www.frasercoast.qld.gov.au
Email: development@frasercoast.qld.gov.au

November2015 #2944588 v.2

Schedule 6

SC6.3C2 Application for on maintenance

REQUEST FORM
APPLICATION FOR ON MAINTENANCE
DEVELOPMENT & PLANNING

Development Details
Development Name:
Stage No:
Council File Number:
Related Approval Number:
Property Details
Real Property Description:
Address:
Developer
Name:
Consultant
Company Name:
Address:
Phone Number:
Email Address:

This form must be fully completed and accompanied by:

Requirement	Comments	Provided
Compliance Statement		☐ Yes ☐ No ☐ Not Applicable
Supervision Certificate – Engineering, Landscaping		☐ Yes ☐ No ☐ Not Applicable
Structural Certificates – Filling, retaining walls, etc		☐ Yes ☐ No ☐ Not Applicable
Copy of survey plan showing easements etc		☐ Yes ☐ No ☐ Not Applicable
Product Documents – Manuals, Warranties etc		☐ Yes ☐ No ☐ Not Applicable
Landscaping Product Documentation		☐ Yes ☐ No ☐ Not Applicable
As Constructed Data and Certification		☐ Yes ☐ No ☐ Not Applicable
State Government Advice (associated works/approvals)		☐ Yes ☐ No ☐ Not Applicable
Contractors Maintenance Agreement		☐ Yes ☐ No ☐ Not Applicable
Landscaping Maintenance Agreement		☐ Yes ☐ No ☐ Not Applicable
CCTV Sewerage		☐ Yes ☐ No ☐ Not Applicable
CCTV Stormwater		☐ Yes ☐ No ☐ Not Applicable

PO Box 1943, Torquay Q 4655
Hervey Bay 77 Tavistock Street, Torquay Q 4655 I **Maryborough** 431 – 433 Kent Street, Maryborough Q 4650
Telephone: 1300 79 49 29 I **Facsimile**: 07 4197 4455 I **Website:** www.frasercoast.qld.gov.au
Email development@frasercoast.qld.gov.au

November 2015#2944600 v2

Schedule 6

SC6.3C3 Application for off maintenance

REQUEST FORM
APPLICATION FOR OFF MAINTENANCE
DEVELOPMENT & PLANNING

Development Details
Development Name:
Stage No:
Council File Number:
Related Approval Number:
Property Details
Real Property Description:
Address:
Developer
Name:
Consultant
Company Name:
Address:
Phone Number:
Email Address:

This form must be fully completed and accompanied by:

Requirement	Comments	Provided
1. Off Maintenance Inspection successfully completed including Council's Off Maintenance inspection checklist fully completed and inspection report sheet.		☐ Yes ☐ No ☐ Not Applicable
2. Request for Acceptance of Works "Off Maintenance"		☐ Yes ☐ No ☐ Not Applicable
3. Payment of re-inspection fees		☐ Yes ☐ No ☐ Not Applicable
4. Request for release of maintenance security bond		☐ Yes ☐ No ☐ Not Applicable

I hereby certify that the information contained within this application (including the information contained in the attachments) is complete and correct in all particulars.

Consultant Name:	
Checking Officer Name:	Checking Officer Position:
Signature:	Date:

PO Box 1943, Torquay Q 4655
Hervey Bay 77 Tavistock Street, Torquay Q 4655 I **Maryborough** 431 – 433 Kent Street, Maryborough Q 4650
Telephone: 1300 79 49 29 I **Facsimile**: 07 4197 4455 I **Website:** www.frasercoast.qld.gov.au
Email development@frasercoast.qld.gov.au

November 2015 #2944604 v2

Schedule 6

SC6.3C4 Engineering supervision certificate

ENGINEERING SUPERVISION CERTIFICATE
DEVELOPMENT & PLANNING

Development Details
Development Name:
Stage No & Estate Name:
Council File Number:
Related Approval Number:
Property Details
Real Property Description:
Address:
Developer
Name:
Consultant
Company Name:
Address:
Phone Number:
Email Address:

I,	Being a Registered Professional Engineer
Registered under the Provision of the Professional Engineers Act 2002 (as amended) and having been commission to carry out the supervision of the works comprising of:	
Do hereby certify that:	
the inspections, testing and reports to be completed in accordance with Council's requirements have been completed and insofar as such inspections, and tests have revealed the works have been completed, in accordance with the design drawings as approved for construction by Council and our project specification and any other reuiqrements as required by the conditions of approval, Councill's Local laws, policies and codes, the relevant legislation and Australian Standard Codes of Practices and the results of these inspection, tests and reports have been found to be satisfactory. I / We acknowledge that acceptance of the works will be issued in reliance upon this certificate. In addition we have verified that all manufactured materials have been stamped as being in compliance with the relevant specification and all inspection and testing reports and results for the project have been provided to Council. All documentation as defined in Council's Planning Scheme policy for development works for the completed works have been submitted.	

Consultant Name:	
Registered Professional Engineer (Name in Full):	RPEQ No:
Position:	
Signature:	Date:

PO Box 1943, Torquay Q 4655
Hervey Bay 77 Tavistock Street, Torquay Q 4655 I **Maryborough** 431 – 433 Kent Street, Maryborough Q 4650
Telephone: 1300 79 49 29 I **Facsimile**: 07 4197 4455 I **Website:** www.frasercoast.qld.gov.au
Email: development@frasercoast.qld.gov.au

November 2015 #2944608 v2

Schedule 6

SC6.3C5 Landscaping supervision certificate

LANDSCAPING SUPERVISION CERTIFICATE
DEVELOPMENT & PLANNING

Development Details
Development Name:
Stage No & Estate Name:
Council File Number:
Related Approval Number:
Property Details
Real Property Description:
Address:
Developer
Name:
Consultant
Company Name:
Address:
Phone Number:
Email Address:

I do hereby certify that:

The landscaping works have been completed in accordance with Council's Planning Scheme policy for development works and in accordance with the approved landscaping and specifications and any other requirements as required by the conditions of approval, Council's Local laws, policies and codes, the relevant legislation and Australian Standard Codes of Practices. I / We acknowledge that acceptance of the works will be issued in reliance upon this certificate.

In addition we have verified that all manufactured materials have been stamped as being in compliance with the relevant specification and all inspection and testing reports and results for the project have been provided to Council.

All documentation as defined in Council's Planning Scheme policy for development works for the completed works have been submitted.

Company:	
Landscaper (Name in Full):	
Position:	Qualifications:
Signature:	Date:

PO Box 1943, Torquay Q 4655
Hervey Bay 77 Tavistock Street, Torquay Q 4655 I **Maryborough** 431 – 433 Kent Street, Maryborough Q 4650
Telephone: 1300 79 49 29 I **Facsimile**: 07 4197 4455 I **Website:** www.frasercoast.qld.gov.au
Email: development@frasercoast.qld.gov.au

November 2015 #2944673 v2

SC6.3C6 Deed of agreement for bonding incomplete works

This Deed is made on _____20_____

BETWEEN:

(Hereinafter "the Principal")

AND: **FRASER COAST REGIONAL COUNCIL**
A Local Government duly constituted under the Local Government Act 1993 of 75 Tavistock Street, Torquay in the State of Queensland (hereinafter "Council")

RECITALS:

A. The Principal under Schedule 19 of the Sustainable Planning Regulation 2009 ("SPA") has requested the Council accept a bond/bank guarantee to secure compliance with conditions of the development permit for reconfiguration of land described as Lot _____ situated at _____("the land") and in relation to the Operational Works Approval dated _____ on Council's File Number _____.

B. In consideration of receipt of an unconditional bond/bank guarantee by Council from the Principal and the terms herein Council acknowledges that it shall endorse its approval on the plan of reconfiguration submitted on behalf of the Principal for the land described herein notwithstanding works prescribed under the development permit remain incomplete.

C. The Principal hereby irrevocably appoints Council to perform any works prescribed under the development permit should the Principal not complete same within fourteen (14) days from demand by Council hereunder and Council is irrevocably authorised by the Principal to draw down upon the security deposit with respect to the payment of any such works undertaken.

D. Upon notification that the land is "on maintenance" the Principal authorises the retention of a component of the security deposit determined at the sole discretion of Council to be held to secure performance of any maintenance works which need to be undertaken on the land for a minimum period of twelve (12) months from acceptance of the land "on maintenance".

NOW THIS AGREEMENT WITNESSES:-

1. The Principal hereby lodges cash/bank guarantee or bond ("security deposit") in the sum of $_____ for incomplete works and maintenance works under the development permit for reconfiguration of the land ("the incomplete works").

2. The Principal covenants and agrees to perform the incomplete works:

   (a) within six (6) weeks of lodgement of the security deposit; or

   (b) if the works are delayed as a result of inclement weather or industrial conditions beyond the control of the Principal, the date which is six (6) weeks after lodgement of the security deposit, extended by a number of days which the Principal can establish to the reasonable satisfaction of the Council were lost as a result of those causes.

3. If the Principal fails to perform the incomplete works by the date determined under clause 2, Council may issue a notice requiring performance of the incomplete works within fourteen (14) days.

4. Council shall be entitled to forthwith draw down upon the security deposit and perform any incomplete works by Council or an independent contractor upon expiration of the notice period prescribed under Clause 3 herein.

5. The Principal irrevocably authorises Council or its duly appointed contractors or agents to enter onto the land and perform any incomplete works and acknowledges such works shall be charged against the security deposit.

6. The Principal acknowledges and agrees that Council is entitled to utilise the security deposit in payment of costs of and incidental to performance of the incomplete works or maintenance works prescribed herein.

7. The Principal hereby indemnifies Council from any loss or damage which may be suffered or incurred as a result of performance of the incomplete works by Council or its independent contractors or agents other than loss or damage arising from the wilful or negligent act or omission of the Council or its independent contractors or agents.

8. Any interest which accrues on the security deposit shall be retained and paid to the Council.

MAINTENANCE BOND

9. Upon performance of all incomplete works and Council accepting the land "on maintenance" Council shall reduce the security deposit to the approved maintenance security amount ("the maintenance bond") being $_____.

10. Council shall provide a partial release of the security deposit whereby part of the cash/bank guarantee or bond shall be released and a sum equivalent to the maintenance bond shall be retained by Council.

11. If Council (by its delegated officer) in its sole discretion determines that any maintenance works are required during a period of twelve (12) months or such longer period determined by Council from acceptance of the land on maintenance ("the maintenance period") Council may direct the Principal in writing to perform the specified maintenance works.

12. If the Principal fails to perform the maintenance works directed within fourteen (14) days Council may proceed to perform the maintenance works identified by Council without further notice.

13. Council shall be entitled to forthwith draw down upon the maintenance bond and perform any maintenance works upon expiration of the notice period prescribed under Clause 12 herein.

14. Should no direction with respect to performance of maintenance works be issued by Council to the Principal during the maintenance period the Principal shall request and the Council shall undertake a final inspection of the works and, provided that the works are to the reasonable satisfaction of the Council, the Council must notify the Principal that the land is "off maintenance" and contemporaneously release the maintenance bond or any balance of the security deposit retained by Council.

15. The notice referred to in Clause 3 and 11 shall be deemed to be given if the Council sends a letter by ordinary post to the Principal at the address mentioned in this deed or to an alternative address where so nominated in writing by the Principal.

(If being signed by company)

Executed as a Deed.

SIGNED, SEALED AND DELIVERED by	)	
	)……	
[INSERT COMPANY NAME]	)	Director
[INSERT COMPANY NAME]	)	
	)……	
ACN/ABN [INSERT NUMBER]	)	Full name of director
Pursuant to the *Corporations Act 2001* (Cth)	)	
	)……	
	)	Director/ Secretary
	)	
	)……	
	)	Full name of director/secretary

In the presence of:

……
Justice of the Peace/ Solicitor/ Comm. Dec

……
Full name of Witness

SIGNED, SEALED AND DELIVERED by	)
FRASER COAST REGIONAL COUNCIL	)
	)
	)

In the presence of:

……
Justice of the Peace/ Solicitor/ Comm. Dec

……
Full name of Witness

Schedule 6

(If being signed by an individual)

Executed as a Deed.

SIGNED, SEALED AND DELIVERED by)……
)
_____)
)
_____)

In the presence of:

……
Justice of the Peace/ Solicitor/ Comm. Dec

……
Full name of Witness

SIGNED, SEALED AND DELIVERED by)
FRASER COAST REGIONAL COUNCIL)
)
)

In the presence of:

……
Justice of the Peace/ Solicitor/ Comm. Dec

……
Full name of Witness

Appendix SC6.3D Standard drawings

Index – Standard drawings

Road cross sections

Drawing No.	Rev No.	Title
FC-200-01	C	URBAN RESIDENTIAL & RURAL RESIDENTIAL (Lots <1ha) ACCESS PLACE/STREET
FC-200-02	D	URBAN RESIDENTIAL & RURAL RESIDENTIAL (Lots <1ha) MINOR/MAJOR COLLECTOR
FC-200-03	C	RURAL RESIDENTIAL (Lots ≥ 1ha) ACCESS STREET AND MINOR/MAJOR COLLECTOR
FC-200-04	D	INDUSTRIAL/COMMERCIAL ACCESS STREET & COLLECTOR
FC-200-05	C	RURAL ARTERIAL
FC-200-06	D	CONTROLLED DISTRIBUTOR - URBAN
FC-200-07	D	TRAFFIC DISTRIBUTOR - URBAN

Road Construction Details

Drawing No.	Rev No.	Title
FC-210-01	C	PUBLIC UTILITIES IN SUBDIVISIONS – ROAD CROSS SECTIONS
FC-220-01	B	KERB AND CHANNEL - PROFILES AND DIMENSIONS
FC-220-02	B	KERB AND CHANNEL - DRAINAGE CONNECTIONS
FC-220-04	B	KERB RAMP
FC-220-05	B	TACTILE INDICATORS FOR KERB RAMPS (sheet 1)
FC-220-06	B	TACTILE INDICATORS FOR KERB RAMPS (sheet 2)
FC-220-08	B	SUBSURFACE DRAINAGE
FC-230-01	B	RESIDENTIAL DRIVEWAY SLAB AND TRACKS
FC-230-02	B	COMMERCIAL DRIVEWAY SLAB
FC-230-03	B	RURAL ACCESS PIPE/BOX CULVERT AND INVERT CROSSING
FC-230-04	B	WATER SENSITIVE URBAN DESIGN VEHICLE CROSSING FOR SINGLE DWELLING

Pathway Details

Drawing No.	Rev No.	Title
FC-240-01	B	CONCRETE, PAVED & ASPHALT FOOTPATHS
FC-240-02	B	CONCRETE FOOTHPATHS COMMERCIAL SITES – FULL WIDTH
FC-240-03	B	CONCRETE PAVEMENT JOINTS FOR FOOTPATHS AND SHARED BIKEPATHS
Fc-240-04	A	PAVED & ASPHALT FOOTPATHS TYPICAL CONSTRUCTION DETAILS

Signage Details

Drawing No.	Rev No.	Title
FC-260-01	B	STREET NAME SIGN AND LOCATION (FINGER BOARD)
FC-260-02	B	TRAFFIC SIGN INSTALLATION DETAILS

Drainage Details

Drawing No.	Rev No.	Title
FC-310-01	B	KERB IN LINE GULLY UNIT MODEL R24P-400 PROTRUDED TYPE ON GRADE
FC-310-02	B	CHANNEL LIP IN LINE GULLY UNIT MODEL C24P-400 RECESSED TYPE SAG AND ANTI_PONDING
FC-310-03	B	GULLY – ROADWAY GENERAL ARRANGEMENT KERB IN LINE – TYPE B KEYSIN INLET UNIT
FC-310-07	B	DOMESTIC AND SHED ROOF WATER ONSITE DISPERSAL PIT

Sewer Details

Drawing No.	Rev No.	Title
SEWER SERVICE CONNECTIONS		
SHC 01		STANDARD DRAWINGS SEWER SERVICE CONNECTIONS CONNECTION ACROSS ROAD
PUMP STATIONS – CIVIL		
PS 01		1800 mm DIAMETER SEWAGE PUMP STATION LAYOUT PLAN
PS 02		1800 mm DIAMETER SEWAGE PUMP STATION LAYOUT PLAN
PS 03		1800 mm DIAMETER SEWAGE PUMP STATION OVERFLOW TYPICAL DETAILS
PS 04		1800 mm DIAMETER SEWAGE PUMP STATION FLOWMETER PIT DETAILS
PS 05		1800 mm DIAMETER SEWAGE PUMP STATION ACCESS CONTROL LAYOUT PLAN
PS 06		1800 mm DIAMETER SEWAGE PUMP STATION MISCELLANEOUS DETAILS
PS 07		1800 mm DIAMETER SEWAGE PUMP STATION VALVE PIT & ROOF SLAB
PS 08		1800 mm DIAMETER SEWAGE PUMP STATION REINFORCEMENT – SECTION A
PS 09		1800 mm DIAMETER SEWAGE PUMP STATION ROOF SLAB TOP STEEL
PS 10		1800 mm DIAMETER SEWAGE PUMP STATION ROOF SLAB BOTTOM STEEL
PS 11		PUMPING STATION – 7.2M VENT POLE TERRAIN CAT 2 AND 3 (NON – CYCLONIC)
PS12		STANDARD DRAWING SAFETY BARRIER SYSTEM
PUMP STATIONS – ELECTRICAL		
DOL-001	A	STANDARD SEWAGE PUMP STATION (DOL < 3.5 KW) THREE LINE 415V POWER DISTRIBUTION - SCHEMATIC DIAGRAM

DOL-002	A	STANDARD SEWAGE PUMP STATION (DOL < 3.5 KW) PUMP CONTROLS – SCHEMATIC DIAGRAM
DOL-003	A	STANDARD SEWAGE PUMP STATION (DOL < 3.5 KW) TELEMETRY WIRING – SCHEMATIC DIAGRAM
DOL-004	A	STANDARD SEWAGE PUMP STATION (DOL < 3.5 KW) GENERAL LAYOUT
DOL-005	A	STANDARD SEWAGE PUMP STATION (DOL < 3.5 KW) CONSTRUCTION NOTES
DOL-006	A	STANDARD SEWAGE PUMP STATION (DOL < 3.5 KW) EQUIPMENT LIST
SS-001	A	STANDARD SEWAGE PUMP STATION (SS > 3.5 KW) THREE LINE 415V POWER DISTRIBUTION - SCHEMATIC DIAGRAM
SS-002	A	STANDARD SEWAGE PUMP STATION (SS > 3.5 KW) PUMP CONTROLS - SCHEMATIC DIAGRAM
SS-003	A	STANDARD SEWAGE PUMP STATION (SS > 3.5 KW) TELEMETRY WIRING – SCHEMATIC DIAGRAM
SS-004	A	STANDARD SEWAGE PUMP STATION (SS > 3.5 KW) GENERAL LAYOUT
SS-005	A	STANDARD SEWAGE PUMP STATION (SS > 3.5 KW) CONSTRUCTION NOTES
SS-006	A	STANDARD SEWAGE PUMP STATION (SS > 3.5 KW) EQUIPMENT LIST

Water Details

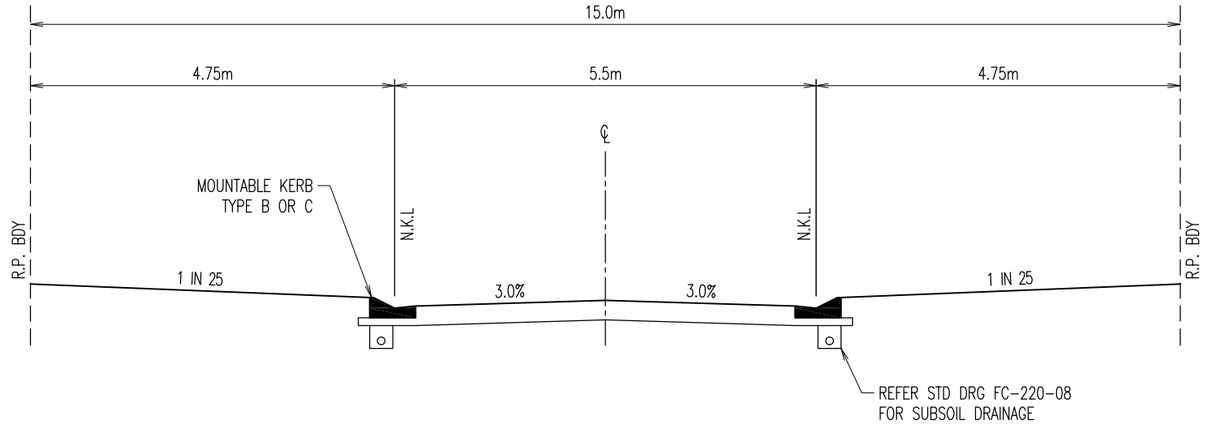
Drawing No.	Rev No.	Title
WS 01		STANDARD DRAWING 25-32mm SMART WATER METER
WM 01		STANDARD DRAWINGS CUL-DE-SAC DETAIL
WM 02		STANDARD DRAWINGS PE to PVC CONNECTION DETAIL

NOTES:

1. FOR STREET CLASSIFICATIONS AND DESIGN PRINCIPLES REFER TO FCRC PLANNING SCHEME SCHEDULE 6 – SC6.3.4 – ROADS AND PATHWAYS.
2. FOR DETAILS OF VERGE AND ALLOCATION OF PUBLIC UTILITIES REFER TO FCRC STD DRG FC-210-01.
3. THESE TYPICAL SECTIONS ARE COUNCIL'S MINIMUM REQUIREMENT ONLY AND MAY VARY WITH PEDESTRIAN/BIKEWAY/PARKING AND GENERAL NETWORK PLANNING.
4. STREET LIGHTING IN ACCORDANCE WITH FCRC PLANNING SCHEME SCHEDULE 6 – SC6.3.9 – ELECTRICAL, STREET LIGHTING AND TELECOMMUNICATIONS.
5. NARROWER STREET WIDTHS WHICH MAY INCLUDE INDENTED PARKING AND ONE WAY CROSSFALLS MAY BE PERMITTED SUBJECT TO DEMONSTRATION THAT THE REQUIREMENTS OF 'COMPLETE STREETS' AND THE 'QUEENSLAND URBAN DRAINAGE MANUAL' ARE SATISFIED.
6. DESIGN STANDARDS MAY VARY TO BE CONSISTENT WITH THE EXISTING INFRASTRUCTURE IN THE SURROUNDING AREA AND MUST TRANSITION INTO EXISTING INFRASTRUCTURE ADJOINING THE DEVELOPMENT. THE MINIMUM ROAD RESERVE MAY NEED TO BE WIDENED TO ACCOMMODATE ALTERNATIVE TREATMENTS, SUCH AS SWALE DRAINS.

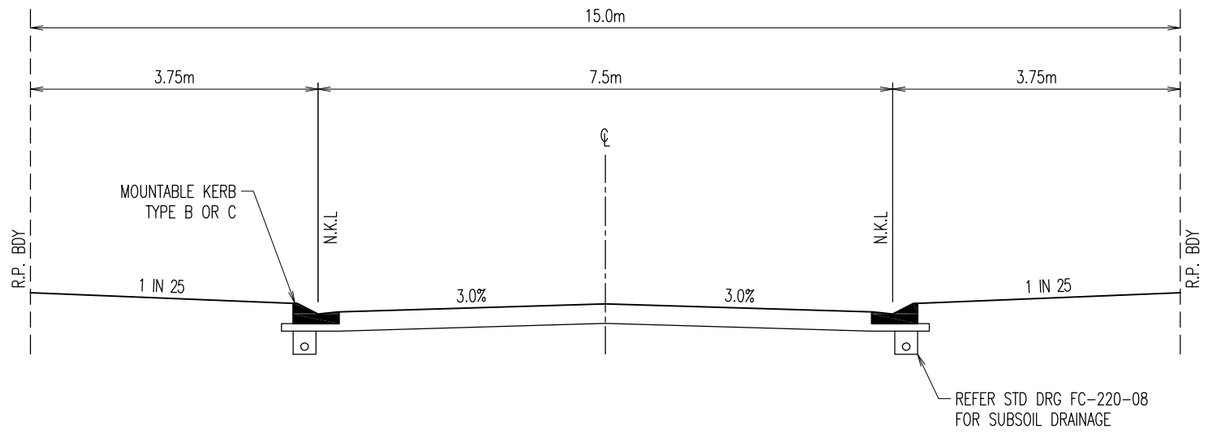
LEGEND

℄ —·——·—	ROAD CENTRELINE
R.P. BDY _ _ _	REAL PROPERTY BOUNDARY
N.K.L	NOMINAL KERB LINE (KERB INVERT)
MIN	NOT LESS THAN
MAX	NOT MORE THAN



ACCESS PLACE

SERVICING UP TO 15 LOTS



ACCESS STREET

SERVICING UP TO 75 LOTS

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C	NOTES ALTERED & TITLEBLOCK CHANGE		08/16
B	DEVELOPMENT MANUAL REVISION		11/12
A	ORIGINAL ISSUE		04/12

Fraser Coast REGIONAL COUNCIL

URBAN RESIDENTIAL & RURAL RESIDENTIAL (Lots < 1ha)
ACCESS PLACE/STREET

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16

* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE

STANDARD DRAWING

SHEET 1 OF 1

A3

STANDARD DRAWING No: FC-200-01

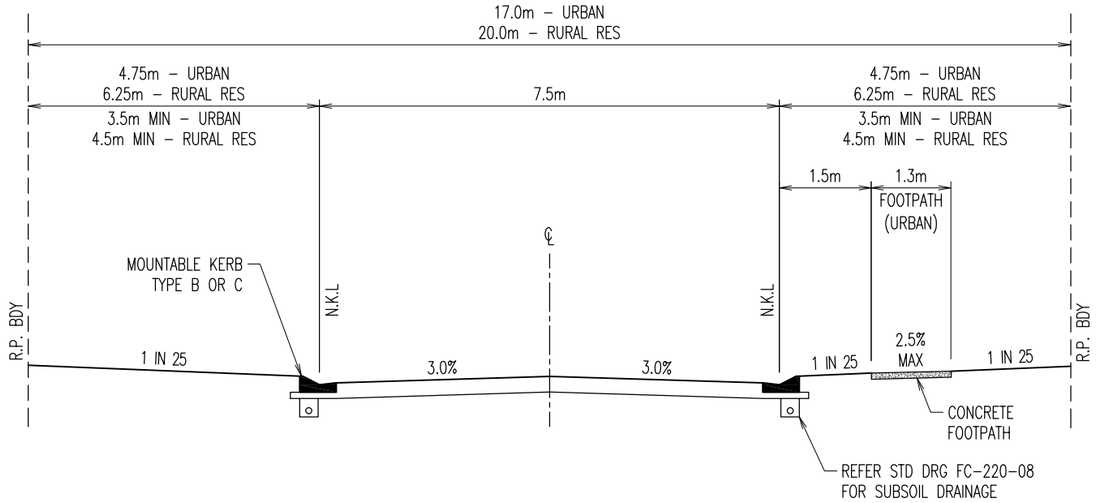
A | B | C

NOTES:

1. FOR STREET CLASSIFICATIONS AND DESIGN PRINCIPLES REFER TO FCRC PLANNING SCHEME SCHEDULE 6 – SC6.3.4 – ROADS AND PATHWAYS.
2. FOR DETAILS OF VERGE AND ALLOCATION OF PUBLIC UTILITIES REFER TO FCRC STD DRG FC–210–01.
3. THESE TYPICAL SECTIONS ARE COUNCIL'S MINIMUM REQUIREMENT ONLY AND MAY VARY WITH PEDESTRIAN/BIKEWAY/PARKING AND GENERAL NETWORK PLANNING.
4. STREET LIGHTING IN ACCORDANCE WITH FCRC PLANNING SCHEME SCHEDULE 6 – SC6.3.9 – ELECTRICAL, STREET LIGHTING AND TELECOMMUNICATIONS.
5. DESIGN STANDARDS MAY VARY TO BE CONSISTENT WITH THE EXISTING INFRASTRUCTURE IN THE SURROUNDING AREA AND MUST TRANSITION INTO EXISTING INFRASTRUCTURE ADJOINING THE DEVELOPMENT. THE MINIMUM ROAD RESERVE MAY NEED TO BE WIDENED TO ACCOMMODATE ALTERNATIVE TREATMENTS, SUCH AS SWALE DRAINS.

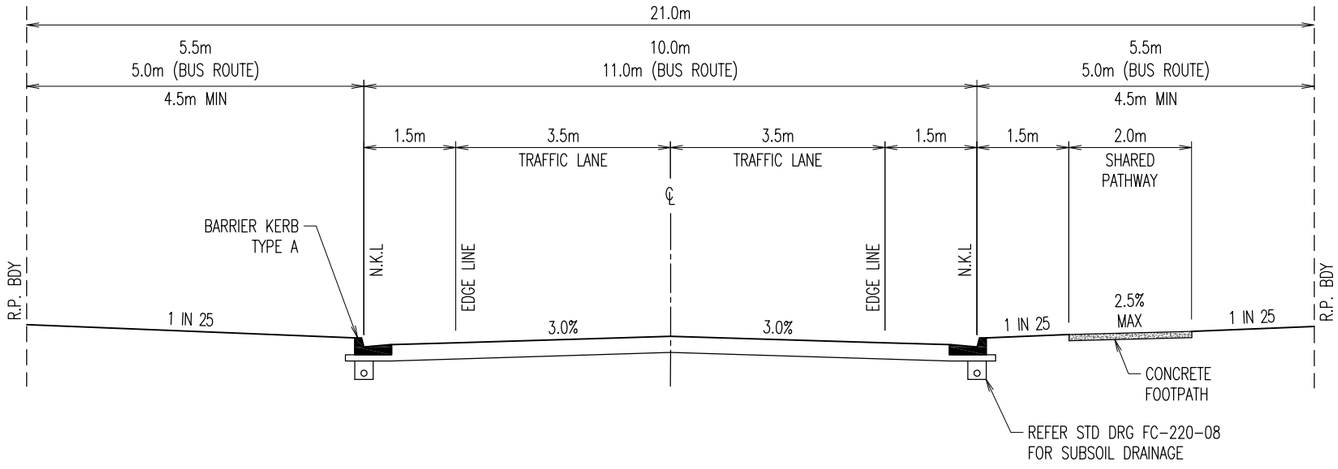
LEGEND

℄ — - —— - —	ROAD CENTRELINE
R.P. BDY	REAL PROPERTY BOUNDARY
N.K.L	NOMINAL KERB LINE (KERB INVERT)
MIN	NOT LESS THAN
MAX	NOT MORE THAN



MINOR COLLECTOR

SERVICING UP TO 300 LOTS – URBAN
SERVICING UP TO 240 LOTS – RURAL RES



MAJOR COLLECTOR

SERVICING UP TO 1,000 LOTS

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D	NOTES ALTERED & TITLEBLOCK CHANGE		08/16
C	FOOTPATH WIDTH ALTERED		07/13
B	DEVELOPMENT MANUAL REVISION		11/12
A	ORIGINAL ISSUE		04/12

Fraser Coast REGIONAL COUNCIL

URBAN RESIDENTIAL & RURAL RESIDENTIAL (Lots < 1ha)
MINOR/MAJOR COLLECTOR

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16

* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE

STANDARD DRAWING

SHEET 1 OF 1

A3

STANDARD DRAWING No: FC–200–02

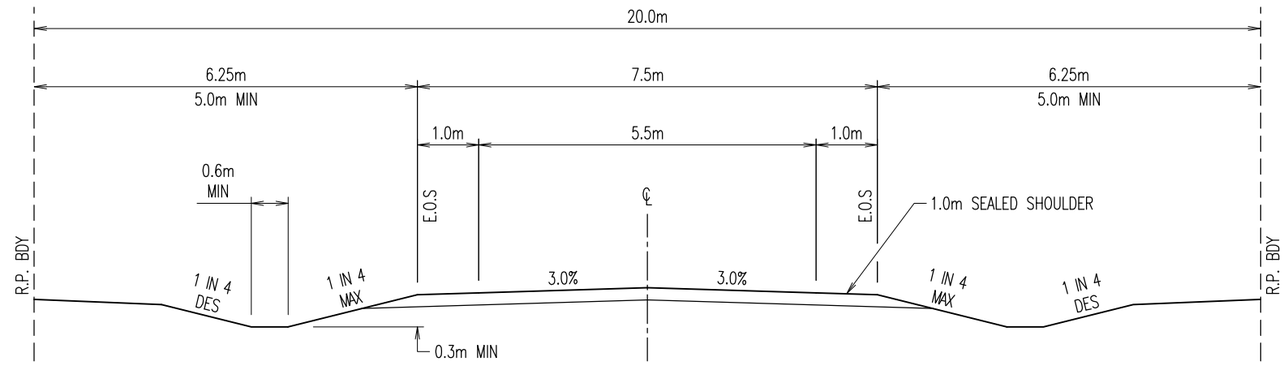
A / B / C / D

NOTES:

1. FOR STREET CLASSIFICATIONS AND DESIGN PRINCIPLES REFER TO FCRC PLANNING SCHEME SCHEDULE 6 – SC6.3.4 – ROADS AND PATHWAYS.
2. FOR DETAILS OF VERGE AND ALLOCATION OF PUBLIC UTILITIES REFER TO FCRC STD DRG FC–210–01.
3. DESIGN STANDARDS MAY VARY TO BE CONSISTENT WITH THE EXISTING INFRASTRUCTURE IN THE SURROUNDING AREA AND MUST TRANSITION INTO EXISTING INFRASTRUCTURE ADJOINING THE DEVELOPMENT. THE MINIMUM ROAD RESERVE MAY NEED TO BE WIDENED TO ACCOMMODATE ALTERNATIVE TREATMENTS, SUCH AS SWALE DRAINS.

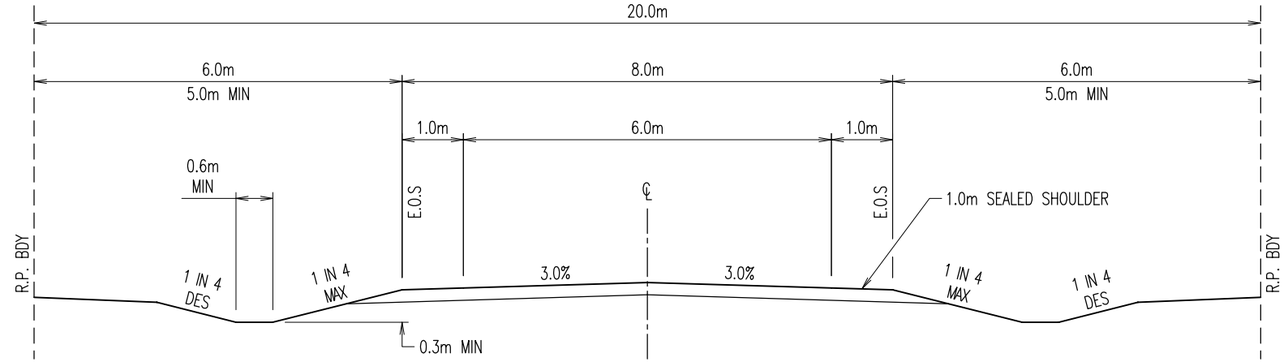
LEGEND

℄ —·——·—	ROAD CENTRELINE
R.P. BDY _ _ _ _	REAL PROPERTY BOUNDARY
E.O.S	EDGE OF SEAL
DES	DESIRABLE
MIN	NOT LESS THAN
MAX	NOT MORE THAN



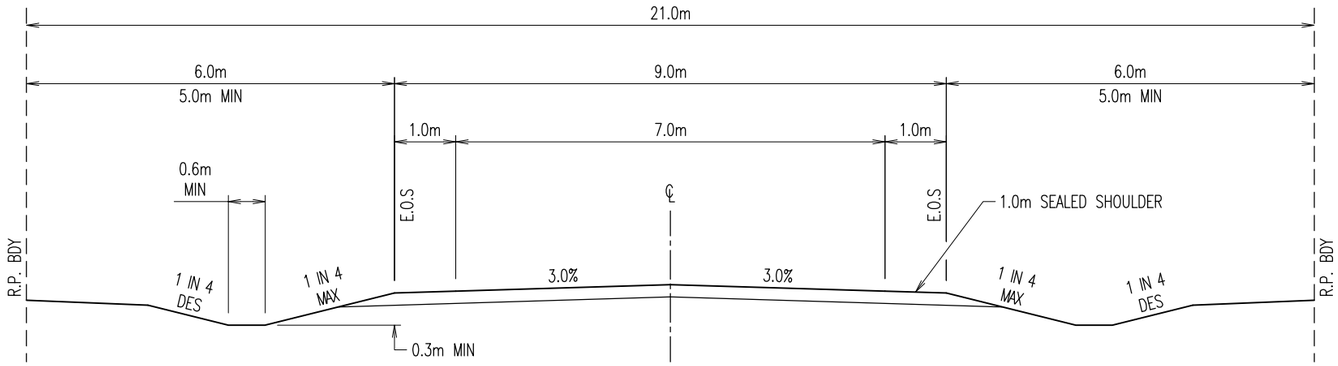
ACCESS STREET – RURAL

SERVICING UP TO 75 LOTS



MINOR COLLECTOR – RURAL

SERVICING UP TO 100 LOTS



MAJOR COLLECTOR – RURAL

TRAFFIC IMPACT ASSESSMENT REQUIRED

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C	MIN VERGE WIDTH ADDED, NOTES ALTERED & TITLEBLOCK CHANGE		08/16
B	DEVELOPMENT MANUAL REVISION		11/12
A	ORIGINAL ISSUE		04/12

Fraser Coast REGIONAL COUNCIL

RURAL RESIDENTIAL (Lots => 1ha)
ACCESS STREET AND MINOR/MAJOR COLLECTOR

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16

* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE

STANDARD DRAWING

SHEET 1 OF 1

A3

STANDARD DRAWING No: FC–200–03

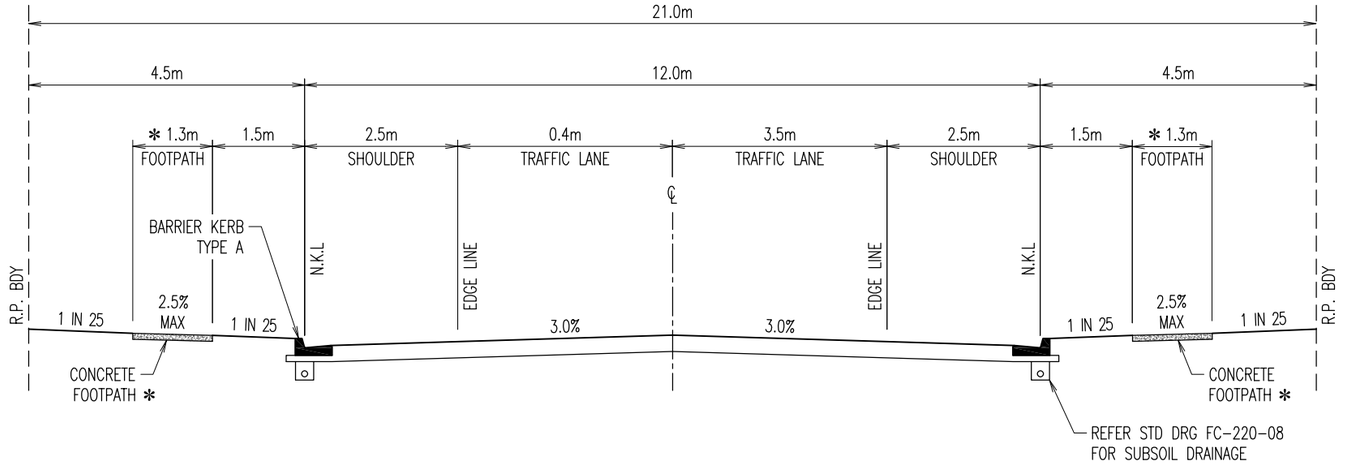
A / B / C

NOTES:

1. FOR STREET CLASSIFICATIONS AND DESIGN PRINCIPLES REFER TO FCRC PLANNING SCHEME SCHEDULE 6 – SC6.3.4 – ROADS AND PATHWAYS.
2. FOR DETAILS OF VERGE AND ALLOCATION OF PUBLIC UTILITIES REFER TO FCRC STD DRG FC–210–01.
3. THESE TYPICAL SECTIONS ARE COUNCIL'S MINIMUM REQUIREMENT ONLY AND MAY VARY WITH PEDESTRIAN/BIKEWAY/PARKING AND GENERAL NETWORK PLANNING.
4. STREET LIGHTING IN ACCORDANCE WITH FCRC PLANNING SCHEME SCHEDULE 6 – SC6.3.9 – ELECTRICAL, STREET LIGHTING AND TELECOMMUNICATIONS.
5. DESIGN STANDARDS MAY VARY TO BE CONSISTENT WITH THE EXISTING INFRASTRUCTURE IN THE SURROUNDING AREA AND MUST TRANSITION INTO EXISTING INFRASTRUCTURE ADJOINING THE DEVELOPMENT. THE MINIMUM ROAD RESERVE MAY NEED TO BE WIDENED TO ACCOMMODATE ALTERNATIVE TREATMENTS, SUCH AS SWALE DRAINS.

LEGEND

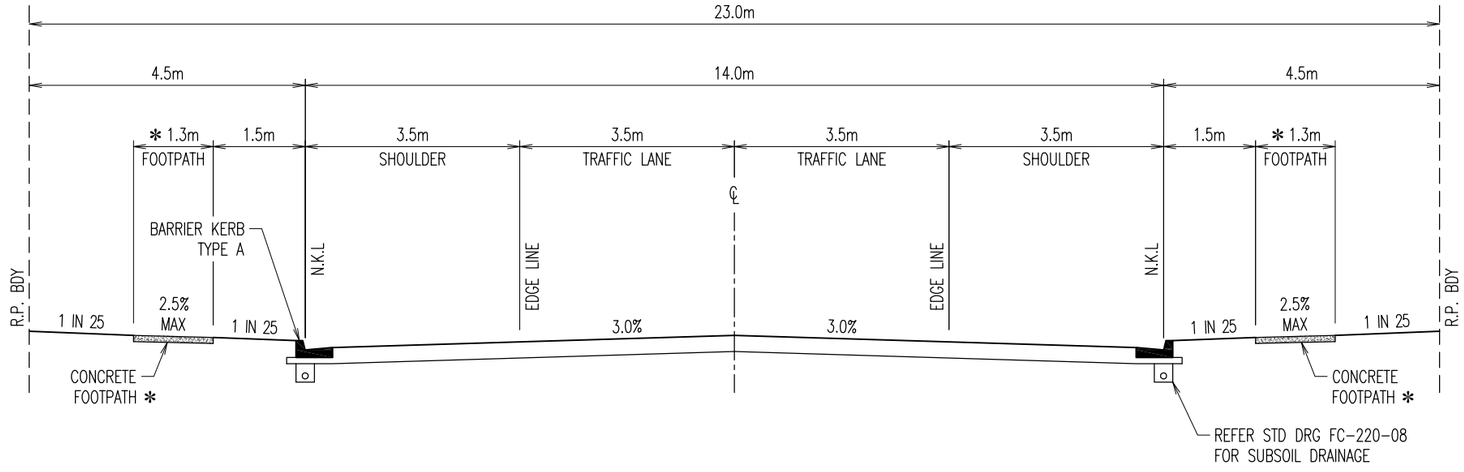
℄ — - —— - —	ROAD CENTRELINE
R.P. BDY	REAL PROPERTY BOUNDARY
N.K.L	NOMINAL KERB LINE (KERB INVERT)
MIN	NOT LESS THAN
MAX	NOT MORE THAN



ACCESS STREET – INDUSTRIAL/COMMERCIAL

TRAFFIC IMPACT ASSESSMENT REQUIRED

✻ FOOTPATHS NOT REQUIRED FOR INDUSTRIAL AREAS



COLLECTOR – INDUSTRIAL/COMMERCIAL

TRAFFIC IMPACT ASSESSMENT REQUIRED

✻ FOOTPATH REQUIRED ON ONE SIDE FOR INDUSTRIAL AREAS

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D	NOTES ALTERED & TITLEBLOCK CHANGE		08/16
C	FOOTPATH WIDTH ALTERED		07/13
B	DEVELOPMENT MANUAL REVISION		11/12
A	ORIGINAL ISSUE		04/12

Fraser Coast REGIONAL COUNCIL

INDUSTRIAL/COMMERCIAL
ACCESS STREET AND COLLECTOR

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16

* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE

STANDARD DRAWING

SHEET 1 OF 1

A3

STANDARD DRAWING No: FC–200–04

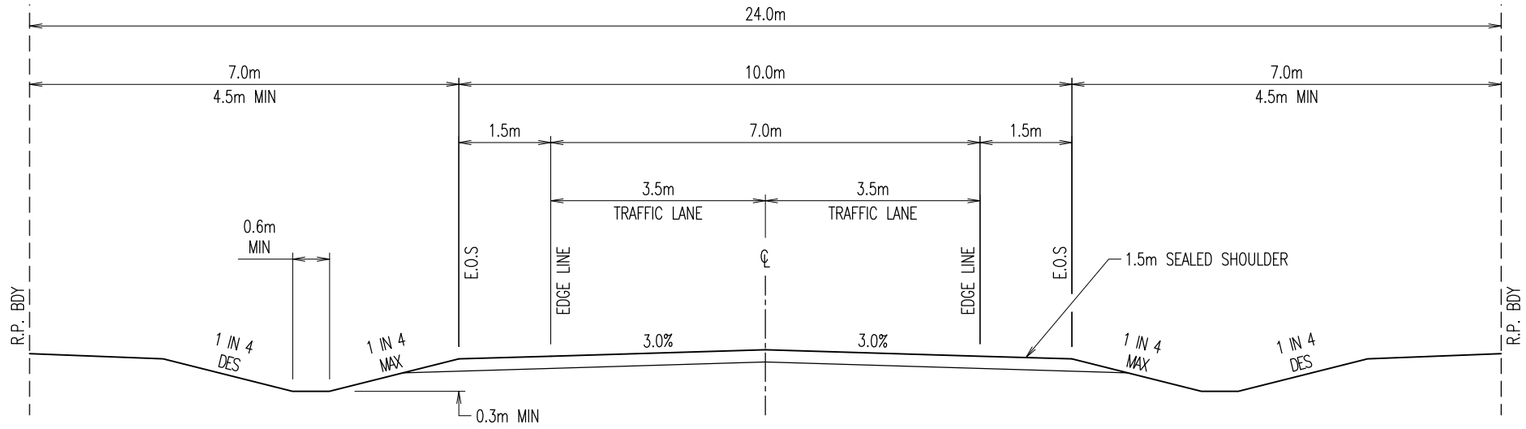
A | B | C | D

NOTES:

1. FOR STREET CLASSIFICATIONS AND DESIGN PRINCIPLES REFER TO FCRC PLANNING SCHEME SCHEDULE 6 – SC6.3.4 – ROADS AND PATHWAYS.
2. FOR DETAILS OF VERGE AND ALLOCATION OF PUBLIC UTILITIES REFER TO FCRC STD DRG FC–210–01.
3. THESE TYPICAL SECTIONS ARE COUNCIL'S MINIMUM REQUIREMENT ONLY AND MAY VARY WITH PEDESTRIAN/BIKEWAY/PARKING AND GENERAL NETWORK PLANNING.
4. STREET LIGHTING IN ACCORDANCE WITH FCRC PLANNING SCHEME SCHEDULE 6 – SC6.3.9 – ELECTRICAL, STREET LIGHTING AND TELECOMMUNICATIONS.
5. THE MAXIMUM CROSSFALL FOR GRASSED/PLANTED MEDIANS SHALL BE 1 IN 6. STEEPER CROSSFALLS MAY BE ALLOWED SUBJECT TO SATISFACTORY DESIGN/CONSTRUCTION DETAILS.
6. FOR MEDIAN WIDTHS LESS THAN 2.0m PROVIDE STENCILED CONCRETE INFILL OR APPROVED EQUIVALENT. PROPOSALS INVOLVING THE USE OF STAMPED CONCRETE MUST PROVIDE DETAILS OF METHODS OF ENSURING THE LONG TERM APPEARANCE AND SLIP RESISTANCE CAN BE MAINTAINED AND PONDING OF WATER DOES NOT OCCUR.
7. GUARDRAIL IS TO BE INSTALLED IN ACCORDANCE WITH QUEENSLAND DEPARTMENT OF TRANSPORT AND MAIN ROADS REQUIREMENTS.
8. WHERE REQUIRED, STABILISATION OF TABLE DRAIN TO BE APPROVED BY COUNCIL.
9. DESIGN STANDARDS MAY VARY TO BE CONSISTENT WITH THE EXISTING INFRASTRUCTURE IN THE SURROUNDING AREA AND MUST TRANSITION INTO EXISTING INFRASTRUCTURE ADJOINING THE DEVELOPMENT. THE MINIMUM ROAD RESERVE MAY NEED TO BE WIDENED TO ACCOMMODATE ALTERNATIVE TREATMENTS, SUCH AS SWALE DRAINS.

LEGEND

℄ — · —— · —	ROAD CENTRELINE
R.P. BDY	REAL PROPERTY BOUNDARY
E.O.S	EDGE OF SEAL
DES	DESIRABLE
MIN	NOT LESS THAN
MAX	NOT MORE THAN



RURAL ARTERIAL

TRAFFIC IMPACT ASSESSMENT REQUIRED

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C	NOTES ALTERED & TITLEBLOCK CHANGE		08/16
B	DEVELOPMENT MANUAL REVISION		11/12
A	ORIGINAL ISSUE		04/12

Fraser Coast REGIONAL COUNCIL

RURAL ARTERIAL

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu * * SIGNED ORIGINAL HELD IN THE DESIGN OFFICE	08/16

STANDARD DRAWING

SHEET 1 OF 1

A3 | STANDARD DRAWING No: FC–200–05

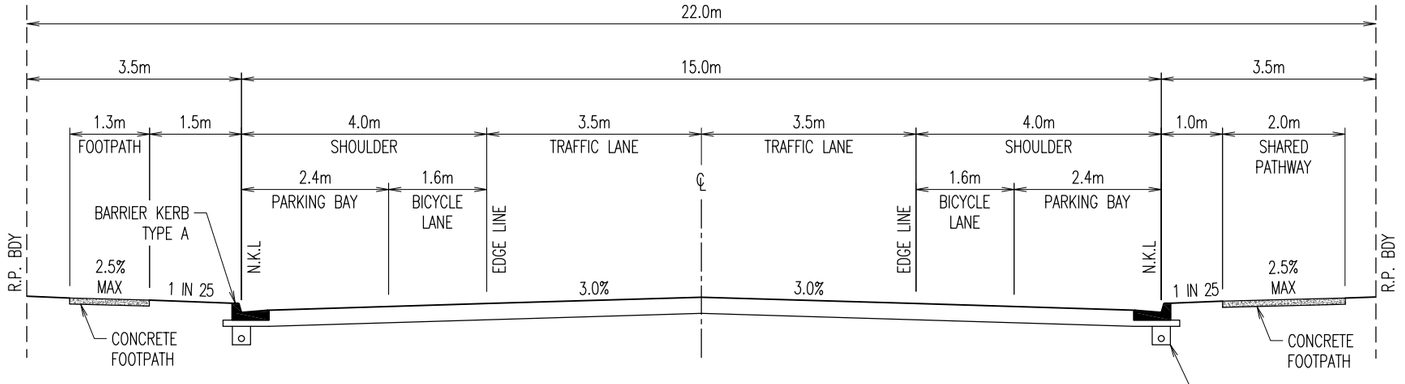
A / B | C

NOTES:

1. FOR STREET CLASSIFICATIONS AND DESIGN PRINCIPLES REFER TO FCRC PLANNING SCHEME SCHEDULE 6 – SC6.3.4 – ROADS AND PATHWAYS.
2. FOR DETAILS OF VERGE AND ALLOCATION OF PUBLIC UTILITIES REFER TO FCRC STD DRG FC–210–01.
3. THESE TYPICAL SECTIONS ARE COUNCIL'S MINIMUM REQUIREMENT ONLY AND MAY VARY WITH PEDESTRIAN/BIKEWAY/PARKING AND GENERAL NETWORK PLANNING.
4. STREET LIGHTING IN ACCORDANCE WITH FCRC PLANNING SCHEME SCHEDULE 6 – SC6.3.9 – ELECTRICAL, STREET LIGHTING AND TELECOMMUNICATIONS.
5. THE MAXIMUM CROSSFALL FOR GRASSED/PLANTED MEDIANS SHALL BE 1 IN 6. STEEPER CROSSFALLS MAY BE ALLOWED SUBJECT TO SATISFACTORY DESIGN/CONSTRUCTION DETAILS.
6. FOR MEDIAN WIDTHS LESS THAN 2.0m PROVIDE STENCILED CONCRETE INFILL OR APPROVED EQUIVALENT. PROPOSALS INVOLVING THE USE OF STAMPED CONCRETE MUST PROVIDE DETAILS OF METHODS OF ENSURING THE LONG TERM APPEARANCE AND SLIP RESISTANCE CAN BE MAINTAINED AND PONDING OF WATER DOES NOT OCCUR.
7. GUARDRAIL IS TO BE INSTALLED IN ACCORDANCE WITH QUEENSLAND DEPARTMENT OF TRANSPORT AND MAIN ROADS REQUIREMENTS.
8. WHERE REQUIRED, STABILISATION OF TABLE DRAIN TO BE APPROVED BY COUNCIL.
9. DESIGN STANDARDS MAY VARY TO BE CONSISTENT WITH THE EXISTING INFRASTRUCTURE IN THE SURROUNDING AREA AND MUST TRANSITION INTO EXISTING INFRASTRUCTURE ADJOINING THE DEVELOPMENT. THE MINIMUM ROAD RESERVE MAY NEED TO BE WIDENED TO ACCOMMODATE ALTERNATIVE TREATMENTS, SUCH AS SWALE DRAINS.

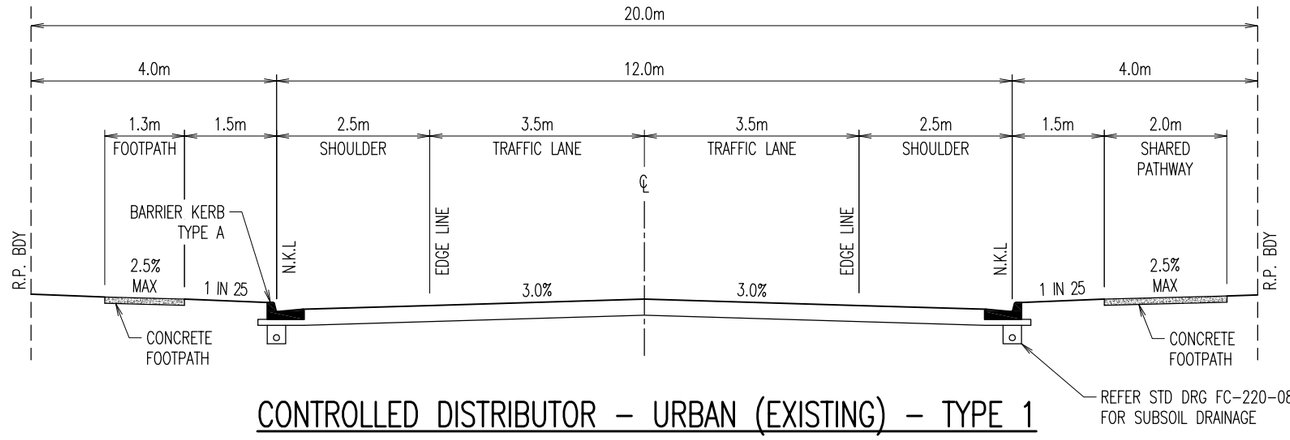
LEGEND

℄ —·——·—	ROAD CENTRELINE
R.P. BDY	REAL PROPERTY BOUNDARY
N.K.L	NOMINAL KERB LINE (KERB INVERT)
MIN	NOT LESS THAN
MAX	NOT MORE THAN



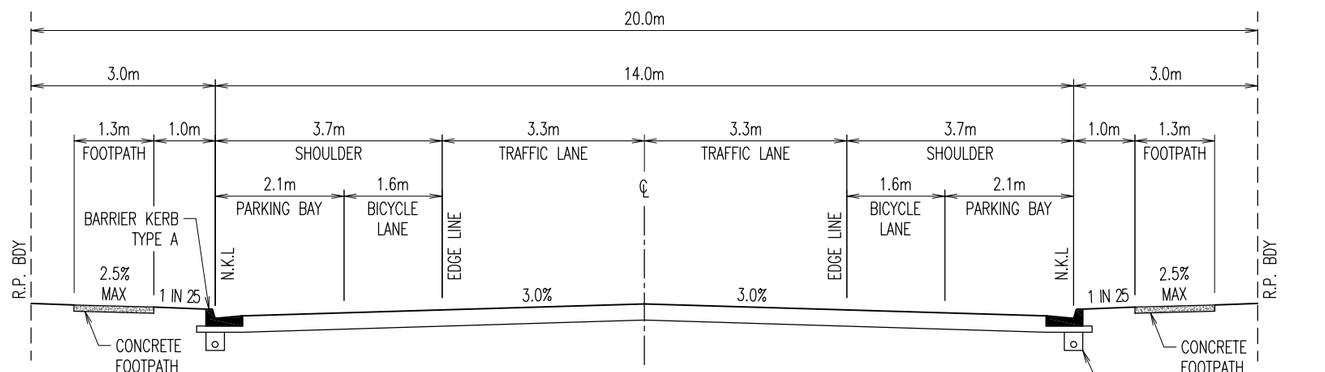
CONTROLLED DISTRIBUTOR – URBAN (NEW DEVELOPMENT)

TRAFFIC VOLUME: < 15,000 VPD



CONTROLLED DISTRIBUTOR – URBAN (EXISTING) – TYPE 1

TRAFFIC VOLUME: < 15,000 VPD



CONTROLLED DISTRIBUTOR – URBAN (EXISTING) – TYPE 2

TRAFFIC VOLUME: < 15,000 VPD

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D	SECTIONS & NOTES ALTERED & TITLEBLOCK CHANGE		08/16
C	FOOTPATH WIDTH ALTERED		07/13
B	DEVELOPMENT MANUAL REVISION		11/12
A	ORIGINAL ISSUE		04/12

Fraser Coast REGIONAL COUNCIL

CONTROLLED DISTRIBUTOR – URBAN

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16

* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE

STANDARD DRAWING

SHEET 1 OF 1

A3 | STANDARD DRAWING No: FC–200–06

A | B | C | D

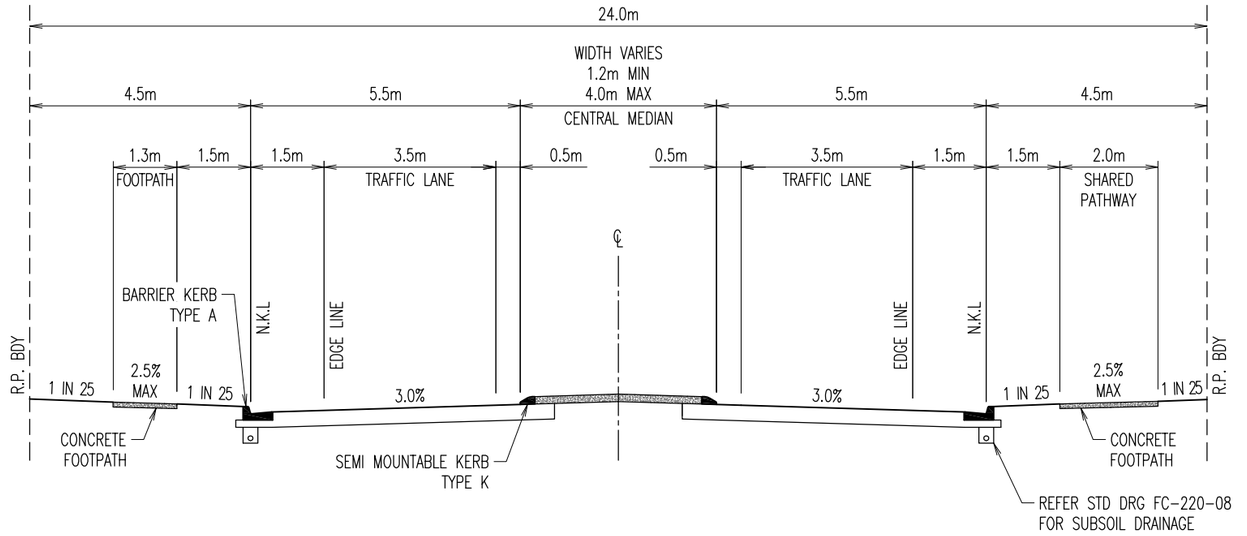
NOTES:

1. FOR STREET CLASSIFICATIONS AND DESIGN PRINCIPLES REFER TO FCRC PLANNING SCHEME SCHEDULE 6 – SC6.3.4 – ROADS AND PATHWAYS.
2. FOR DETAILS OF VERGE AND ALLOCATION OF PUBLIC UTILITIES REFER TO FCRC STD DRG FC–210–01.
3. THESE TYPICAL SECTIONS ARE COUNCIL'S MINIMUM REQUIREMENT ONLY AND MAY VARY WITH PEDESTRIAN/BIKEWAY/PARKING AND GENERAL NETWORK PLANNING.
4. STREET LIGHTING IN ACCORDANCE WITH FCRC PLANNING SCHEME SCHEDULE 6 – SC6.3.9 – ELECTRICAL, STREET LIGHTING AND TELECOMMUNICATIONS.
5. THE MAXIMUM CROSSFALL FOR GRASSED/PLANTED MEDIANS SHALL BE 1 IN 6. STEEPER CROSSFALLS MAY BE ALLOWED SUBJECT TO SATISFACTORY DESIGN/CONSTRUCTION DETAILS.
6. FOR MEDIAN WIDTHS LESS THAN 2.0m PROVIDE STENCILED CONCRETE INFILL OR APPROVED EQUIVALENT. PROPOSALS INVOLVING THE USE OF STAMPED CONCRETE MUST PROVIDE DETAILS OF METHODS OF ENSURING THE LONG TERM APPEARANCE AND SLIP RESISTANCE CAN BE MAINTAINED AND PONDING OF WATER DOES NOT OCCUR.
7. GUARDRAIL IS TO BE INSTALLED IN ACCORDANCE WITH QUEENSLAND DEPARTMENT OF TRANSPORT AND MAIN ROADS REQUIREMENTS.
8. WHERE REQUIRED, STABILISATION OF TABLE DRAIN TO BE APPROVED BY COUNCIL.
9. DESIGN STANDARDS MAY VARY TO BE CONSISTENT WITH THE EXISTING INFRASTRUCTURE IN THE SURROUNDING AREA AND MUST TRANSITION INTO EXISTING INFRASTRUCTURE ADJOINING THE DEVELOPMENT. THE MINIMUM ROAD RESERVE MAY NEED TO BE WIDENED TO ACCOMMODATE ALTERNATIVE TREATMENTS, SUCH AS SWALE DRAINS.

LEGEND

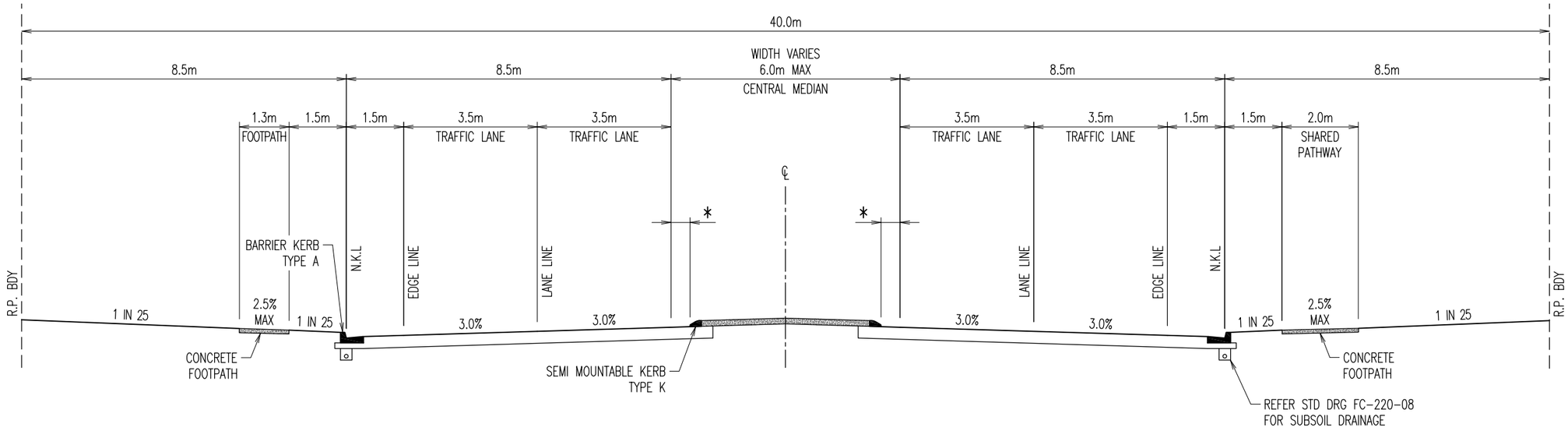
℄ —·——·—	ROAD CENTRELINE
R.P. _ _ _ _	BDY REAL PROPERTY BOUNDARY
N.K.L	NOMINAL KERB LINE (KERB INVERT)
E.O.S	EDGE OF SEAL
DES	DESIRABLE
MIN	NOT LESS THAN
MAX	NOT MORE THAN

* 0.0m FOR 60 km/h
0.3m FOR 80 km/h
0.5m FOR 100 km/h



TRAFFIC DISTRIBUTOR – URBAN (TYPE 2)

TRAFFIC IMPACT ASSESSMENT REQUIRED



TRAFFIC DISTRIBUTOR – URBAN (TYPE 1)

TRAFFIC IMPACT ASSESSMENT REQUIRED

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D	NOTES ALTERED & TITLEBLOCK CHANGE		08/16
C	FOOTPATH WIDTH ALTERED		07/13
B	DEVELOPMENT MANUAL REVISION		11/12
A	ORIGINAL ISSUE		04/12

Fraser Coast REGIONAL COUNCIL

TRAFFIC DISTRIBUTOR – URBAN

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16

* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE

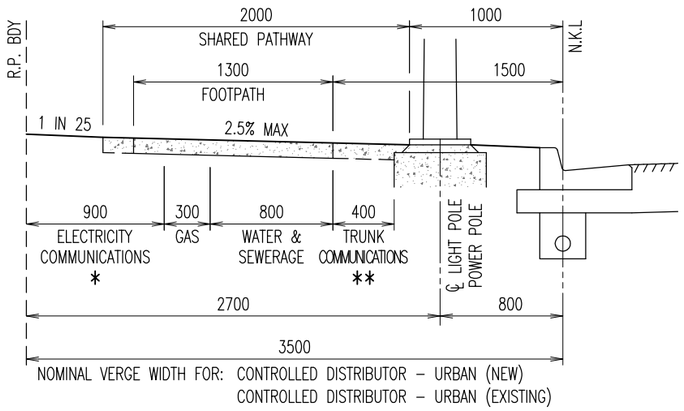
STANDARD DRAWING

SHEET 1 OF 1

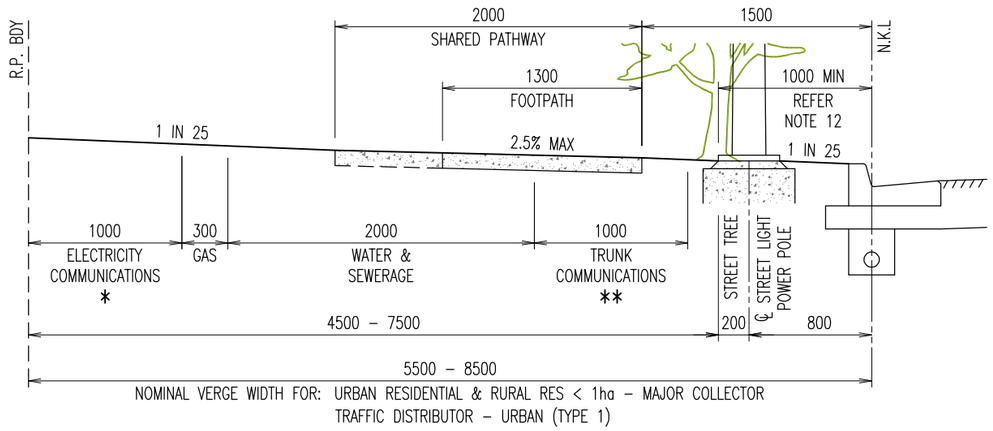
A3

STANDARD DRAWING No: FC–200–07

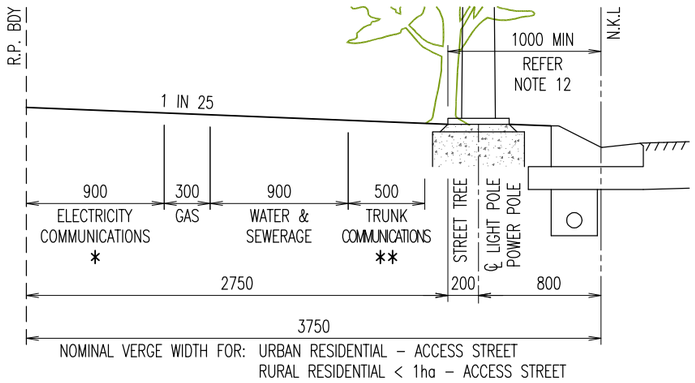
A | B | C | D



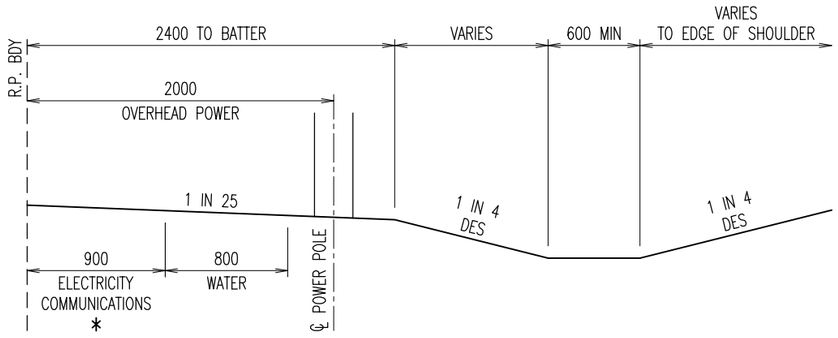
3.5m OR LESS VERGE



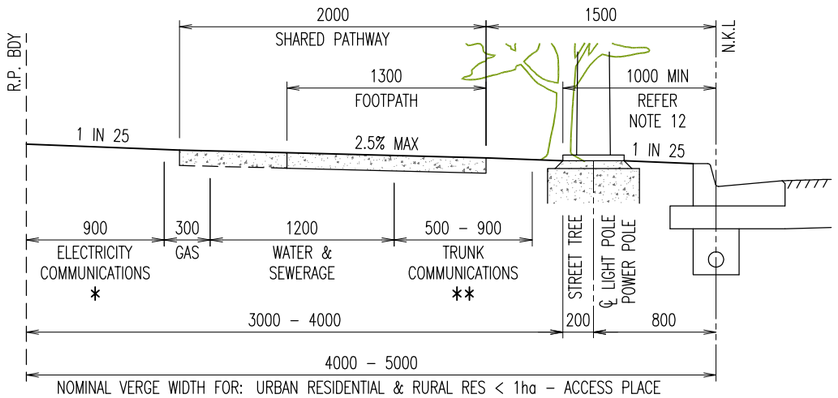
GREATER THAN 5.0m VERGE



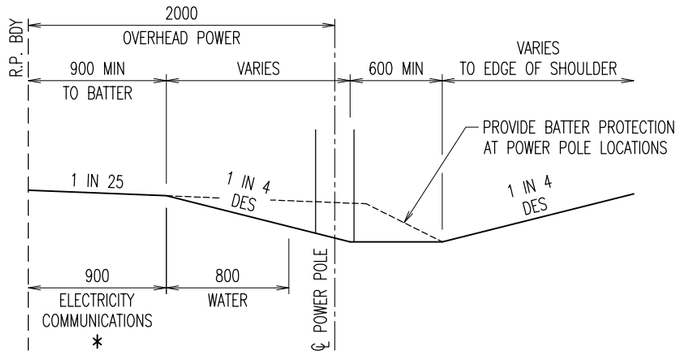
3.75m VERGE



RURAL VERGE – DESIRABLE



4.0m – 5.0m VERGE



RURAL VERGE – CONSTRAINED

NOTES:

1. PUBLIC UTILITIES ALLOCATIONS ARE MEASURED FROM THE REAL PROPERTY BOUNDARY EXCEPT FOR POWER/STREET LIGHT POLES.
2. POWER/STREET LIGHT POLES AND TREE ALLOCATIONS ARE MEASURED FROM THE NOMINAL KERB LINE. (EXCEPT RURAL WHICH IS MEASURED FROM THE REAL PROPERTY BOUNDARY)
3. BRASS OR STAINLESS STEEL INDICATOR DISCS TO BE PLACED IN KERB OVER ALL CONDUITS.
3. THESE TYPICAL SECTIONS ARE COUNCIL'S MINIMUM REQUIREMENT ONLY AND MAY VARY WITH PEDESTRIAN/BIKEWAY/PARKING AND GENERAL NETWORK PLANNING.
4. THE ALIGNMENT AND DEPTH OF EXISTING SERVICES SHALL BE CONFIRMED ON SITE IN CONSULTATION WITH RELEVANT SERVICE AUTHORITIES PRIOR TO ANY EXCAVATION AND SHALL NOT BE INFERRED FROM THE SERVICE ALLOCATION DRAWING.
5. DEVELOPERS SHALL NEGOTIATE WITH ALL RELEVANT COMMUNICATIONS COMPANIES FOR THE PROVISION OF CONDUITS AT THE DESIGN PHASE OF DEVELOPMENT. VARIOUS JOINT USE ARRANGEMENTS EXIST AMONGST ELECTRICITY AND COMMUNICATIONS PROVIDERS.
6. VARIOUS CONFIGURATIONS OF TRENCH WIDTH AND CONDUIT NUMBERS/ DIAMETERS EXIST FOR COMMON TRENCH ARRANGEMENTS BETWEEN SERVICE PROVIDERS OF ELECTRICITY, COMMUNICATIONS AND GAS. REFER ELECTRICITY, TELECOMMUNICATIONS AND GAS AUTHORITIES STANDARD DRAWINGS.
7. TUNNEL BORING TECHNIQUES ARE TO BE UTILISED FOR ROAD CROSSING SERVICES CONDUITS IN EXISTING ROADWAY.
8. FOR LANDSCAPING CONSIDERATIONS THE INTENT IS TO GENERALLY PROVIDE A MAIN SERVICES CORRIDOR ON ONE SIDE OF THE STREET ONLY. THE UTILISATION OF VERGES IS DEPENDENT ON SERVICE AUTHORITY INFRASTRUCTURE DEMANDS, WHICH MAY REQUIRE THAT BOTH VERGES FOR SERVICES SHOULD BE AVOIDED WHERE POSSIBLE.
9. LANDSCAPING DESIGNS SHALL GIVE DUE CONSIDERATION TO THE PROVISION OF DRIVEWAY ACCESSES AND CLEARANCES TO SERVICE PITS, PILLARS AND POLES FOR MAINTENANCE ACCESS.
10. PLANTS SPECIES SHALL BE SELECTED WHICH MINIMISE THE POTENTIAL FOR ROOT DAMAGE TO UNDERGROUND SERVICES, PATHWAYS AND KERB AND CHANNEL.
11. THE MATURE HEIGHT AND SPREAD OF PLANTS SHALL BE CONSIDERED WHEN ASSESSING VISIBILITY SIGHT LINES FOR SAFE VEHICULAR AND PEDESTRIAN FUNCTIONS AND STREET LIGHTING REQUIREMENTS APPLICABLE TO THE ROAD CLASSIFICATION.
12. STREET TREE OFFSET FROM THE NOMINAL KERB LINE IS SHOWN AS A MINIMUM. WHERE AVAILABLE SPACE EXISTS STREET TRESS SHALL BE POSITIONED CLOSER TO THE PROPERTY BOUNDARY PROVIDING IT DOES NOT CONFLICT WITH SERVICES AND PATHWAYS.
13. STREET TREES ARE NOT TO IMPEDE THE LIGHT OUTPUT OF STREET LIGHTS.
14. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

LEGEND

℄ —·—·—	CENTRELINE
R.P. BDY	REAL PROPERTY BOUNDARY
N.K.L	NOMINAL KERB LINE (KERB INVERT)
DES	DESIRABLE
MIN	NOT LESS THAN
MAX	NOT MORE THAN
*	FOR DOMESTIC CONNECTION TO INDIVIDUAL LOTS
**	FOR FEEDER CONNECTION – NOT DOMESTIC CONNECTION TO INDIVIDUAL LOTS

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C	3.5m & RURAL VERGE ADDED, VERGE WIDTH & CORRIDORS ALTERED & TITLEBLOCK CHANGE		08/16
B	FOOTPATH WIDTHS ALTERED		07/13
A	ORIGINAL ISSUE		04/11

Fraser Coast REGIONAL COUNCIL

PUBLIC UTILITIES
TYPICAL SERVICE CORRIDORS AND ALIGNMENTS

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16

* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE

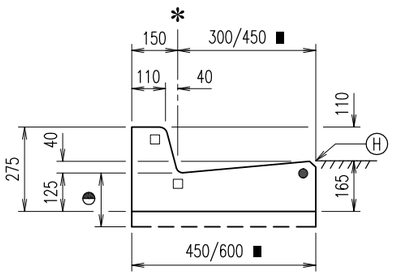
STANDARD DRAWING

SHEET 1 OF 1

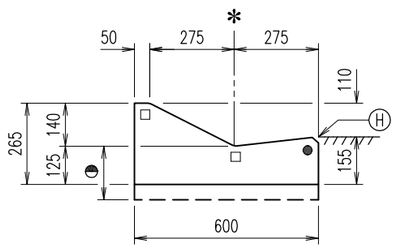
A3

STANDARD DRAWING No: FC–210–01

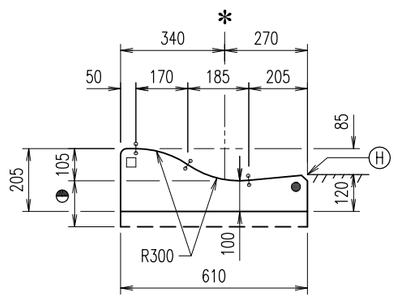
A | B | C



TYPE A
BARRIER KERB
(IPWEA PROFILE B1)
(TMR PROFILE TYPE 7)

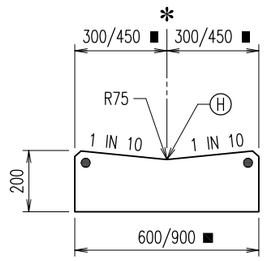


TYPE B
MOUNTABLE KERB
(IPWEA PROFILE M1)



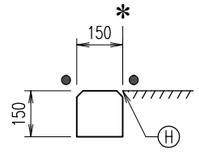
TYPE C
MOUNTABLE KERB
(IPWEA PROFILE M3)

KERB AND CHANNEL

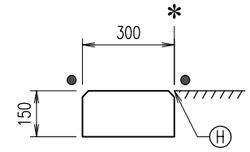


TYPE D
(IPWEA PROFILE INVERT)
(TMR PROFILE TYPE 22)

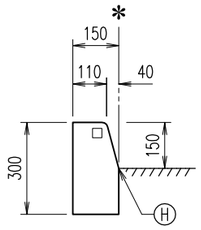
INVERT



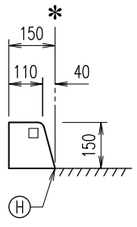
TYPE N
NO VEHICLE LOADING
(IPWEA PROFILE ER1)
USED AS RESTRAINT BETWEEN
PAVEMENT AND/OR GRASS



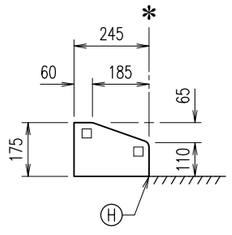
TYPE P
NO VEHICLE LOADING
(IPWEA PROFILE ER4)
USED AS RESTRAINT BETWEEN
PAVEMENT AND/OR GRASS



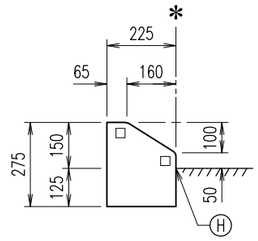
TYPE E
(IPWEA PROFILE B2)



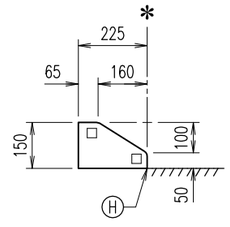
TYPE F
(IPWEA PROFILE B4)



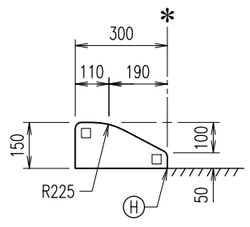
TYPE G
(IPWEA PROFILE B5)



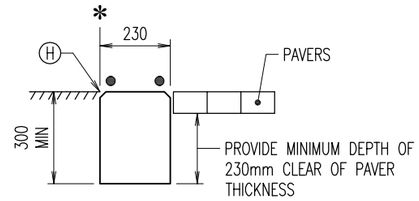
TYPE H
(IPWEA PROFILE SM3)



TYPE J
(IPWEA PROFILE SM4)



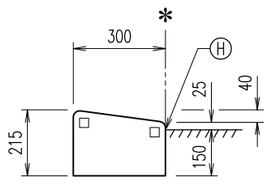
TYPE K
(TMR PROFILE TYPE 9)



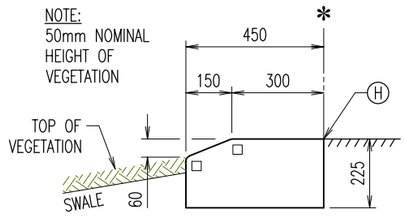
TYPE Q
WITH VEHICLE LOADING
(IPWEA PROFILE ER2)
USED FOR RESTRAINING PAVERS
FROM PAVEMENT OR GRASS

EDGE RESTRAINT

KERB
(BARRIER TYPE)



TYPE L
(IPWEA PROFILE M6)



TYPE M

KERB
(MOUNTABLE TYPE)

KERB
(SEMI MOUNTABLE TYPE)

REFERENCE POSITIONS
* NOMINAL KERB LINE
(H) SETOUT/HEIGHT REFERENCE

LEGEND
- ■ CHANNEL INVERT WIDTH, REFER PROJECT DRAWINGS
- ● 20 ARRIS
- □ R20 RADIUS
- ◓ 175 WHERE SPECIFIED FOR COMMERCIAL AND INDUSTRIAL APPLICATIONS, REFER PROJECT DRAWINGS

NOTES:
1. ALL MATERIALS AND CONSTRUCTION SHALL COMPLY WITH AS 2876 EXCEPT WHERE SPECIFIED ON THIS DRAWING.
2. MACHINE PLACED (SLIP FORMED OR EXTRUDED) CONCRETE TO BE GRADE N32/10 IN ACCORDANCE WITH AS 1379 AND AS 3600.
3. PRECAST OR HAND PLACED (IN SITU) CONCRETE TO BE GRADE N32/20 IN ACCORDANCE WITH AS 1379 AND AS 3600.
4. TRANSITIONING BETWEEN KERB TYPES TO BE CARRIED OUT OVER 3m.
5. ALL KERB SECTIONS TO BE BEDDED ON TOP OF THE SUB-BASE PAVEMENT LAYER OR A 100mm (MIN) COMPACTED CLASS 2 (MIN) GRAVEL UNLESS DIRECTED OTHERWISE BY COUNCIL.
6. PROVIDE CONTRACTION OR SHRINKAGE CONTROL JOINTS AT REGULAR INTERVALS NOT EXCEEDING 3m, BY FORMING GROOVES 40mm DEEP BY 6mm WIDE.
7. PROVIDE EXPANSION JOINTS WHERE THE KERB AND CHANNEL ABUTS SUBSTANTIAL EXISTING STRUCTURES SUCH AS BRIDGES, OR WHERE DIRECTED. WHERE RELEVANT, LOCATE JOINTS TO LINE UP WITH THE EXPANSION JOINTS IN ADJACENT STRUCTURES SUCH AS RIGID PAVEMENTS AND CONCRETE SLABS. CONSTRUCT EXPANSION JOINTS BY INSTALLING 10mm THICK BITUMINOUS FIBREBOARD OR APPROVED EQUIVALENT BY COUNCIL FOR THE FULL WIDTH AND DEPTH OF THE KERB AND CHANNEL.
8. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

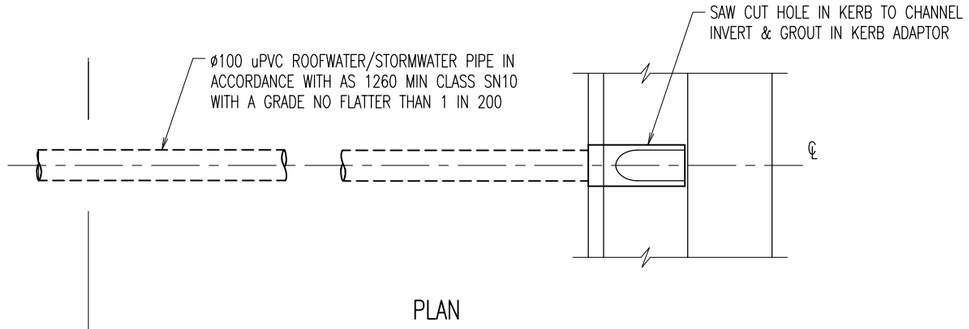
REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B	SETOUT REFERENCE, EDGE RESTRAINT, NOTES ALTERED & TITLEBLOCK CHANGE		08/16
A	ORIGINAL ISSUE		04/11

Fraser Coast REGIONAL COUNCIL

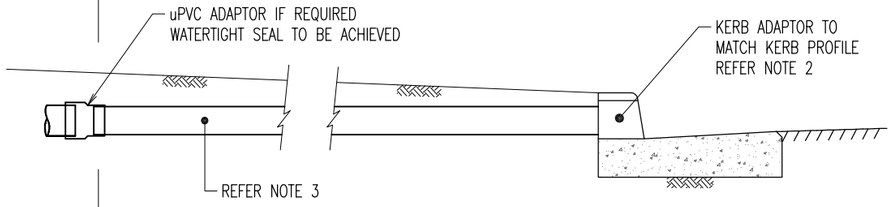
KERB AND CHANNEL PROFILES AND DIMENSIONS

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16
		* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE	

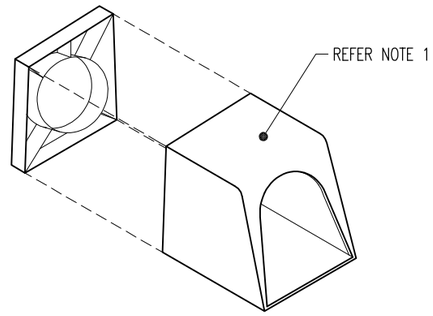
STANDARD DRAWING
SHEET 1 OF 1
A3
STANDARD DRAWING No: FC-220-01
A | B



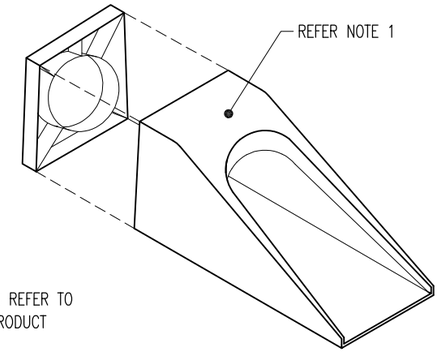
MOUNTABLE KERB AND CHANNEL



BARRIER KERB AND CHANNEL

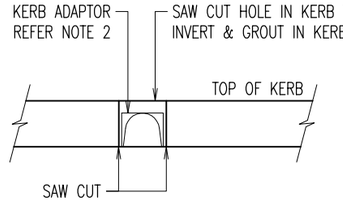


BARRIER KERB ADAPTOR



NOTE:
FOR SPECIFICATIONS REFER TO
MANUFACTURER'S PRODUCT
INFORMATION

MOUNTABLE KERB ADAPTOR



EXISTING KERB AND CHANNEL

NOTES:

1. STANDARD ROOFWATER OUTLET TO SUIT KERB AND CHANNEL PROFILE.
2. KERB ADAPTORS AND OTHER ANCILLARY COMPONENTS WITHIN THE VERGE ARE TO CONFORM TO AS/NZS 2179.1. KERB ADAPTORS ARE TO BE CAST IN MARINE GRADE ALUMINIUM.
3. ROOFWATER PIPE ACROSS VERGE TO BE LAID WITH THE MAXIMUM AVAILABLE COVER AND WITH A MINIMUM GRADE OF 1 IN 200 (5mm IN 1m).
4. PROVIDE SINGLE PIECE/MULTIPLE OUTLET ADAPTOR OR MIN 500mm CLEARANCE BETWEEN SINGLE OUTLETS WITH A MIN 300mm CLEARANCE FROM ALL OUTLETS TO DRIVEWAY TAPERS.
5. AT EXISTING KERB AND CHANNEL SAW CUT KERB AS NECESSARY. REINSTATE WITH GRADE N32 CONCRETE IN ACCORDANCE WITH AS 1379 AND AS 3600 TO CLEAN CONCRETE FACES.
6. AT NEW DEVELOPMENTS SEAL INLET TO ADAPTOR.
7. FOR COMMERCIAL AND INDUSTRIAL APPLICATIONS, PROVIDE SINGLE OR MULTIPLE HOT DIPPED GALVANISED RECTANGULAR HOLLOW SECTION (RHS) ACROSS FULL WIDTH OF VERGE. GENERALLY 125/150/200 x 75 x 4 RHS ARE SUITABLE AND SHALL BE LAID AT A GRADE NO FLATTER THAN 1 IN 200 AND CUT TO FINISH FLUSH WITH THE KERB PROFILE. ALL CUT ENDS ARE TO BE TREATED WITH A COLD GALVANISED TREATMENT AND THE KERB REINSTATED.
8. REINSTATE ANY CONSTRUCTED FOOTPATH TO MATCH ORIGINAL FINISH.
9. COUNCIL APPROVAL IS REQUIRED TO CONNECT TO STORMWATER INFRASTRUCTURE SUCH AS MANHOLES, GULLY PITS AND THE LIKE.
10. COUNCIL'S POLICY IS THAT PROVISION AND MAINTENANCE OF PRIVATE ROOFWATER/ STORMWATER DRAINS ARE THE RESPONSIBILITY OF THE PROPERTY OWNER. THE PROPERTY OWNER IS ALSO RESPONSIBLE FOR VERGE RESTORATION TO ORIGINAL CONDITIONS AFTER CONSTRUCTION.
11. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B	NOTES ALTERED & TITLEBLOCK CHANGE		08/16
A	ORIGINAL ISSUE		04/11

Fraser Coast REGIONAL COUNCIL

KERB AND CHANNEL DRAINAGE CONNECTIONS

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16

* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE

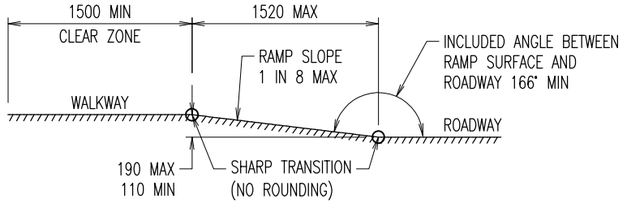
STANDARD DRAWING

SHEET 1 OF 1

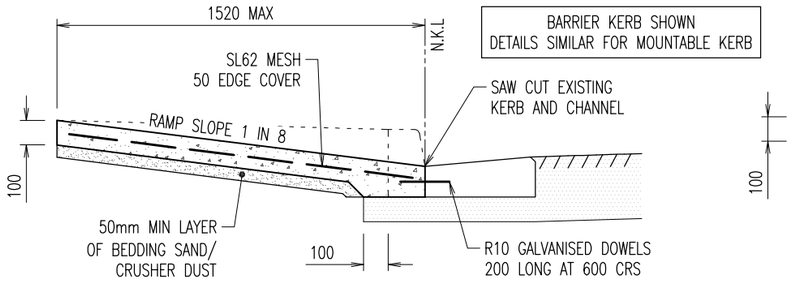
A3 | STANDARD DRAWING No: FC-220-02

A | B

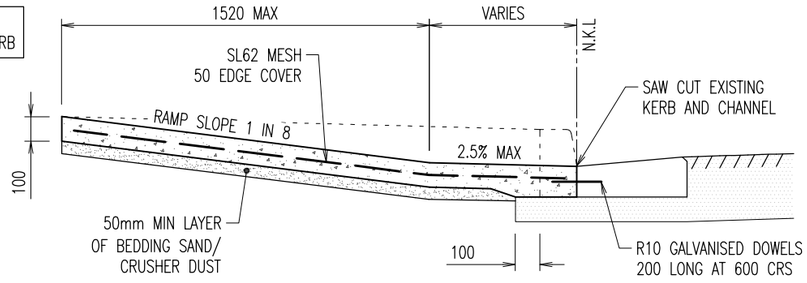
REFER FC-220-05 AND FC-220-06 FOR DETAILS ON TGSI APPLICATION AND GUIDELINES ON THEIR USE AND PLACEMENT



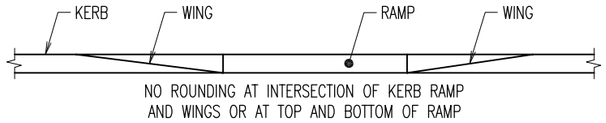
RAMP SLOPE



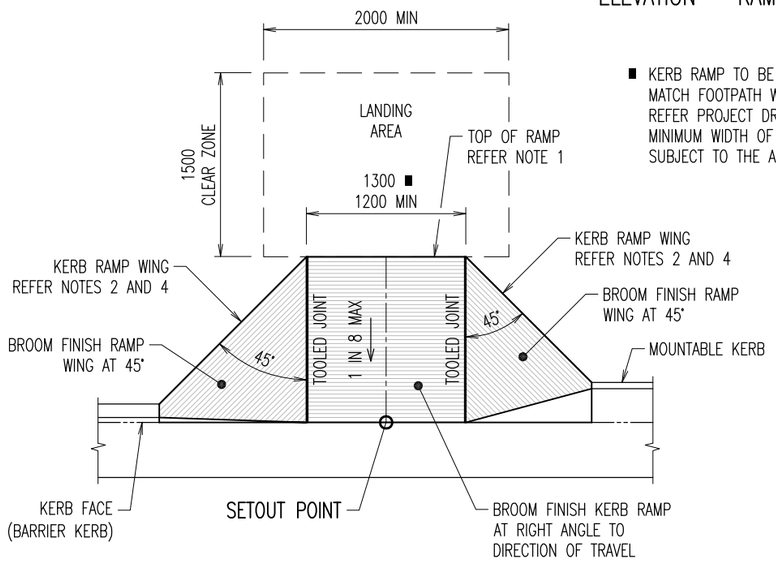
SECTION – KERB RAMP (ON STRAIGHT)
BARRIER TYPE KERB AND CHANNEL



SECTION – KERB RAMP (ON CURVE)
BARRIER TYPE KERB AND CHANNEL

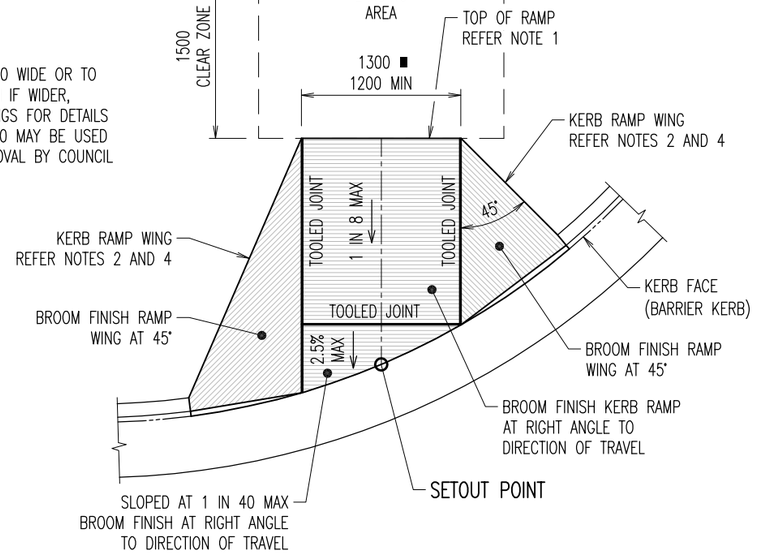


ELEVATION – RAMP

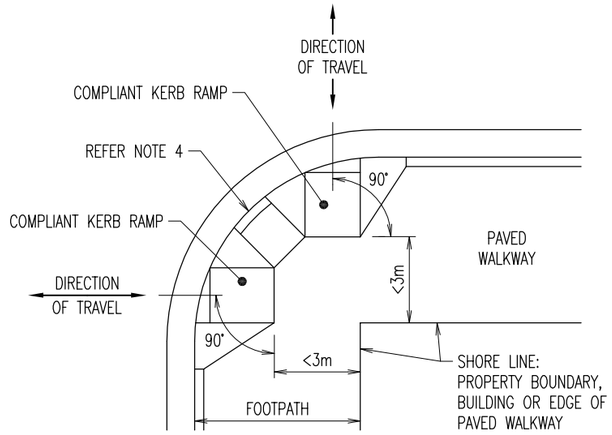


■ KERB RAMP TO BE 1300 WIDE OR TO MATCH FOOTPATH WIDTH IF WIDER, REFER PROJECT DRAWINGS FOR DETAILS MINIMUM WIDTH OF 1200 MAY BE USED SUBJECT TO THE APPROVAL BY COUNCIL

PLAN VIEW
(ON STRAIGHT)



PLAN VIEW
(ON CURVE)



KERB RAMP LAYOUT
TGSI NOT REQUIRED

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.
2. RAMP: MAXIMUM RAMP SLOPE FOR WHEELCHAIR ACCESS SHALL BE 1 IN 8. A SHARP TRANSITION (NO ROUNDING) IS TO BE MAINTAINED AT THE INTERSECTION OF GRADED PLANE SURFACES (TOP AND 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 THE 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 BY COUNCIL, 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 600mm AND 1500mm MAX. A SLOPE NO STEEPER THAN 1 IN 4 IS TO BE MAINTAINED ON THE WINGS. AT LEAST A 1 METRE KERB UPSTAND IS DESIRABLE BETWEEN ADJACENT KERB RAMP WINGS ON AN INTERSECTION CORNER.
5. SURFACE OF RAMP AND SLOPING SIDES SHALL BE SLIP RESISTANT AS SPECIFIED IN AS 1428.1.

TACTILE GROUND SURFACE INDICATORS (TGSI):

6. TGSI (TACTILE GROUND SURFACE INDICATORS) ARE NOT REQUIRED AT A CROSSING POINT IF:
   (a) A COMPLIANT KERB RAMP IS INSTALLED; AND
   (b) THE TOP OF THE 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 BOUNDARY, BUILDING LINE OR EDGE OF 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 KERB RAMP MAY ASSIST PEDESTRIANS WITH A VISION IMPAIRMENT.
7. WARNING TGSI SHALL BE INSTALLED ON OR ADJACENT TO DESIGNATED CROSSING POINTS TO WARN PEDESTRIANS WITH A VISION IMPAIRMENT OF THE IMPENDING HAZARD (TRAFFIC) AND DIRECTIONAL TGSI SHALL BE INSTALLED TO PROVIDE DIRECTIONAL GUIDANCE IN THE ABSENCE OF DETECTABLE CUES.
8. REFER FCRC STD DRG'S FC-220-05 AND FC-220-06 FOR FULL DETAILS OF TGSI REQUIREMENTS.

GENERAL:

9. CONCRETE TO BE GRADE N32/10 IN ACCORDANCE WITH AS 1379 AND AS 3600.
10. CONCRETE TO BE BROOM FINISHED FOR SLIP RESISTANCE TO AS 4586.
11. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

COMPLIANT KERB RAMP

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B	LANDING AREA ADDED, KERB RAMP WIDTH, NOTES ALTERED & TITLEBLOCK CHANGE		08/16
A	ORIGINAL ISSUE		04/11

Fraser Coast REGIONAL COUNCIL

KERB RAMP
RAMPED PEDESTRIAN CROSSINGS

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu * * SIGNED ORIGINAL HELD IN THE DESIGN OFFICE	08/16

STANDARD DRAWING

SHEET 1 OF 1

A3 | STANDARD DRAWING No: FC-220-04

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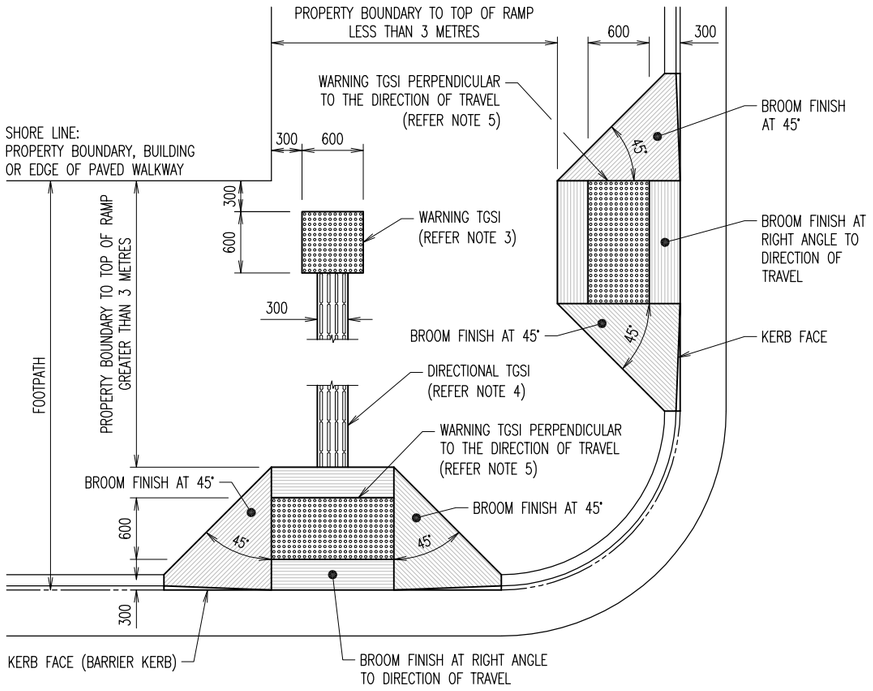
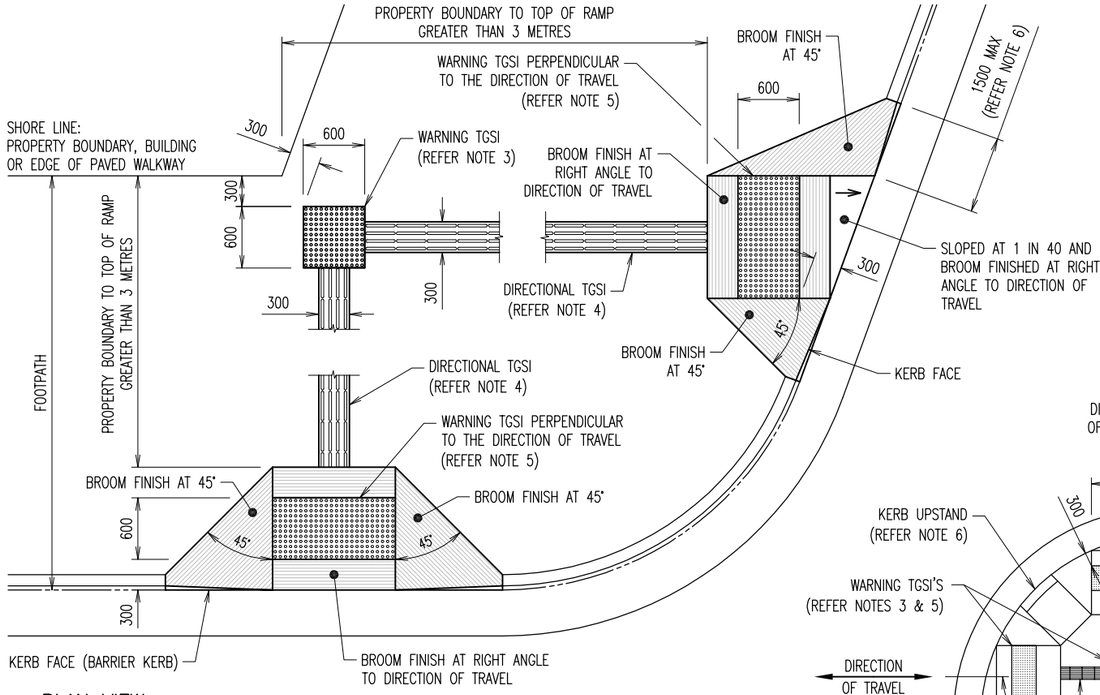
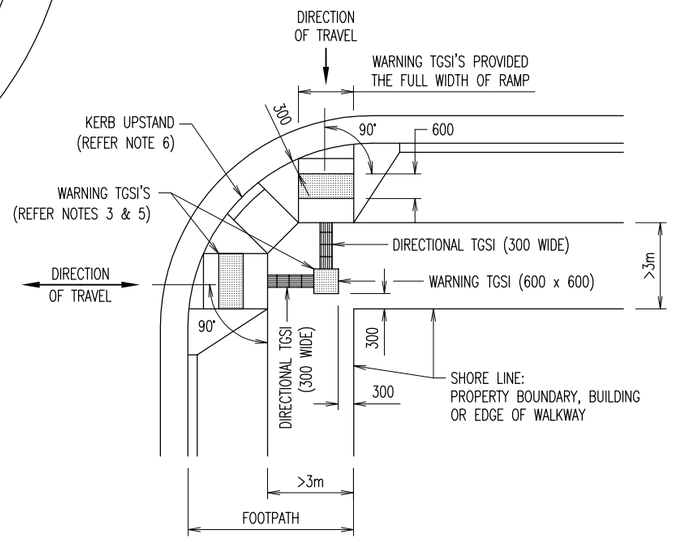




PLAN VIEW



COMPLIANT KERB RAMPS AND TGSI'S APPLICATION EXAMPLES

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 SHALL CONFORM WITH AS/NZS 1428.4.1 DESIGN FOR ACCESS AND MOBILITY – PART 4: TACTILE INDICATORS.

B. TACTILE INDICATORS SHALL HAVE 30% MIN LUMINANCE CONTRAST TO THE SURROUNDING SURFACES, AND BE OF CONTRASTING COLOUR, PREFERABLY BLACK OR SAFETY YELLOW (GOLDEN YELLOW Y14 OR SUNFLOWER Y15 – AS 2700). LUMINANCE CONTRAST SHALL BE ACHIEVED IN ALL CONDITIONS (I.E. WET/DRY, DAY/NIGHT). TACTILE INDICATORS AND THEIR BASE SHALL BE SLIP RESISTANT. REFER AS/NZS 1428.4.1 FOR LUMINANCE CONTRAST AND SLIP RESISTANCE REQUIREMENTS.

C. WARNING TGSI 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 IN 8

D. DIRECTIONAL TGSI 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 CENTERLINE OF THE DIRECTION OF TRAVEL.
   (c) 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).
   (d) BETWEEN A WARNING TGSI INDICATING A CHANGE/CHOICE OF DIRECTION AND THE TOP OF KERB RAMPS WHERE 2 PEDESTRIAN CROSSINGS EXIST ON A CORNER OF A INTERSECTION.

E. THE INSTALLATION OF TGSI SHOULD BE PRIORITISED AS FOLLOWS:
   (a) NO TGSI REQUIRED WHEN ALL CRITERIA SPECIFIED BY 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, REFER AS/NZS 1428.4.1 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 ARE NOT REQUIRED AT A CROSSING POINT IF:
   (a) A COMPLIANT KERB RAMP IS INSTALLED (REFER FCRC STD DRG FC-220-04); AND
   (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.

   IF TGSI'S ARE NOT REQUIRED, 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 AT CHANGE OF GRADE I.E. TOP AND BOTTOM OF A 1 IN 8 KERB RAMP; CHANGE IN GRADE BETWEEN RAMP AND RAMP WINGS.
   (b) AUDIO TACTILE PUSH BUTTONS, REFER MUTCD PART 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.

I. REFER FCRC STD DRG FC-220-04 FOR DETAILS OF COMPLIANT RAMPS.

COMPLIANT KERB RAMP ALIGNMENT – INCLUDING TGSI'S

NOTES:

TACTILE GROUND SURFACE INDICATORS (TGSI) – APPLICATION EXAMPLES:

1. FOR DETAILS OF COMPLIANT KERB RAMPS REFER TO FCRC STD DRG FC-220-04.
2. FOR DETAILS OF WARNING AND DIRECTIONAL TGSI, REFER AS/NZS 1428.4.1.
3. WARNING INDICATORS REQUIRED ADJACENT TO THE SHORE LINE (PROPERTY BOUNDARY) TO INDICATE CHANGE/CHOICE 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). CAN BE OMITTED IF THE KERB RAMP IS IN ACCORDANCE WITH AS 1428.1 & < 3 METRES FROM THE BUILDING LINE.
6. THE REQUIRED KERB RAMP WING ANGLE IS 45°. SUBJECT TO THE APPROVAL BY COUNCIL, WINGS MAY BE ANGLED AT LESS THAN 45° IF THE WING IS REQUIRED TO BE CLEAR OF TRAFFIC SIGNALS HARDWARE, OTHER KERB RAMPS OR UTILITY PITS/MANHOLES. WING ANGLE MAY ALSO BE REDUCED AT OBTUSE ANGLED INTERSECTIONS. WING WIDTHS SHALL BE BETWEEN 600mm AND 1500mm MAX. A SLOPE NO STEEPER THAN 1 IN 4 IS TO BE MAINTAINED ON THE WINGS. A 1 METRE KERB UPSTAND IS DESIRABLE BETWEEN ADJACENT KERB RAMP WINGS ON AN INTERSECTION CORNER.
7. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B	COMPLIANT KERB RAMP DETAIL ADDED, NOTES ALTERED & TITLEBLOCK CHANGE		08/16
A	ORIGINAL ISSUE		01/11

Fraser Coast REGIONAL COUNCIL

INSTALLATION OF TGSI'S
ON RAMPED KERB CROSSINGS

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16
		* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE	

STANDARD DRAWING

SHEET 1 OF 1

A3

STANDARD DRAWING No: FC-220-05

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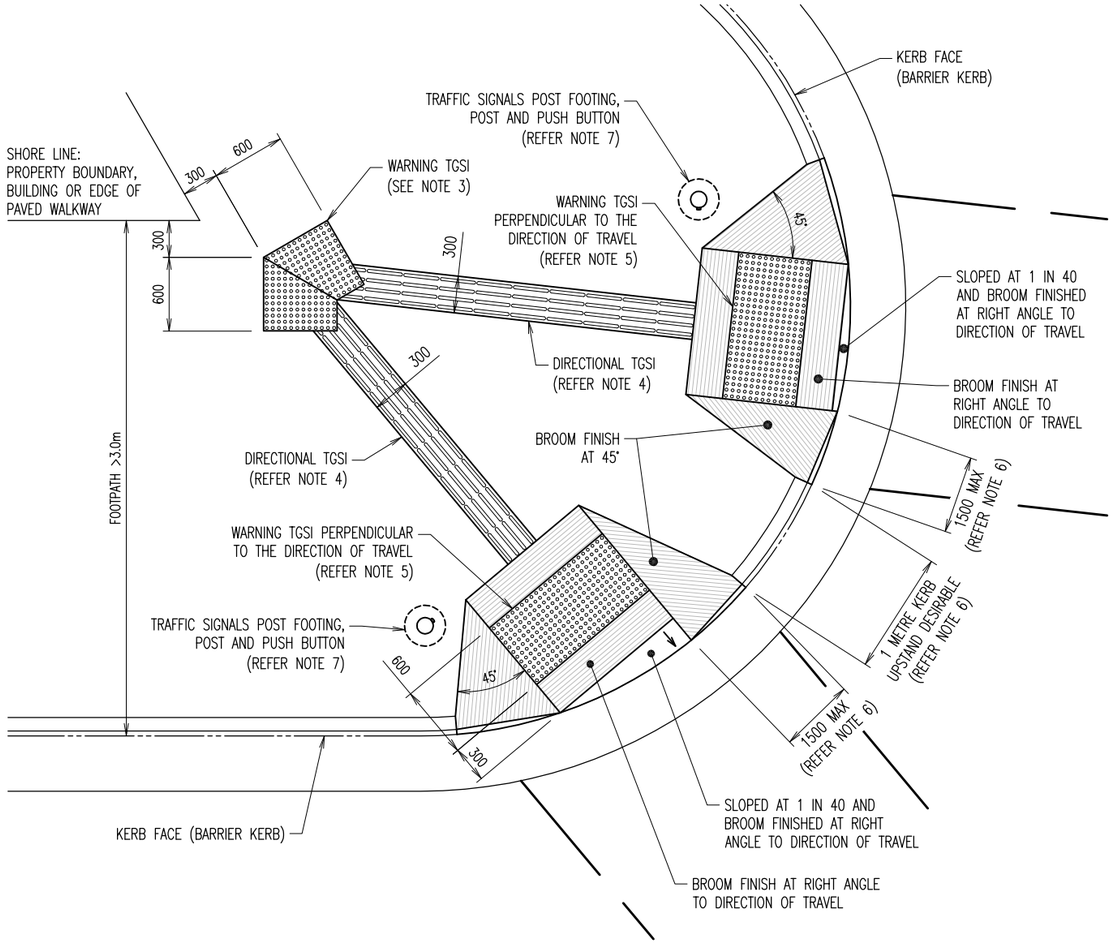


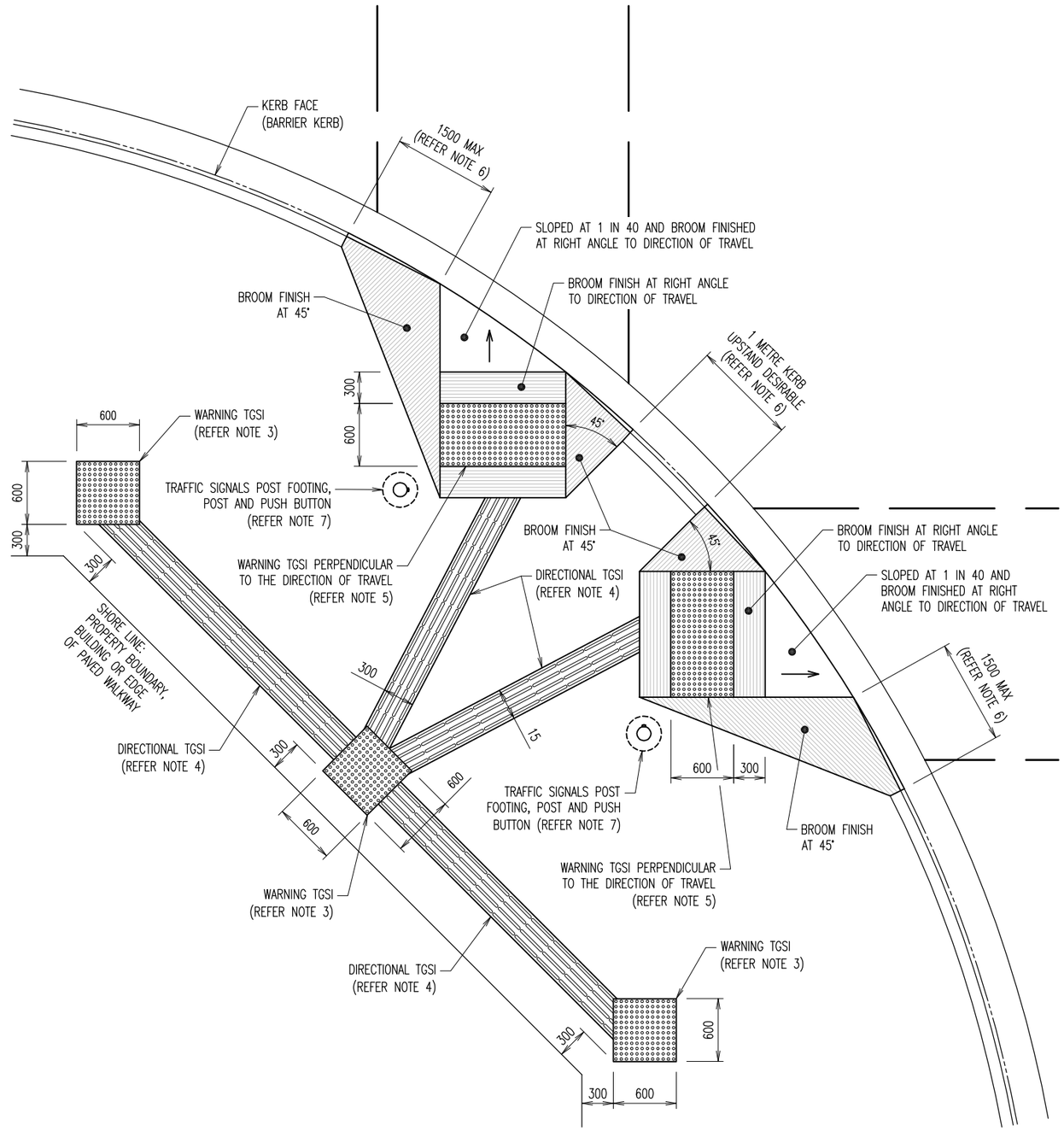
PLAN VIEW

COMPLIANT KERB RAMPS AND TGSI APPLICATION EXAMPLE

NOTES:

TACTILE GROUND SURFACE INDICATORS (TGSI) – APPLICATION EXAMPLES:

1. FOR DETAILS OF COMPLIANT KERB RAMPS REFER TO FCRC STD DRG FC–220–04.
2. FOR DETAILS OF WARNING AND DIRECTIONAL TGSI, REFER AS/NZS 1428.4.1.
3. WARNING INDICATORS REQUIRED ADJACENT TO THE SHORE LINE (PROPERTY BOUNDARY) TO INDICATE CHANGE/CHOICE 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). CAN BE OMITTED IF THE KERB RAMP IS IN ACCORDANCE WITH AS 1428.1 & < 3 METRES FROM THE BUILDING LINE.
6. THE REQUIRED KERB RAMP WING ANGLE IS 45°. SUBJECT TO THE APPROVAL BY COUNCIL, WINGS MAY BE ANGLED AT LESS THAN 45° IF THE WING IS REQUIRED TO BE CLEAR OF TRAFFIC SIGNALS HARDWARE, OTHER KERB RAMPS OR UTILITY PITS/MANHOLES. WING ANGLE MAY ALSO BE REDUCED AT OBTUSE ANGLED INTERSECTIONS. WING WIDTHS SHALL BE BETWEEN 600mm AND 1500mm MAX. A SLOPE NO STEEPER THAN 1 IN 4 IS TO BE MAINTAINED ON THE WINGS. A 1 METRE KERB UPSTAND IS DESIRABLE BETWEEN ADJACENT KERB RAMP WINGS ON AN INTERSECTION CORNER.
7. FOR LOCATION OF TRAFFIC SIGNALS 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 A ZONE OF COMMON REACH (REFER AS 1428.2 I.E. NO MORE THAN 400mm OUTSIDE THE EDGE OF A PATHWAY OR KERB RAMP).
8. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.



PLAN VIEW

COMPLIANT KERB RAMPS AND TGSI APPLICATION EXAMPLE

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B	NOTES ALTERED & TITLEBLOCK CHANGE		08/16
A	ORIGINAL ISSUE		01/11

Fraser Coast REGIONAL COUNCIL

INSTALLATION OF TGSI'S ON RAMPED KERB CROSSINGS APPLICATION EXAMPLES

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16

* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE

STANDARD DRAWING

SHEET 1 OF 1

A3

STANDARD DRAWING No: FC–220–06

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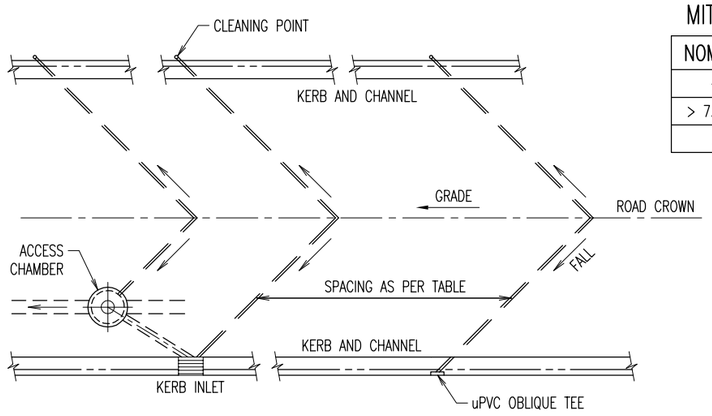
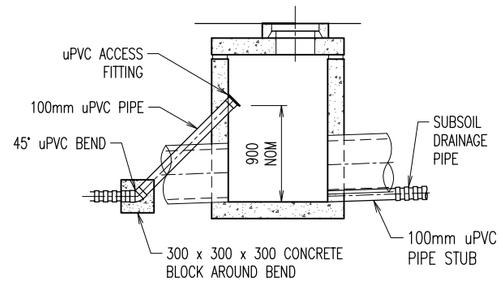


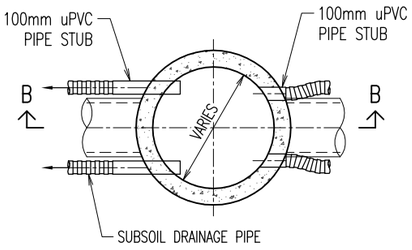
TYPICAL MITRE DRAIN LOCATIONS

MITRE DRAIN SPACING

NOM GRADE	SPACING
< 7.5%	40m CENTRES
> 7.5% < 10%	30m CENTRES
> 10%	20m CENTRES

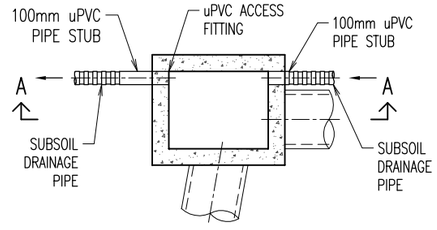


SECTION B–B

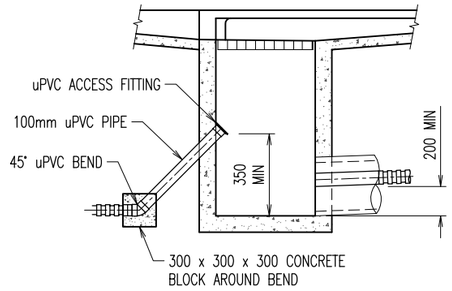


PLAN

CONNECTION DETAIL – ACCESS CHAMBER

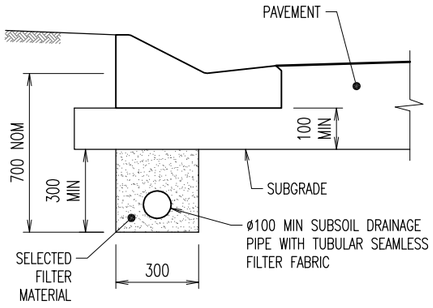


PLAN

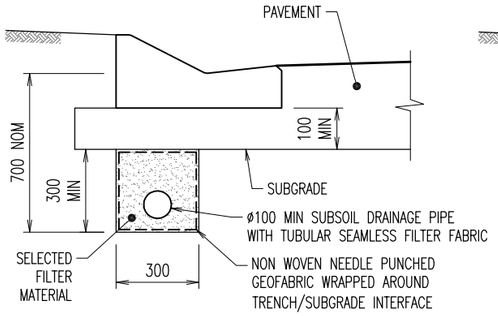


SECTION A–A

CONNECTION DETAIL – KERB INLET



SUBSOIL DRAIN DETAIL
TYPE 1



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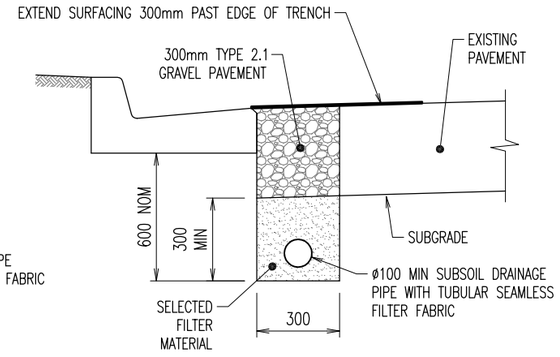
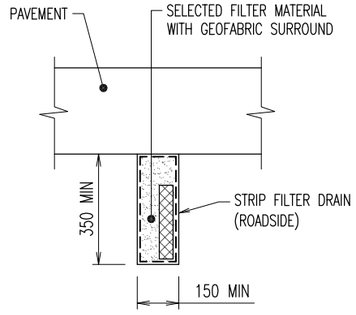


SUBSOIL DRAIN DETAIL
TYPE 3

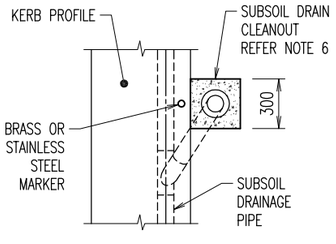


SUBSOIL DRAIN ALTERNATIVE
STRIP FILTER DRAIN
MAY BE SUBSTITUTED FOR ø100 SUBSOIL DRAINAGE PIPE IN TYPES 1, 2 AND 3

FILTER ON SLOTTED PIPE

AS SIEVE SIZE	% BY WT. PASSING
13.20 mm	100
9.50 mm	85 – 100
6.70 mm	–
4.75 mm	0 – 20
2.36 mm	0 – 5
75 µm	0 – 2

FILTER MATERIAL GRADING
UNLESS OTHERWISE SPECIFIED



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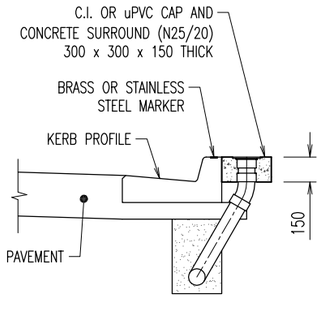

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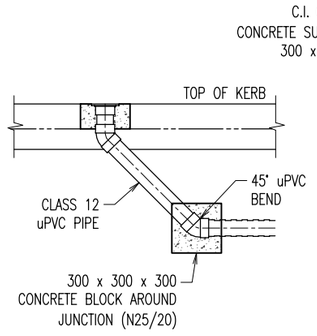
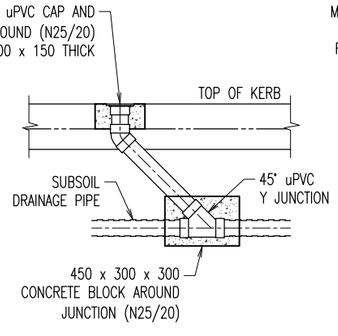
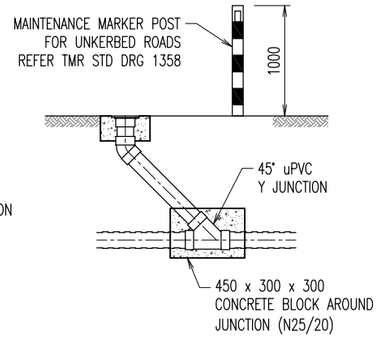


ELEVATION – KERBED ROADS



ELEVATION – KERBED ROADS



ELEVATION – UNKERBED ROADS

SUBSOIL DRAIN AND CLEANOUT
FOR CLEANOUT & OUTLET DETAILS TO CULVERTS AND RURAL ROADS REFER TMR STD DRG 1116

NOTES:

1. ALL SUBSOIL DRAINS TO BE CLASS 1000 POLYETHYLENE CORRUGATED SLOTTED PIPE TO AS 2439.1.
2. ALL OTHER PIPES AND FITTINGS TO BE CLASS 12 uPVC TO AS 1254.
3. MINIMUM GRADE OF SUBSOIL DRAIN IS TO BE 0.5%.
4. SELECTED FILTER MATERIAL TO BE CLEAN AGGREGATE GRADED 10 TO 20.
5. FILTER MATERIALS NOT COMPLYING WITH THE SPECIFIED GRADING REQUIREMENTS MAY BE USED WHEN APPROVED BY COUNCIL. A GEOFABRIC MAY BE USED TO LINE TRENCHES WHERE APPROVED BY COUNCIL.
6. SUBSOIL DRAIN CLEANOUTS TO BE CONSTRUCTED AT HEAD OF SUBSOIL DRAIN WITH CLEANING JUNCTIONS AT MAXIMUM SPACINGS OF 60m FOR PIPE TYPE DRAINS AND 50m FOR STRIP FILTER TYPE DRAINS. CLEANOUTS SHALL BE SUITABLY MARKED FOR EASY IDENTIFICATION BY MAINTENANCE PERSONNEL.
7. WHERE SUBSOIL DRAINS ARE DISCHARGED INTO A GULLY PIT, THE OUTLET OF THE SUBSOIL DRAIN SHALL BE LOCATED A MIN 200mm ABOVE THE INVERT LEVEL OF THE GULLY PIT UNLESS OTHERWISE APPROVED BY COUNCIL. THE SUBSOIL DRAIN OUTLETS SHALL BE PROVIDED WITH PEST–PROOF FLAPS.
8. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B	STRIP DRAIN ADDED, MITRE DRAIN, CONNECTIONS, CLEANOUTS, NOTES ALTERED & TITLEBLOCK CHANGE		08/16
A	ORIGINAL ISSUE		04/11

Fraser Coast REGIONAL COUNCIL

SUBSOIL DRAINAGE

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16

* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE

STANDARD DRAWING

SHEET 1 OF 1

A3 | STANDARD DRAWING No: FC–220–08

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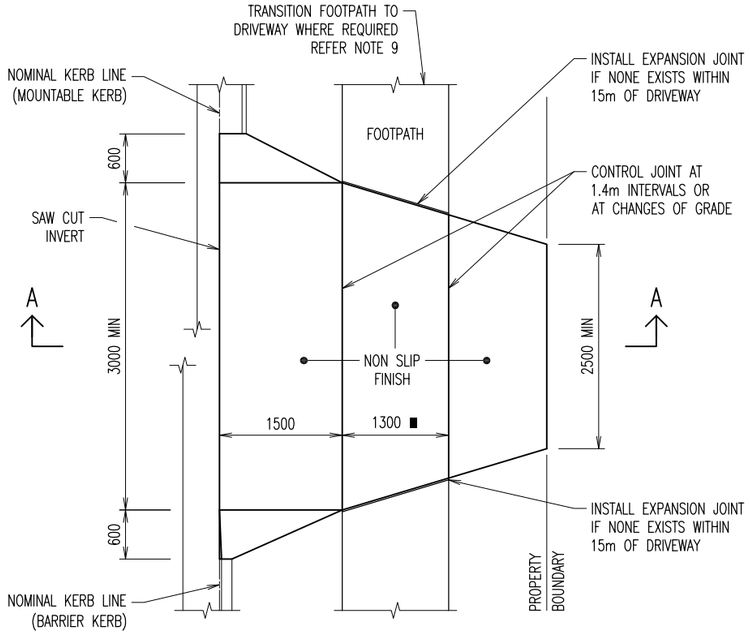

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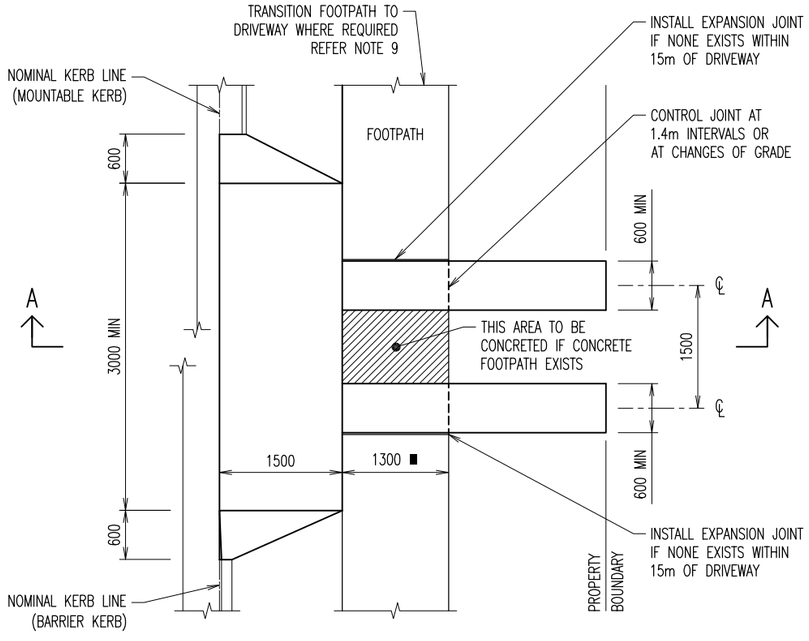
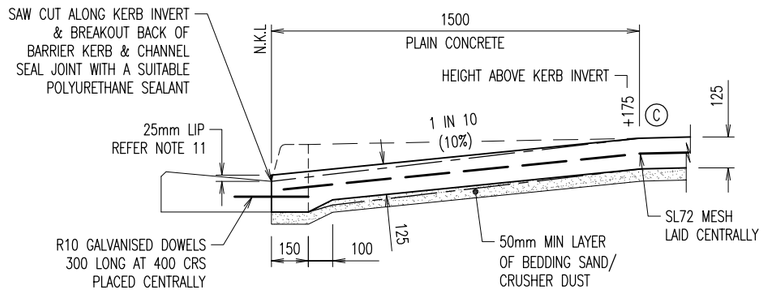
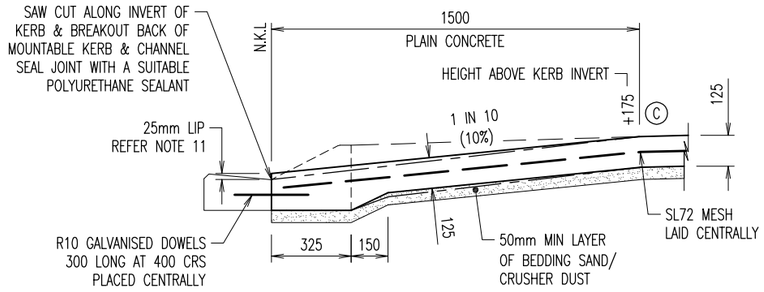


TRACK TYPE
(FOR EXISTING TRACK DRIVEWAYS)



BARRIER KERB & CHANNEL – BREAKOUT



MOUNTABLE KERB & CHANNEL – BREAKOUT

NOTES:

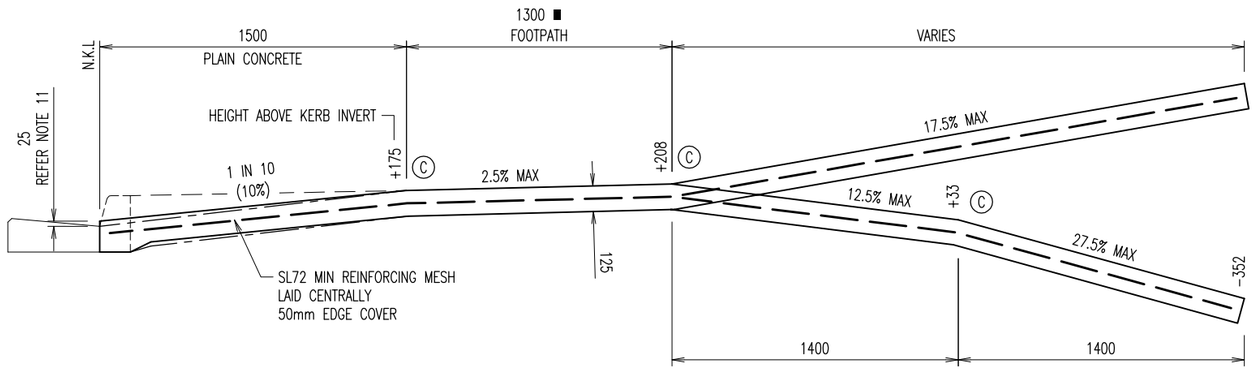
1. THIS CROSSING IS NOT DESIGNED FOR COMMERCIAL VEHICLES. FOR COMMERCIAL/ INDUSTRIAL CROSSINGS REFER FCRC STD DRG FC–230–02.
2. DRIVEWAY CONFIGURATION AND DIMENSIONS ARE CONSISTENT WITH STANDARD ROAD CROSSFALLS OF 3%. IF ROAD CROSSFALL EXCEEDS 3%, DRIVEWAY PROFILE MAY NEED TO BE REDESIGNED TO ENSURE SATISFACTORY CLEARANCE FOR VEHICLES. DRIVEWAY PROFILE MAY BE VARIED TO SUIT DIFFICULT OR EXISTING CONDITIONS WITH APPROVAL BY COUNCIL.
3. APPROVED MATERIALS FOR CONSTRUCTION :– CONCRETE, PAVING BLOCKS ON MINIMUM 150mm COMPACTED ROAD BASE OR ASPHALT ON MINIMUM 200mm COMPACTED ROAD BASE, REFER PROJECT DRAWINGS.
4. CONCRETE TO BE GRADE N32 IN ACCORDANCE WITH AS 1379 AND AS 3600.
5. REINFORCING MESH TO AS/NZS 4671, LAID CENTRALLY WITH 50mm EDGE COVER, LAP FABRIC 250mm.
6. CONCRETE TO BE BROOM FINISHED FOR SLIP RESISTANCE TO AS 4586.
7. FINISHES OTHER THAN BROOM FINISHED CONCRETE TO BE APPROVED BY COUNCIL, WITH REGARDS TO LONG TERM SLIP RESISTANCE AND DURABILITY. THE THICKNESS OF DECORATIVE SURFACING IS ADDITIONAL TO THE CONCRETE THICKNESS SHOWN.
8. ADJOINING CONCRETE FOOTPATHS AND VERGE MAY REQUIRE RE–PROFILING TO MATCH DRIVEWAY. VERGE EARTHWORKS MUST BE WELL COMPACTED, TOP DRESSED AND TURFED. EARTHWORKS CUT AND FILL BATTERS TO BE A MAXIMUM GRADE OF 1 IN 6.
9. WHERE EXISTING FOOTPATH TO BE TRANSITIONED TO NEW DRIVEWAY CROSSING, TRANSITION FOOTPATH AT A MAXIMUM GRADE OF 1 IN 14.
10. EXPANSION JOINTS TO BE FULL DEPTH 10mm THICK CLOSED CELL CROSS LINKED POLYETHYLENE FOAM (85–150 kg/m3) OR FULL DEPTH 10mm THICK COMPRESSED GRANULATED CORKBOARD. SEAL SURFACE OF JOINT WITH A SUITABLE POLYURETHANE SEALANT.
11. 25mm LIP AT CHANNEL INVERT MAY BE PROVIDED ON BOTH TYPE 'A' AND TYPE 'B' KERB AND CHANNEL TYPES TO PREVENT WATER FLOW INGRESS ON FLAT OR NEGATIVE VERGE CROSSFALLS AND STEEP LONGITUDINAL GRADES ON KERB. WHERE MOBILITY ACCESS IS REQUIRED AT DRIVEWAY CROSSING, REMOVE LIP FROM DRIVEWAY PROFILE. GRADE ON DRIVEWAY CROSSING NOT TO EXCEED 1 IN 8.
12. ALL APPROPRIATE PERMITS MUST BE OBTAINED FROM COUNCIL, INCLUDING APPROVAL OF LOCATION AND LEVELS PRIOR TO EXCAVATION.
13. THE MAINTENANCE OF ALL ACCESSES FROM THE THROUGH ROAD PAVEMENT TO THE PROPERTY BOUNDARY IS THE RESPONSIBILITY OF THE PROPERTY OWNER.
14. MAXIMUM ALLOWABLE GRADE CHANGE TO BE 15%.
15. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

LEGEND

■ FOOTPATH WIDTH, REFER PROJECT DRAWINGS

N.K.L NOMINAL KERB LINE (KERB INVERT)

Ⓒ CONTROL JOINT



SECTION A–A

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B	FOOTPATH WIDTH, NOTES ALTERED & TITLEBLOCK CHANGE		08/16
A	ORIGINAL ISSUE		01/11

Fraser Coast REGIONAL COUNCIL

RESIDENTIAL DRIVEWAY CROSSING SLAB AND TRACKS

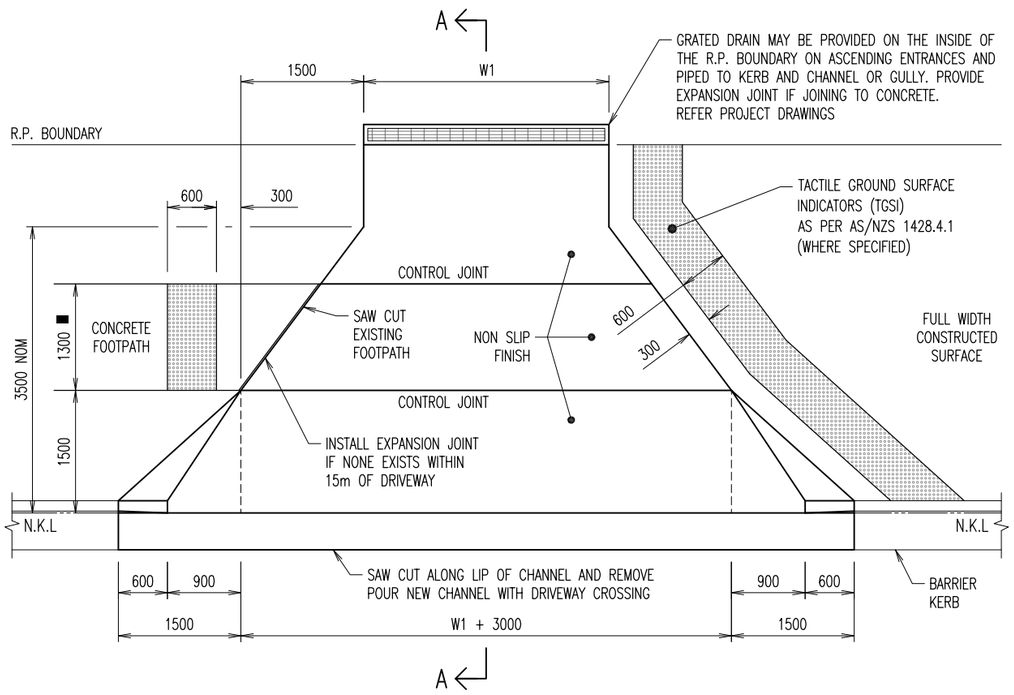
DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16
		* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE	

STANDARD DRAWING

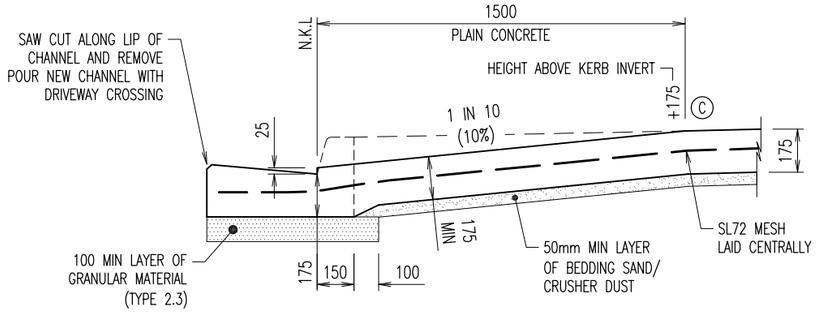
SHEET 1 OF 1

A3 | STANDARD DRAWING No: FC–230–01

A | B



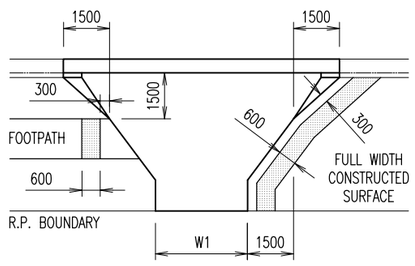
PLAN



BARRIER KERB & CHANNEL – BREAKOUT

COMMERICAL/INDUSTRIAL VEHICLE CROSSING DETAILS

TYPE	W1	W2
B	6.0 – 9.0	–
C1 / D1	4.5	3.5
C2 / D2	5.5	5.0
C3 / D3	7.5	6.0
C4 / D4	9.0	7.5



TYPE B

NOTES:

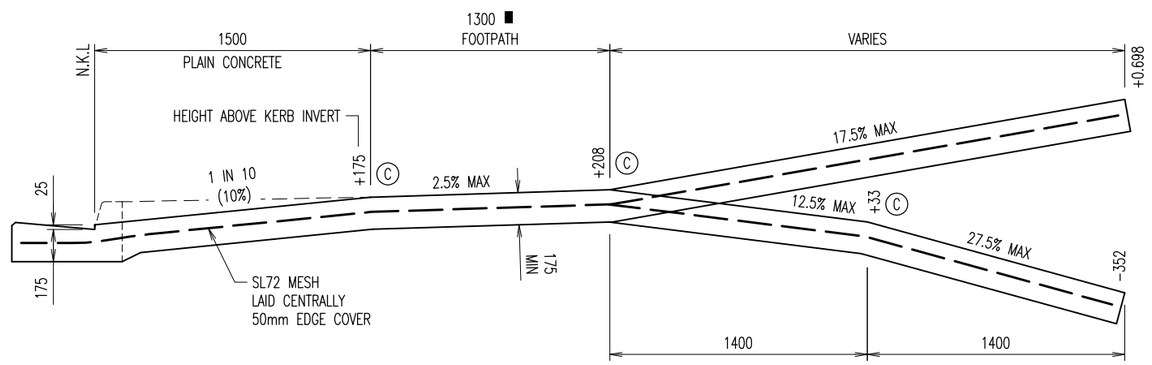
1. CONCRETE TO BE GRADE N32/20 IN ACCORDANCE WITH AS 1379 AND AS 3600.
2. REINFORCING MESH TO AS/NZS 4671. MESH TO BE LAID CENTRALLY WITH 50mm EDGE COVER, LAP FABRIC 250mm.
3. CONCRETE TO BE BROOM FINISHED FOR SLIP RESISTANCE TO AS 4586.
4. FINISHES OTHER THAN BROOM FINISHED CONCRETE TO BE APPROVED BY COUNCIL, WITH REGARDS TO LONG TERM SLIP RESISTANCE AND DURABILITY. THE THICKNESS OF DECORATIVE SURFACING IS ADDITIONAL TO THE CONCRETE THICKNESS SPECIFIED.
5. DEPTHS OF CONCRETE AND REINFORCING STEEL SHOWN ARE THE MINIMUM REQUIREMENTS FOR GOOD SUBGRADE CONDITIONS AND AVERAGE TRAFFIC LOADING. WHERE THIS DOES NOT APPLY, DEPTHS OF CONCRETE AND REINFORCING SHALL BE INCREASED TO SUIT SPECIFIC CONDITIONS.
6. WHERE THE SUBGRADE IS LESS THAN CBR 5, EXCAVATE AND PROVIDED IMPORTED GRANULAR MATERIAL TO SATISFACTION OF COUNCIL.
7. DIMENSION W1 & W2, REFER PROJECT DRAWINGS.
8. ALL EXISTING ASPHALT OR CONCRETE PAVEMENTS TO BE SAW CUT PRIOR TO ALLOW FOR NEAT REMOVAL AND REINSTATEMENT.
9. FULL CROSS SECTION OF KERB AND CHANNEL TO BE REMOVED AND REINFORCING MESH TO EXTEND TO WITHIN 50mm OF CHANNEL LIP. ROAD PAVEMENT TO BE CEMENT TREATED IF DISTURBED DURING REMOVAL OF KERB AND CHANNEL AND RESURFACED WITH BITUMEN OR ASPHALT TO MATCH ROAD SURFACE.
10. ADJOINING CONCRETE FOOTPATHS AND VERGE MAY REQUIRE RE-PROFILING TO MATCH DRIVEWAY. VERGE EARTHWORKS MUST BE WELL COMPACTED, TOP DRESSED AND TURFED. EARTHWORKS CUT AND FILL BATTERS TO BE A MAXIMUM GRADE OF 1 IN 6.
11. EXISTING FOOTPATH PROFILE TO BE MAINTAINED WHERE POSSIBLE. VARIATIONS TO THE DESIGN PROFILES SHOWN ARE SUBJECT TO APPROVAL BY COUNCIL.
12. WHERE DIRECTED BY COUNCIL TACTILE GROUND SURFACE INDICATORS (TGSI'S) ARE TO BE PROVIDED ADJACENT TO THE DRIVEWAY IN ACCORDANCE WITH AS/NZS 1428.4.1.
13. EXPANSION JOINTS TO BE FULL DEPTH 10mm THICK CLOSED CELL CROSS LINKED POLYETHYLENE FOAM (85–150 kg/m3) OR FULL DEPTH 10mm THICK COMPRESSED GRANULATED CORKBOARD. SEAL SURFACE OF JOINT WITH A SUITABLE POLYURETHANE SEALANT.
14. ALL APPROPRIATE PERMITS MUST BE OBTAINED FROM COUNCIL, INCLUDING APPROVAL OF LOCATION AND LEVELS PRIOR TO EXCAVATION.
15. THE MAINTENANCE OF ALL ACCESSES FROM THE THROUGH ROAD PAVEMENT TO THE PROPERTY BOUNDARY IS THE RESPONSIBILITY OF THE PROPERTY OWNER.
16. MAXIMUM ALLOWABLE GRADE CHANGE TO BE 15%.
17. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

LEGEND

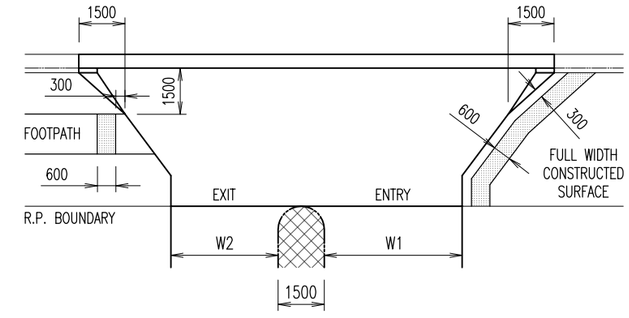
■ FOOTPATH WIDTH, REFER PROJECT DRAWINGS

N.K.L NOMINAL KERB LINE (KERB INVERT)

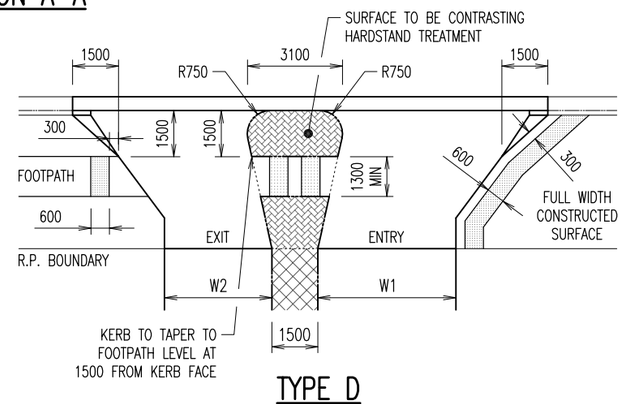
Ⓒ CONTROL JOINT



SECTION A–A



TYPE C
TYPE 1 CENTRE ISLAND



TYPE D
TYPE 2 CENTRE ISLAND
(LEFT IN / LEFT OUT ONLY)

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B	DRIVEWAY TYPES ADDED, FOOTPATH WIDTH, NOTES ALTERED & TITLEBLOCK CHANGE		08/16
A	ORIGINAL ISSUE		01/11

Fraser Coast REGIONAL COUNCIL

COMMERCIAL/INDUSTRIAL DRIVEWAY CROSSING HEAVY DUTY SLAB

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16

* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE

STANDARD DRAWING

SHEET 1 OF 1

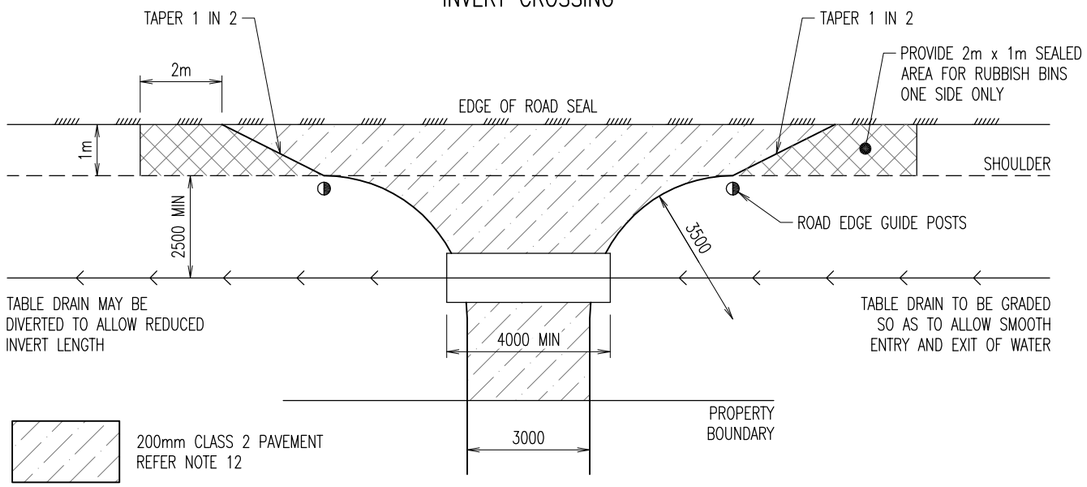
A3

STANDARD DRAWING No: FC–230–02

A B

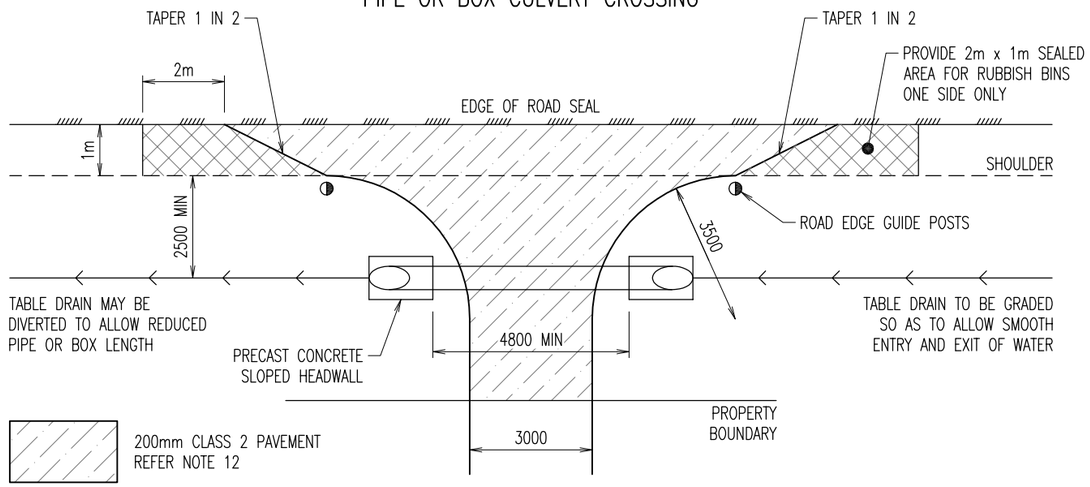
TYPE 'A'

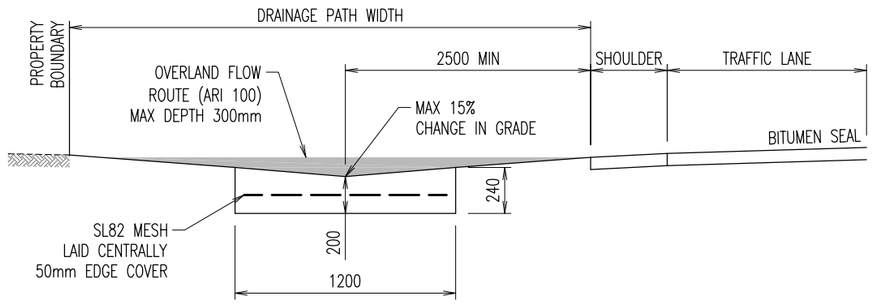
INVERT CROSSING



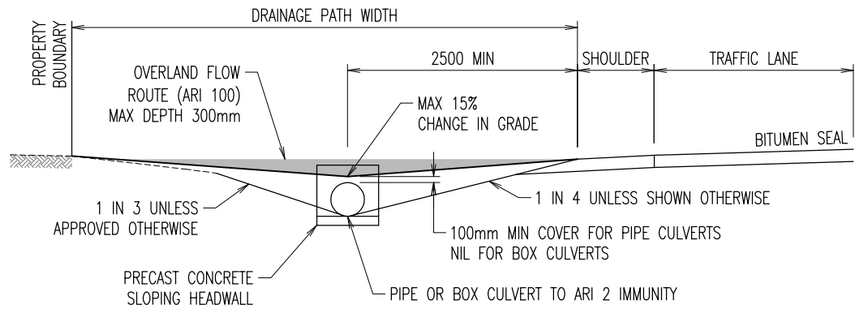
TYPE 'B'

PIPE OR BOX CULVERT CROSSING





TYPE 'A' CROSS SECTION



TYPE 'B' CROSS SECTION

NOTES:

1. PIPE OR BOX CULVERT CROSSINGS ARE NOT TO BE INSTALLED ON ROADS THAT FALL TO THE SUBJECT PROPERTY OR WHERE STORMWATER CANNOT BE DIRECTED TO A NATURAL WATER COURSE OR DRAINAGE EASEMENT/SYSTEM OR WHEN THERE IS NO UPSTREAM STORMWATER CATCHMENT OR TABLE DRAIN.
2. ACCESS DRIVEWAYS WITH GRADES GREATER THAN 10% (1 IN 10) WITHIN PROPERTY BOUNDARIES SHALL BE CONSTRUCTED WITH NON–ERODIBLE MATERIAL (I.E. BITUMEN, ASPHALT, CONCRETE, PAVERS).
3. TABLE DRAINS AND OUTLETS PRONE TO SCOURING SHALL BE LINED WITH ROCK, CONCRETE OR STABILISED TURF FOR PROTECTION.
4. ALL DRAINAGE FROM WITHIN THE PROPERTY AND ON THE DRIVEWAY SURFACES SHALL BE COLLECTED AT OR INSIDE THE PROPERTY BOUNDARY AND DISCHARGED BY WAY OF A SEALED PIPE OR OTHER APPROVED MEANS TO COUNCIL'S DRAINAGE SYSTEM.
5. THE ACCESS SHALL BE POSITIONED SO AS THE APPROACH SIGHT DISTANCE, ENTERING SIGHT DISTANCE AND SAFE INTERSECTION SIGHT DISTANCE MEETS THE CRITERIA AS STIPULATED IN SECTION 5 OF AUSTROADS PUBLICATION "INTERSECTIONS AT GRADE". EARTHWORKS REQUIRED WITHIN THE ROAD RESERVE TO ACHIEVE THE CRITERIA SHALL BE APPROVED BY COUNCIL.
6. CALCULATIONS FOR THE SIZING OF PIPE OR BOX CULVERTS SHALL BE CARRIED OUT BY A REGISTERED PROFESSIONAL ENGINEER AND APPROVED BY COUNCIL. PIPE OR BOX CULVERT DESIGN SHALL PROVIDE A MINIMUM ARI 2 IMMUNITY.
7. MINIMUM PIPE DIAMETER TO BE 300mm AND MINIMUM BOX HEIGHT TO BE 225mm UNLESS OTHERWISE APPROVED BY COUNCIL.
8. WHERE PIPE IS USED FOR A RURAL ACCESS, PIPE TO BE MINIMUM CLASS 3 REINFORCED CONCRETE PIPE (FIBRE OR STEEL REINFORCED).
9. MINIMUM PIPE OR BOX GRADE TO BE 0.5%.
10. LOW POINT OF ACCESS TO BE A MIN OF 100mm BELOW SHOULDER HINGE POINT.
11. ALL CULVERT, INVERT AND DRIVEWAY CONSTRUCTION SHALL BE CARRIED OUT IN THE SECTION OF ROAD RESERVE CONTAINED WITHIN THE EXTENDED PROPERTY BOUNDARY LINES.
12. WHERE AN ACCESS CROSSING IS REQUIRED TO BE PROVIDED AS A CONDITION OF A DEVELOPMENT PERMIT, A 200mm GRAVEL PAVEMENT WITH A 2 COAT BITUMEN SEAL SHALL BE PROVIDED. COUNCIL FEE FOR THE INSTALLATION OF A CROSSING DOES NOT INCLUDE PAVEMENT OR BITUMEN SURFACING WORK.
13. RURAL ACCESS CULVERT LENGTH MIN 4.8m, MAX 7.0m BETWEEN HEADWALLS. SHOULD A CULVERT LONGER THAN 7.0m BE REQUIRED THE OWNER/DEVELOPER SHALL SEEK WRITTEN APPROVAL FROM COUNCIL FOR THE PROPOSAL AND HAVE THE WATER FLOW CAPACITY SIZED IN ACCORDANCE WITH THE DEVELOPMENT MANUAL.
14. WHERE ACCESS CANNOT BE CONSTRUCTED IN ACCORDANCE WITH THIS STANDARD, A SKETCH OF THE PROPOSAL SHALL BE SUBMITTED TO COUNCIL FOR APPROVAL.
15. ALL UNDERGROUND SERVICES ARE TO BE LOCATED ON SITE PRIOR TO ANY EXCAVATION WORKS.
16. ALL APPROPRIATE PERMITS MUST BE OBTAINED FROM COUNCIL, INCLUDING APPROVAL OF LOCATION AND LEVELS PRIOR TO EXCAVATION.
17. THE MAINTENANCE OF ALL ACCESSES FROM THE THROUGH ROAD PAVEMENT TO THE PROPERTY BOUNDARY IS THE RESPONSIBILITY OF THE PROPERTY OWNER.
18. MAXIMUM ALLOWABLE GRADE CHANGE TO BE 15%.
19. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B	REGP ADDED, NOTES ALTERED & TITLEBLOCK CHANGE		08/16
A	ORIGINAL ISSUE		01/11

Fraser Coast REGIONAL COUNCIL

RURAL ACCESS
PIPE OR BOX CULVERT AND INVERT CROSSINGS

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16

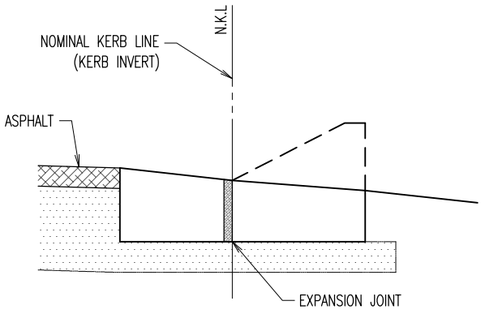
* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE

STANDARD DRAWING

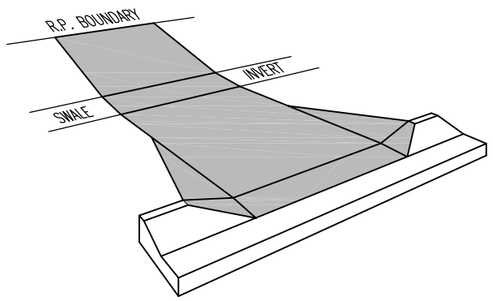
SHEET 1 OF 1

A3 | STANDARD DRAWING No: FC–230–03

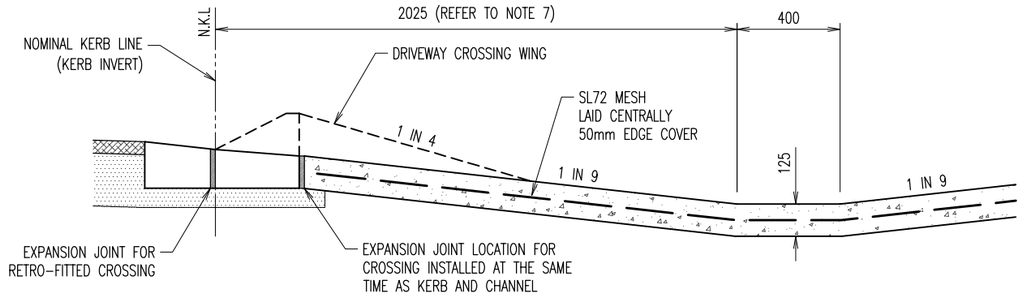
A | B



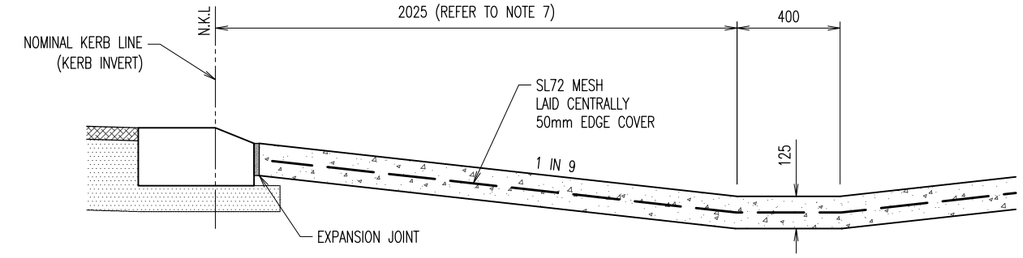
SECTION A–A
FOR TYPE 'B' MOUNTABLE KERB



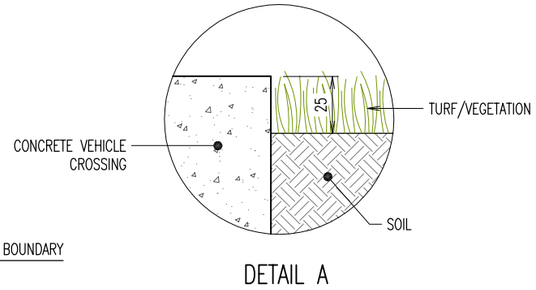
PERSPECTIVE VIEW



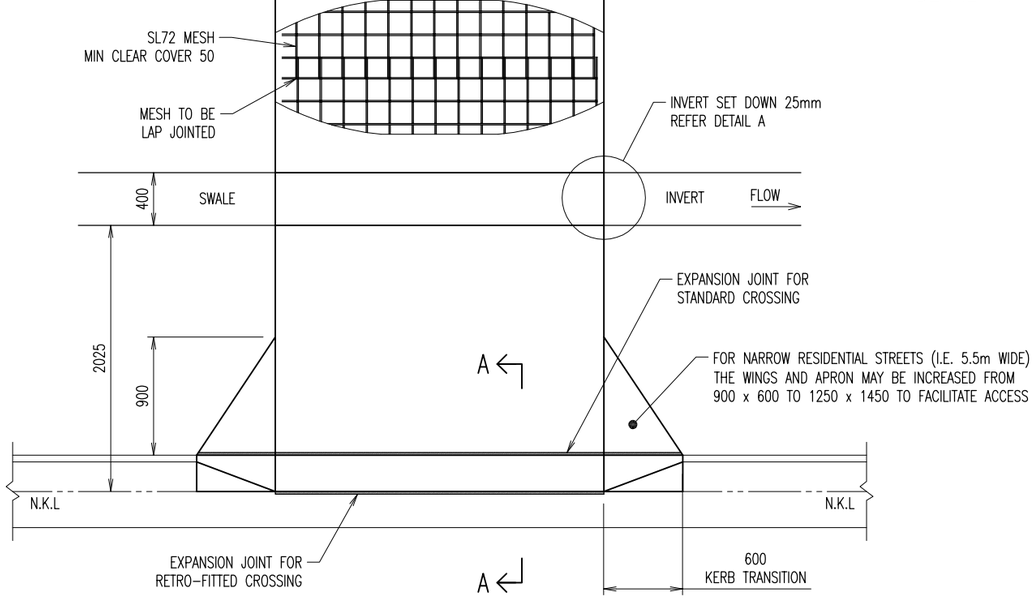
SECTION
(WITH TYPE 'B' MOUNTABLE KERB)



SECTION
(WITH TYPE 'M' MOUNTABLE KERB)



DETAIL A



PLAN

NOTES:

1. THIS CROSSING IS NOT DESIGNED FOR COMMERCIAL VEHICLES.
2. CONCRETE TO BE GRADE N32 IN ACCORDANCE WITH AS 1379 AND AS 3600.
3. REINFORCING MESH TO AS/NZS 4671, LAID CENTRALLY WITH 50mm EDGE COVER, LAP FABRIC 250mm.
4. CONCRETE TO BE BROOM FINISHED FOR SLIP RESISTANCE TO AS 4586. FINISHES OTHER THAN BROOM FINISHED CONCRETE TO BE APPROVED BY COUNCIL, WITH REGARDS TO LONG TERM SLIP RESISTANCE AND DURABILITY.
5. THE THICKNESS OF DECORATIVE SURFACING WHERE APPROVED IS ADDITIONAL TO THE CONCRETE THICKNESS SPECIFIED.
6. EXPANSION JOINTS TO BE FULL DEPTH 10mm THICK CLOSED CELL CROSS LINKED POLYETHYLENE FOAM (85–150 kg/m3) OR FULL DEPTH 10mm THICK COMPRESSED GRANULATED CORKBOARD. SEAL SURFACE OF JOINT WITH A SUITABLE POLYURETHANE SEALANT.
7. DISTANCE FROM NOMINAL FACE OF KERB MAY VARY WITH SWALE WIDTH. GRADES ARE RECOMMENDED MAXIMUMS FOR VEHICLE ACCESS.
8. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

LEGEND

N.K.L NOMINAL KERB LINE (KERB INVERT)

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B	NOTES ALTERED & TITLEBLOCK CHANGE		08/16
A	ORIGINAL ISSUE		01/11

Fraser Coast REGIONAL COUNCIL

RESIDENTIAL VEHICLE CROSSING SWALE PROFILE

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16

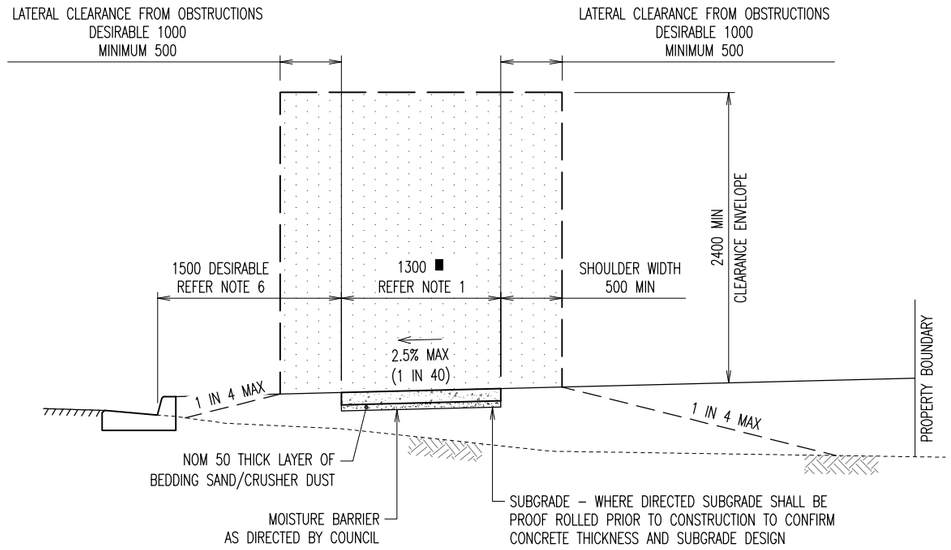
* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE

STANDARD DRAWING

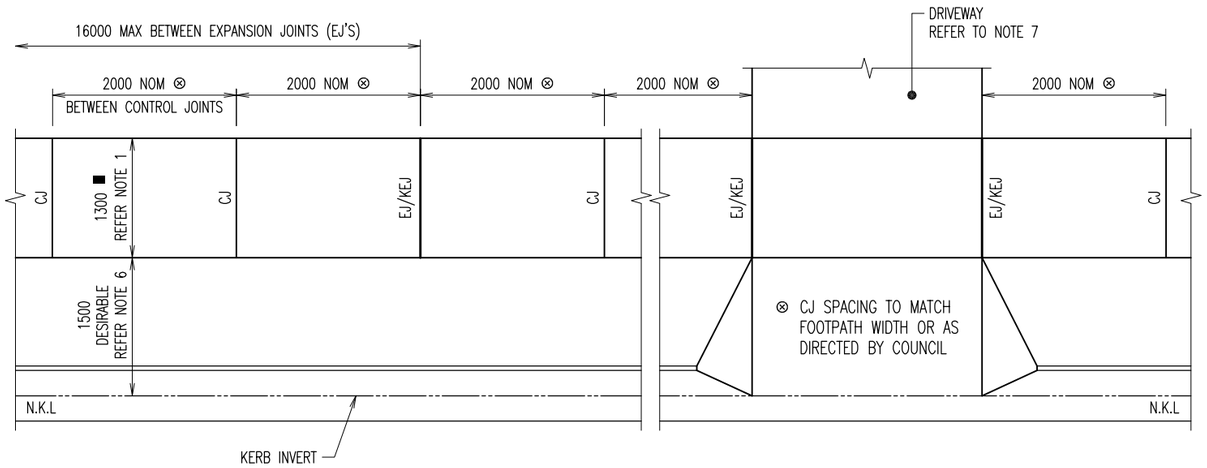
SHEET 1 OF 1

A3 | STANDARD DRAWING No: FC–230–04

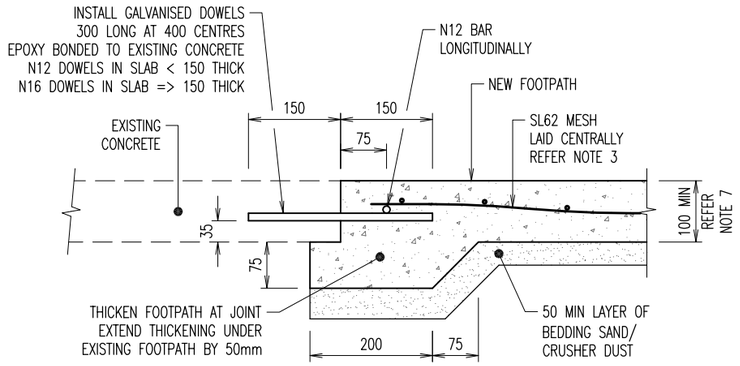
A | B



TYPICAL SECTION

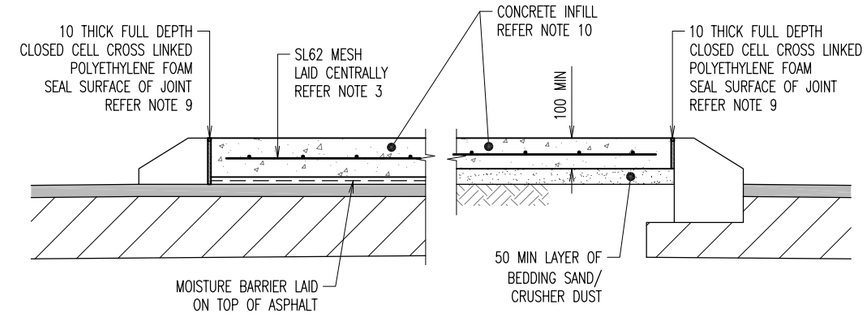


PLAN – CONCRETE FOOTPATHS

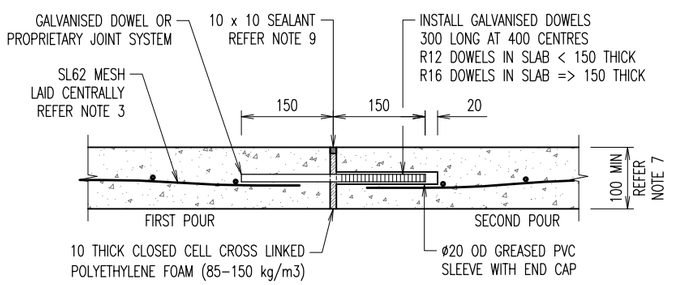


SLAB WIDENING/JOINING TO EXISTING

MINIMUM WIDENING 800mm



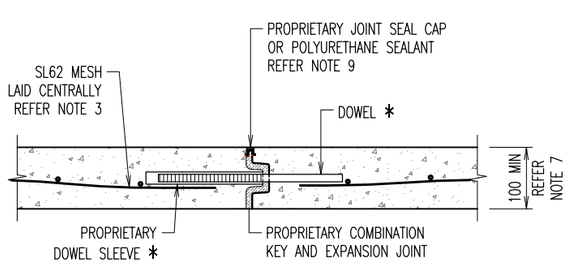
MEDIAN ISLAND INFILL



EXPANSION JOINT – DOWELED (EJ)

SPACING 16m

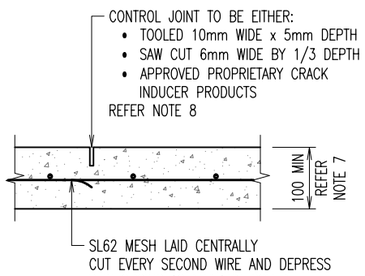
(REFER DETAIL A FOR ALTERNATIVE PREFORMED JOINT DETAIL)



* DOWEL MAYBE ELIMINATED FOR MASS CONCRETE FOOTPATHS

DETAIL A – (KEJ)

PREFORMED KEY JOINT WITH DOWEL



CONTROL JOINT (CJ)

SPACING 2m NOM

MATCH FOOTPATH WIDTH IF WIDTH > 2m

NOTES:

1. REFER TO PROJECT DRAWINGS FOR FOOTPATH WIDTH, DIMENSIONS AND SURFACE TREATMENT.
2. CONCRETE TO BE GRADE N32 IN ACCORDANCE WITH AS 1379 AND AS 3600.
3. REINFORCING MESH TO AS/NZS 4671, LAID CENTRALLY WITH 50mm EDGE COVER, LAP FABRIC 250mm.
4. FIBRE REINFORCEMENT – WHEN APPROVED FOR USE BY COUNCIL, THE CONCRETE SHALL BE GRADE N32 REINFORCED WITH CLASS 2 MACRO STRUCTURAL SYNTHETIC POLYMER FIBRES IN ACCORDANCE WITH THE MANUFACTURES SPECIFICATION FOR THE SPECIFIED DESIGN LOAD. BATCHING OF THE FIBRES SHALL BE BY READY MIX SUPPLIER IN ACCORDANCE MANUFACTURER'S TECHNICAL SPECIFICATION.
5. CONCRETE TO BE BROOM FINISHED FOR SLIP RESISTANCE TO AS 4586.
6. THE DIMENSION BETWEEN KERB INVERT AND EDGE OF FOOTPATH MAY BE VARIED SUBJECT TO COUNCIL'S APPROVAL. MINIMUM FOOTPATH OFFSET SHOULD NOT BE LESS THAN 500mm IN ANY SITUATION.
7. WHERE A FOOTPATH CROSSES A DRIVEWAY OR IS SUBJECTED TO TRAFFIC LOADS THE FOOTPATH THICKNESS SHALL BE AS PER THE RELEVANT RESIDENTIAL OR COMMERCIAL DRIVEWAY FCRC STANDARD DRAWING FC–230–01 OR FC–230–02.
8. SAW CUT JOINTS ARE TO BE UNDERTAKEN BETWEEN 4 TO 12 HOURS AFTER LAYING DEPENDING ON CONDITIONS. JOINT SEALANT IS REQUIRED IN SANDY AREAS. PROPRIETY CRACK INDUCER PRODUCTS MAY BE USED IN PLACE OF SAW CUTTING ON CONTROL JOINTS.
9. EXPANSION JOINTS TO BE SEALED WITH A LOW MODULUS SELF PRIMING SEALANT TO THE MANUFACTURES SPECIFICATIONS. THE COLOUR OF THE SEALANT IS TO MATCH THE ADJOINING SURFACE FINISH.
10. CONCRETE SPLITTER/MEDIAN ISLANDS INFILL SURFACE FINISH TO BE EITHER 'STENCIL CRETE' (RUNNING BOND BRICK PATTERN COLOURED TERRACOTTA) OR ARTIFICIAL TURF 'ENDUROTURF BLISS' (OR APPROVED EQUIVALENT) UNLESS NOTED OTHERWISE. PATTERN LINES TO FOLLOW ADJOINING KERB AND FINISHED WITH AN APPROVED GROOVING TOOL. ALL CONTROL & EXPANSION JOINTS TO MATCH ADJOINING KERB JOINTS.
11. ALL APPROPRIATE PERMITS MUST BE OBTAINED FROM COUNCIL, INCLUDING APPROVAL OF LOCATION AND LEVELS PRIOR TO EXCAVATION.
12. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

LEGEND

■ FOOTPATH WIDTH, REFER PROJECT DRAWINGS

N.K.L NOMINAL KERB LINE (KERB INVERT)

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B	JOINTS & MEDIAN ISLAND ADDED, PLAN, SECTION & NOTES ALTERED & TITLEBLOCK CHANGE		08/16
A	ORIGINAL ISSUE		01/11

Fraser Coast REGIONAL COUNCIL

CONCRETE FOOTPATHS
TYPICAL CONSTRUCTION DETAILS

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16

* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE

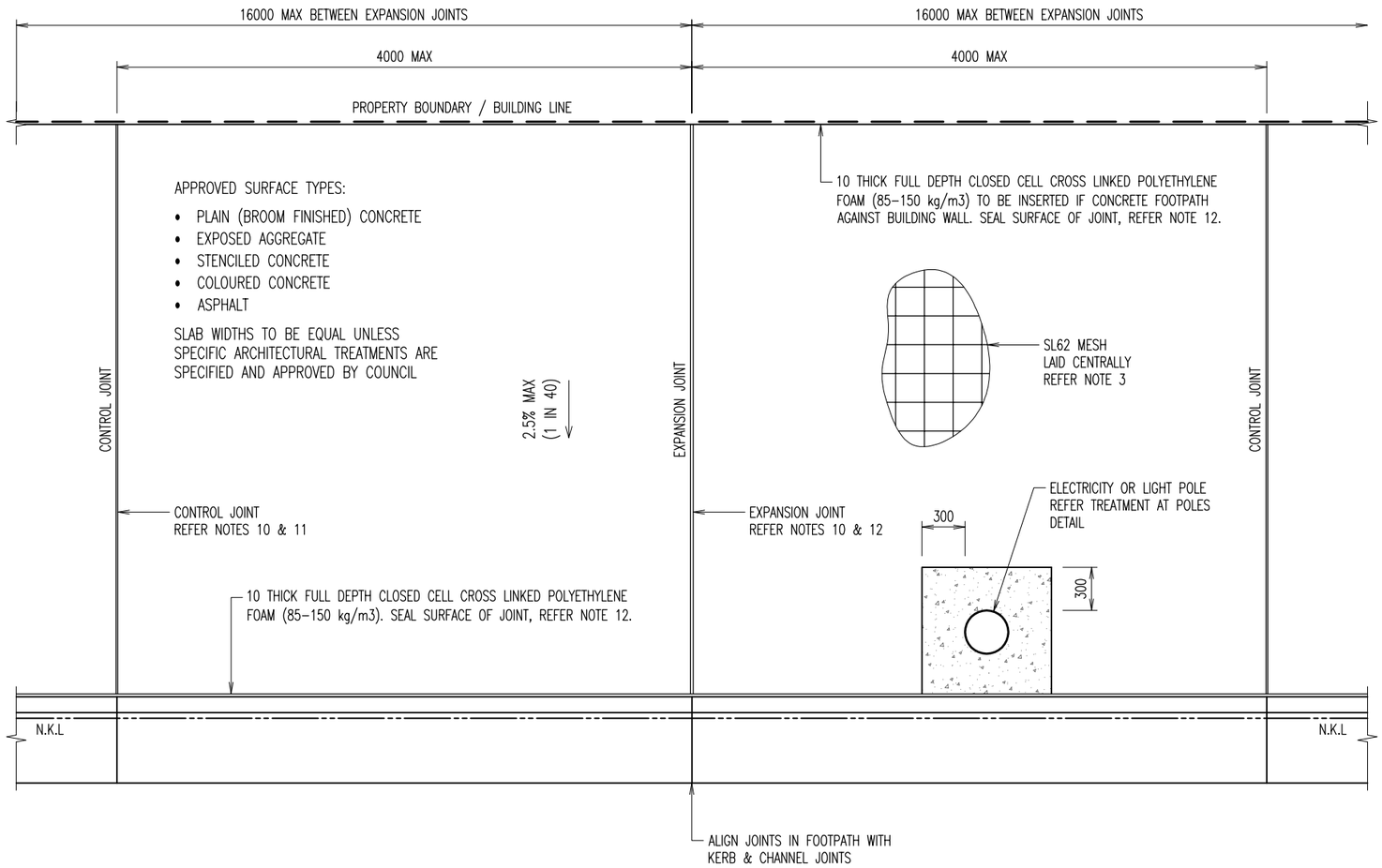
STANDARD DRAWING

SHEET 1 OF 1

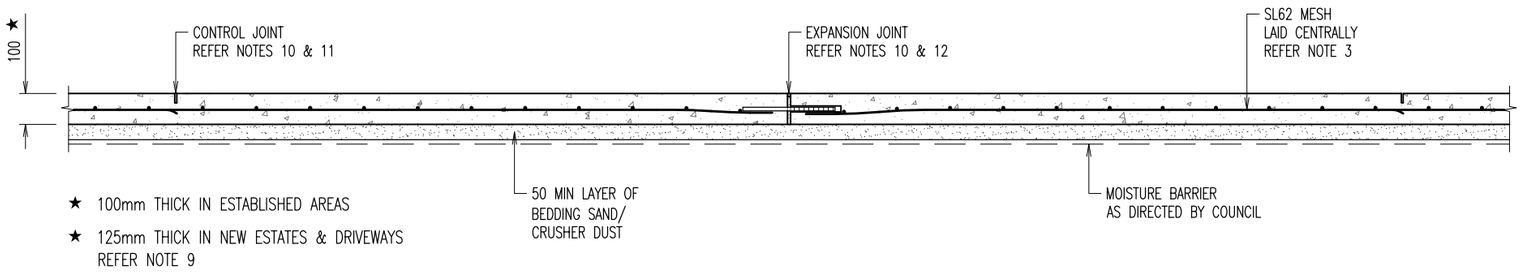
A3

STANDARD DRAWING No: FC–240–01

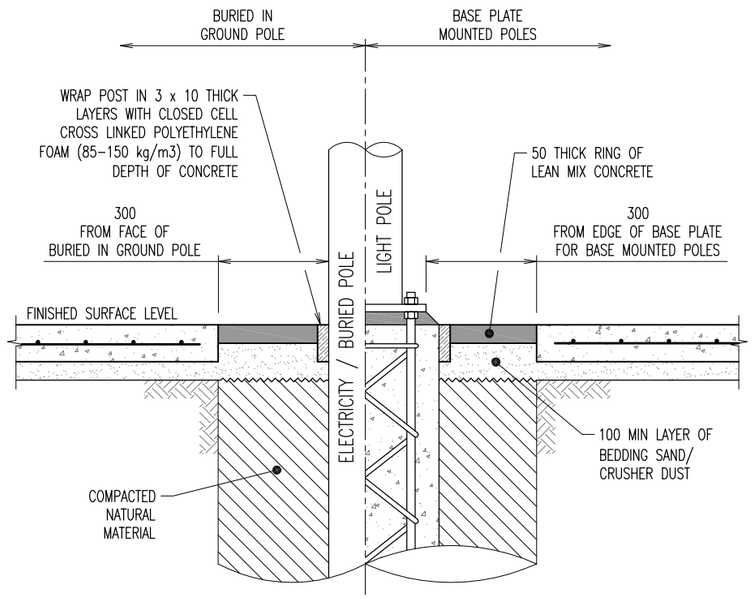
A | B



PLAN



SECTION A–A



TREATMENT AT POLES

NOTES:

1. REFER TO PROJECT DRAWINGS FOR FOOTPATH WIDTH, DIMENSIONS AND SURFACE TREATMENT.
2. CONCRETE TO BE GRADE N32 IN ACCORDANCE WITH AS 1379 AND AS 3600.
3. REINFORCING MESH TO AS/NZS 4671, LAID CENTRALLY WITH 50mm EDGE COVER, LAP FABRIC 250mm.
4. FIBRE REINFORCEMENT – WHEN APPROVED FOR USE BY COUNCIL, THE CONCRETE SHALL BE GRADE N32 REINFORCED WITH CLASS 2 MACRO STRUCTURAL SYNTHETIC POLYMER FIBRES IN ACCORDANCE WITH THE MANUFACTURES SPECIFICATION FOR THE SPECIFIED DESIGN LOAD. BATCHING OF THE FIBRES SHALL BE BY READY MIX SUPPLIER IN ACCORDANCE MANUFACTURER'S TECHNICAL SPECIFICATION.
5. CONCRETE TO BE BROOM FINISHED FOR SLIP RESISTANCE TO AS 4586.
6. CONCRETE SHALL BE PLACED IN ALTERNATE PANELS.
7. FOOTPATH TO COMPLY WITH AUSTRALIAN STANDARDS AND COUNCIL REQUIREMENTS FOR ACCESS AND MOBILITY, PARTICULARLY AS 1428.
8. CROSSFALL TO BE MAX 2.5% (1 IN 40) DOWN TOWARDS KERB (NOMINAL).
9. WHERE A FOOTPATH CROSSES A DRIVEWAY OR IS SUBJECTED TO TRAFFIC LOADS THE FOOTPATH THICKNESS SHALL BE AS PER THE RELEVANT RESIDENTIAL OR COMMERCIAL DRIVEWAY FCRC STANDARD DRAWING FC–230–01 OR FC–230–02.
10. FOR JOINT DETAILS REFER TO FCRC STANDARD DRAWING FC–240–03.
11. SAW CUT JOINTS ARE TO BE UNDERTAKEN BETWEEN 4 TO 12 HOURS AFTER LAYING DEPENDING ON CONDITIONS. JOINT SEALANT IS REQUIRED IN SANDY AREAS. PROPRIETY CRACK INDUCER PRODUCTS MAY BE USED IN PLACE OF SAW CUTTING ON CONTROL JOINTS.
12. EXPANSION JOINTS TO BE SEALED WITH A LOW MODULUS SELF PRIMING SEALANT TO THE MANUFACTURES SPECIFICATIONS. THE COLOUR OF THE SEALANT IS TO MATCH THE ADJOINING SURFACE FINISH.
13. ALL APPROPRIATE PERMITS MUST BE OBTAINED FROM COUNCIL, INCLUDING APPROVAL OF LOCATION AND LEVELS PRIOR TO EXCAVATION.
14. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

LEGEND

N.K.L NOMINAL KERB LINE (KERB INVERT)

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B	PLAN, SECTION, TREATMENT AT POLES & NOTES ALTERED & TITLEBLOCK CHANGE		08/16
A	ORIGINAL ISSUE		01/11

Fraser Coast REGIONAL COUNCIL

CONCRETE FOOTPATHS – FULL WIDTH TYPICAL CONSTRUCTION DETAILS

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16

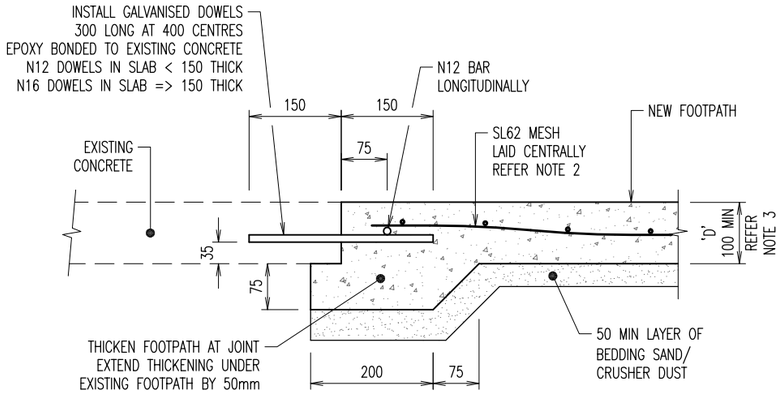
* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE

STANDARD DRAWING

SHEET 1 OF 1

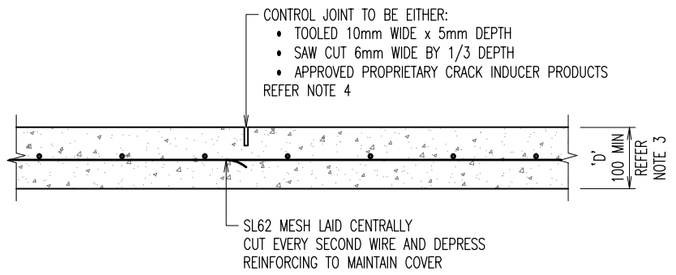
A3 | STANDARD DRAWING No: FC–240–02

A | B



SLAB WIDENING/JOINING TO EXISTING

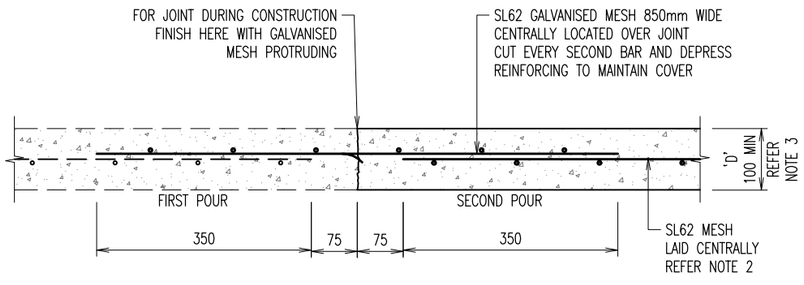
MINIMUM WIDENING 800mm



CONTROL JOINT (CJ)

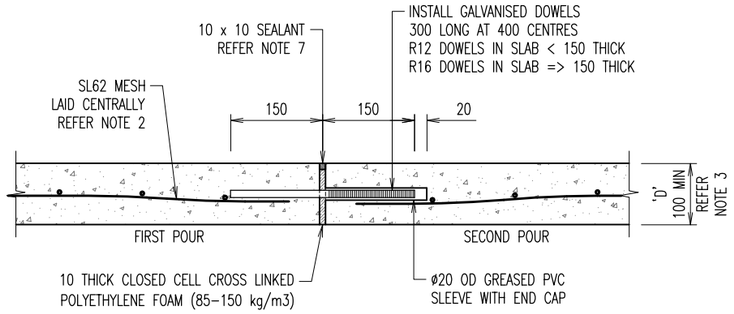
SPACING 2m NOM

MATCH FOOTPATH WIDTH IF WIDTH > 2m



CONSTRUCTION JOINT

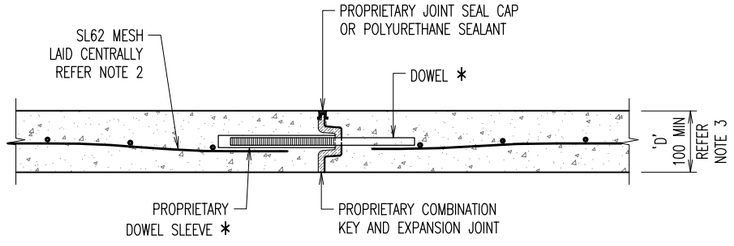
PLACEMENT AS REQUIRED



EXPANSION JOINT – DOWELED (EJ)

SPACING 16m

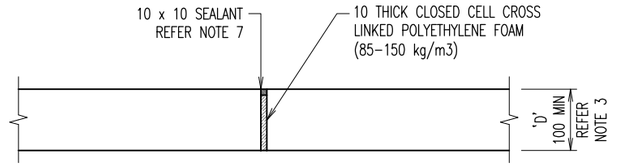
(REFER DETAIL A FOR ALTERNATIVE PREFORMED JOINT DETAIL)



* DOWEL MAYBE ELIMINATED FOR MASS CONCRETE FOOTPATHS

DETAIL A – (KEJ)

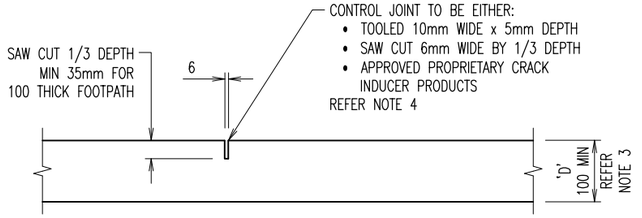
PREFORMED KEY JOINT WITH DOWEL



EXPANSION JOINT

SPACING 16m

FOR FIBRE REINFORCED PATHS REFER DETAIL A FOR PREFORMED KEY JOINT/EXPANSION JOINT REQUIREMENTS



CONTROL JOINT

SPACING 2m

MASS CONCRETE AND FIBRE REINFORCED JOINTS

NOTES:

1. CONCRETE TO BE GRADE N32 IN ACCORDANCE WITH AS 1379 AND AS 3600.
2. REINFORCING MESH TO AS/NZS 4671, LAID CENTRALLY WITH 50mm EDGE COVER, LAP FABRIC 250mm.
3. 'D' VARIES DEPENDING ON PROPOSED USE OF FOOTPATH. WHERE A FOOTPATH CROSSES A DRIVEWAY OR IS SUBJECTED TO TRAFFIC LOADS THE FOOTPATH THICKNESS SHALL BE AS PER THE RELEVANT RESIDENTIAL OR COMMERCIAL DRIVEWAY FCRC STANDARD DRG FC-230-01 OR FC-230-02.
4. SAW CUT JOINTS ARE TO BE UNDERTAKEN BETWEEN 4 TO 12 HOURS AFTER LAYING DEPENDING ON CONDITIONS. JOINT SEALANT IS REQUIRED IN SANDY AREAS. PROPRIETY CRACK INDUCER PRODUCTS MAY BE USED IN PLACE OF SAW CUTTING ON CONTROL JOINTS.
5. PROPRIETY COMBINATION DOWELED KEY JOINT WITH EXPANSION MATERIAL MAY BE USED IN PLACE OF STANDARD DOWELED EXPANSION JOINT. REFER DETAIL A FOR TYPICAL DETAILS.
6. ALL DOWELS TO BE PERPENDICULAR TO JOINT AND PARALLEL TO EACH OTHER. DOWELS TO BE HOT DIPPED GALVANISED.
7. EXPANSION JOINTS TO BE SEALED WITH A LOW MODULUS SELF PRIMING SEALANT TO THE MANUFACTURES SPECIFICATIONS. THE COLOUR OF THE SEALANT IS TO MATCH THE ADJOINING SURFACE FINISH.
8. FIBRE REINFORCEMENT – WHEN APPROVED FOR USE BY COUNCIL, THE CONCRETE SHALL BE GRADE N32 REINFORCED WITH CLASS 2 MACRO STRUCTURAL SYNTHETIC POLYMER FIBRES IN ACCORDANCE WITH THE MANUFACTURES SPECIFICATION FOR THE SPECIFIED DESIGN LOAD. BATCHING OF THE FIBRES SHALL BE BY READY MIX SUPPLIER IN ACCORDANCE MANUFACTURER'S TECHNICAL SPECIFICATION.
9. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

STEEL REINFORCED JOINTS

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B	EXISTING JOINT ADDED, JOINT SPACING, NOTES ALTERED & TITLEBLOCK CHANGE		08/16
A	ORIGINAL ISSUE		01/11

Fraser Coast REGIONAL COUNCIL

CONCRETE JOINTS
TYPICAL CONSTRUCTION DETAILS

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Dayendra Naidu *	08/16

* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE

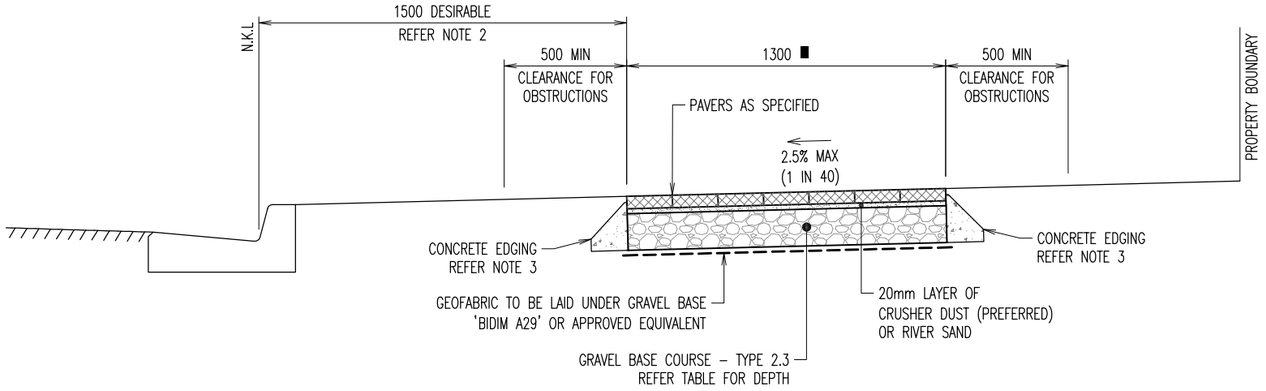
STANDARD DRAWING

SHEET 1 OF 1

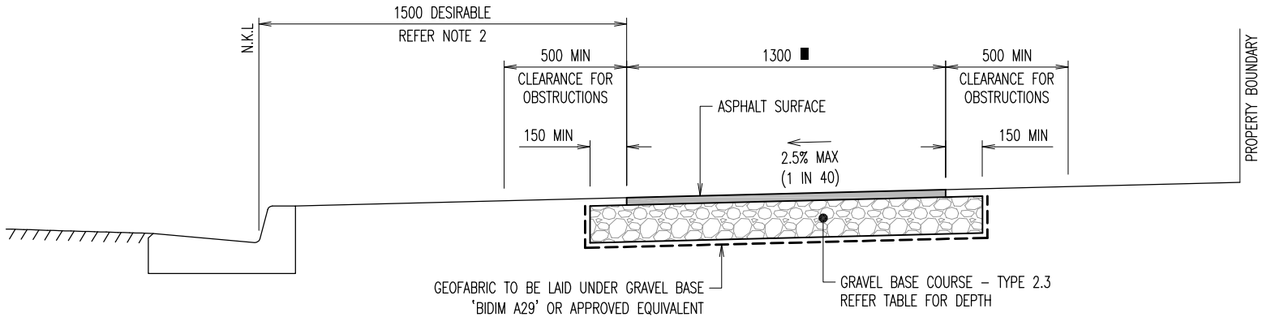
A3

STANDARD DRAWING No: FC-240-03

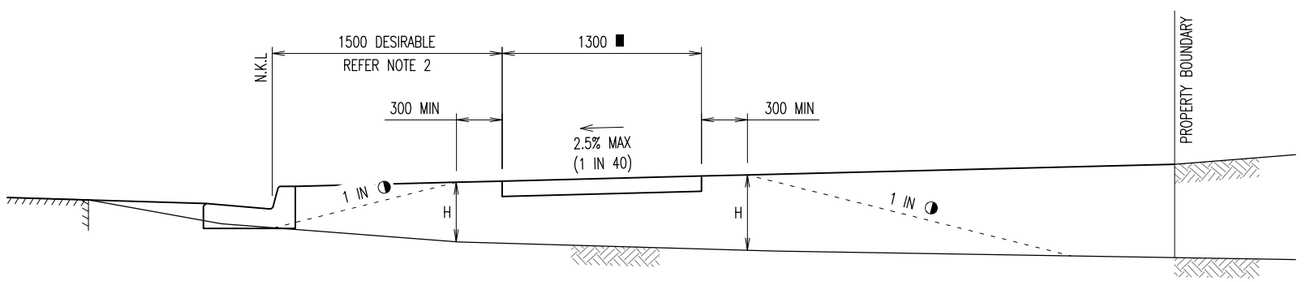
A B



PAVED FOOTPATH



ASPHALT FOOTPATH



TYPICAL SECTION

PAVED FOOTPATH NOTES:

1. PAVERS OTHER THAN CONCRETE PAVERS ARRANGED IN A STRETCHER BOND PATTERN TO BE APPROVED BY COUNCIL.
2. THE COLOUR AND TYPE OF PAVERS TO BE USED SHALL BE APPROVED BY COUNCIL WITH REGARD TO CONTINUITY WITH SURROUNDING PATTERNS & COLOUR AND WITH REGARDS FOR LONG TERM SKID RESISTANCE AND DURABILITY.
3. CONCRETE EDGING DEPTH TO EQUAL DEPTH OF PAVEMENT WITH A MINIMUM DEPTH OF 200mm. EDGING TO BE TAPERED TO AVOID VISIBILITY.
4. PAVEMENT LAYER TO BE COMPACTED ROAD BASE TYPE 2.3 WITH A MINIMUM DEPTH OF 125mm. REFER TABLE FOR DEPTH.

CBR SUBGRADE	DEPTH OF BASE COURSE
LESS THAN 3	200
3 – 5	150
GREATER THAN 5	125

ASPHALT FOOTPATH NOTES:

1. FOOTPATH SURFACE TO BE CONSTRUCTED FROM ASPHALT TYPE DG10 WITH A MINIMUM THICKNESS OF 30mm.
2. PAVEMENT LAYER TO BE COMPACTED ROAD BASE TYPE 2.3 WITH A MINIMUM DEPTH OF 125mm. REFER TABLE FOR DEPTH.

GENERAL NOTES:

1. FINISHED SURFACE OF FOOTPATH TO BE NON SLIP AND COMPLY WITH THE REQUIREMENTS OF AS 4586.
2. THE DIMENSION BETWEEN KERB INVERT AND EDGE OF FOOTPATH MAY BE VARIED SUBJECT TO COUNCIL'S APPROVAL. MINIMUM FOOTPATH OFFSET SHOULD NOT BE LESS THAN 500mm IN ANY SITUATION.
3. PROFILE OF FOOTPATH ADJOINING EXISTING DRIVEWAYS IS TO BE TRANSITIONED OVER A MINIMUM LENGTH OF 3.0m.
4. FOR APPROPRIATE TREATMENT OF LONGITUDINAL GRADES GREATER THAN 1 IN 8 (12.5%), REFER TO AS 1428 – DESIGN FOR ACCESS & MOBILITY.
5. PROVIDE MIN 1 IN 10 TRANSITION BETWEEN DIFFERENT FOOTPATH WIDTHS.
6. ALL APPROPRIATE PERMITS MUST BE OBTAINED FROM COUNCIL, INCLUDING APPROVAL OF LOCATION AND LEVELS PRIOR TO EXCAVATION.
7. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

LEGEND

N.K.L NOMINAL KERB LINE (KERB INVERT)

■ FOOTPATH WIDTH, REFER PROJECT DRAWINGS

◑ BATTER SLOPE – 1 IN 6 FOR H < 0.5m
– 1 IN 4 FOR H => 0.5m

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B			
A	ORIGINAL ISSUE		08/16

Fraser Coast REGIONAL COUNCIL

PAVED & ASPHALT FOOTPATHS TYPICAL CONSTRUCTION DETAILS

DRAWN	CHECKED	APPROVED BY INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16

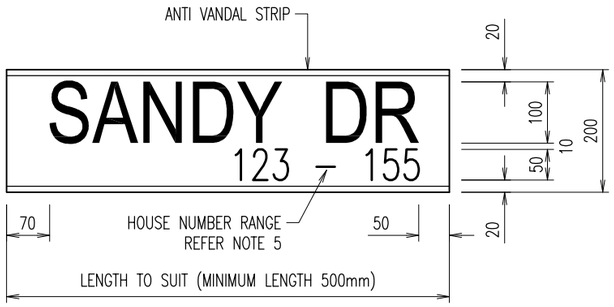
* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE

STANDARD DRAWING

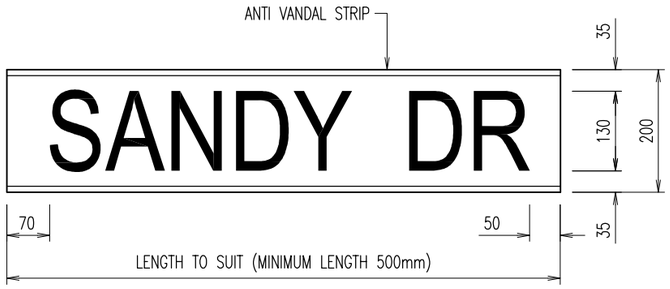
SHEET 1 OF 1

A3 STANDARD DRAWING No: FC–240–04

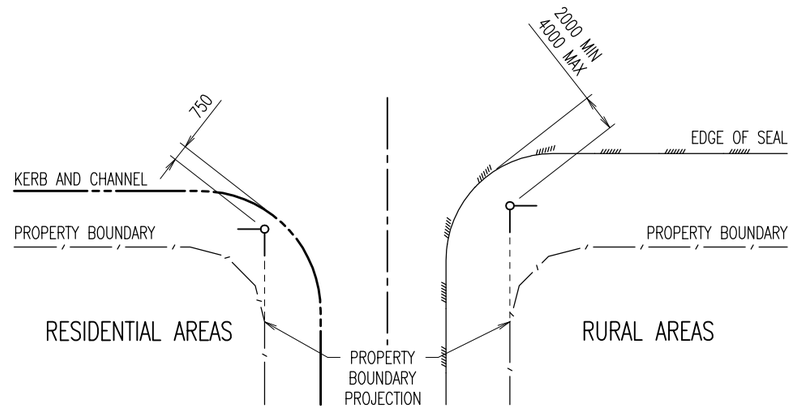
A



NAME PLATE – NUMBERED



NAME PLATE – REGULAR



STREET NAME SIGN LOCATIONS

TABLE OF ABBREVIATIONS	
AVENUE	AV
BOULEVARD	BVD
CIRCUIT	CCT
CLOSE	CL
COURT	CT
CRESCENT	CR
DRIVE	DR
ESPLANADE	ESP
LANE	LA
PARADE	PDE
PLACE	PL
ROAD	RD
STREET	ST
TERRACE	TCE
WAY	WAY

OTHER ABBREVIATIONS TO BE APPROVED BY COUNCIL

NOTES:

1. STREET NAMES AND NUMBERING MUST BE APPROVED BY COUNCIL.
2. CIRCULAR HOLLOW SECTION (CHS) SHALL BE TO AS/NZS 1163 AND HOT DIPPED GALVANISED TO AS/NZS 4680.
3. NAME PLATES: 200mm WIDE AND 3mm THICK EXTRUDED ALUMINIUM DUMBBELL SECTION.
4. BRACKET: STANDARD 200mm WIDE AND 3mm THICK EXTRUDED ALUMINIUM BRACKET (INCLUDING 2 x M10 x 25mm CADMIUM OR STAINLESS STEEL BOLTS, NUTS AND WASHERS).
5. LETTERS & NUMBERS: BLACK LEGEND ON CLASS 1 RETROREFLECTIVE WHITE BACKGROUND (BOTH SIDES) TO AS/NZS 1906.1.

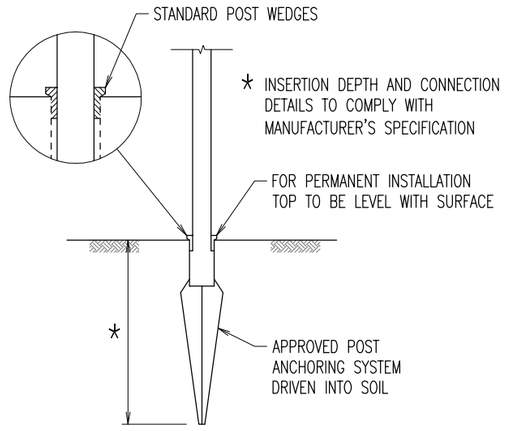
   LETTERS: 100mm HIGH (NUMBERED NAME PLATE) OR 130mm HIGH (REGULAR NAME PLATE), SERIES B, MEDIUM SPACING (SPACING MAY BE VARIED TO SUIT LENGTH OF STREET NAME WHEN APPROVED BY COUNCIL).

   NUMBERS: 50mm HIGH, SERIES C, NARROW SPACING.

   ALL TEXT TO AS 1744.
6. HOUSE NUMBER RANGE: IF SIGN ON ODD SIDE OF ROAD – ODD NUMBERS ONLY
   IF SIGN ON EVEN SIDE OF ROAD – EVEN NUMBERS ONLY
7. ALL SIGNS ARE TO BE APPROVED BY COUNCIL PRIOR TO ERECTION.
8. SIGNS TO BE POSITIONED ON THE SIDE OF STREET/ROAD THAT PROVIDES BEST VISIBILITY.
9. WHERE SIDE AND MAIN ROAD NAMES ARE MOUNTED ON THE ONE POST THE SIDE ROAD NAME SHALL BE MOUNTED BELOW THE MAIN ROAD NAME.
10. SPECIAL SIGNS MAY BE REQUIRED FOR CIRCUITS ETC.
11. ALL ALTERNATIVE STREET SIGNAGE E.G. THEME OR COLOUR, IS TO BE SPECIFICALLY APPROVED BY THE COUNCIL FOR THE PARTICULAR APPLICATION.
12. CONCRETE TO BE GRADE N32 IN ACCORDANCE WITH AS 1379 AND AS 3600.
13. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN.

POST DETAIL – CONCRETE

POST DETAIL – SLEEVE



POST DETAIL– ANCHOR

POST SPECIFICATION				FOOTINGS							
				COHESIVE CLAY SOILS				COHESIONLESS SAND SOILS			
	POST DIMENSIONS	WALL THICKNESS	GRADE	FIRM TO STIFF		VERY STIFF		LOOSE TO MEDIUM		DENSE	
				'd'	'L'	'd'	'L'	'd'	'L'	'd'	'L'
CHS	60.3 OD (50NB)	3.2	C350L0	300	450	300	450	300	750	300	750
	76.1 OD (65NB)	3.2	C350L0	300	700	300	500	300	1000	300	800

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B	NAME PLATE, FOOTING DETAILS, NOTES ALTERED & TITLEBLOCK CHANGE		08/16
A	ORIGINAL ISSUE		01/11

Fraser Coast REGIONAL COUNCIL

STREET NAME SIGN AND LOCATION (FINGER BOARD)

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16
		* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE	

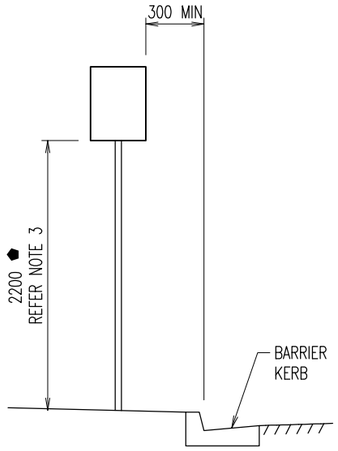
STANDARD DRAWING

SHEET 1 OF 1

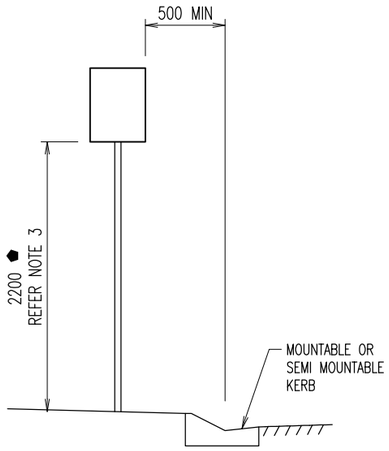
A3

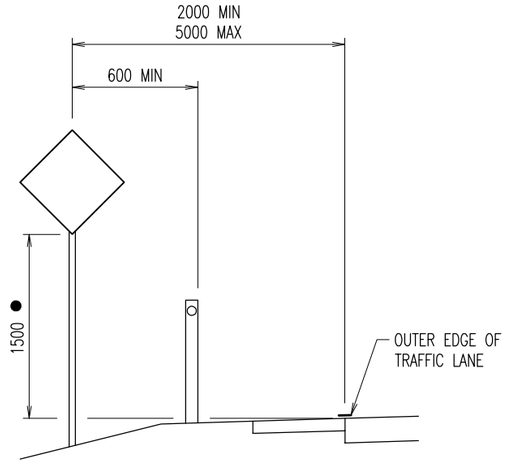
STANDARD DRAWING No: FC–260–01

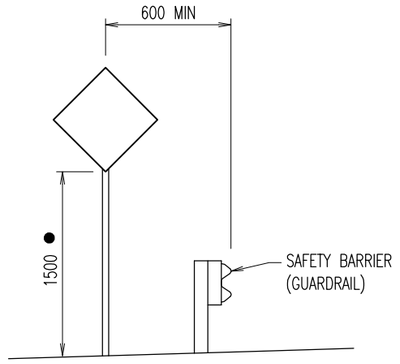
A | B



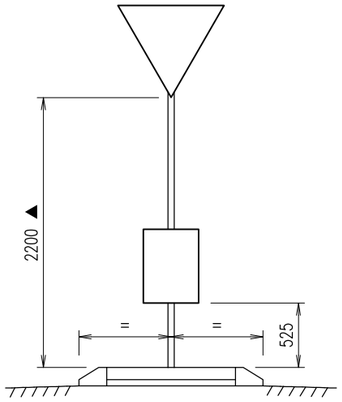
URBAN ROADS (KERBED)







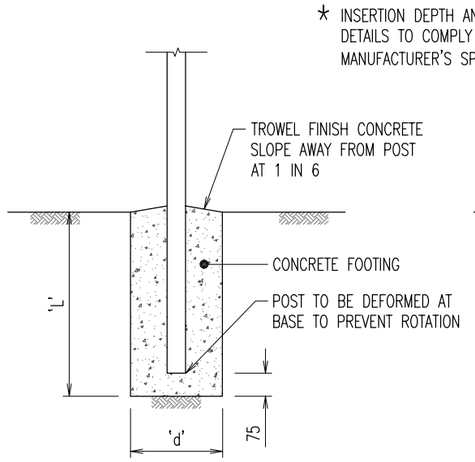
RURAL ROADS (UNKERBED)



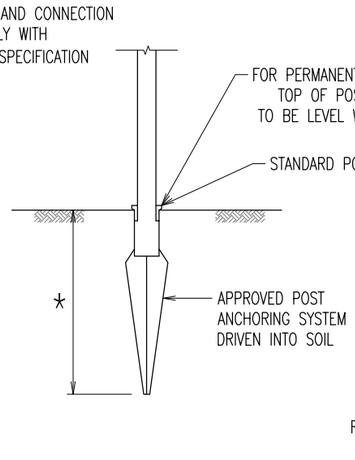
MEDIANS

LOCATION OF SIGNS

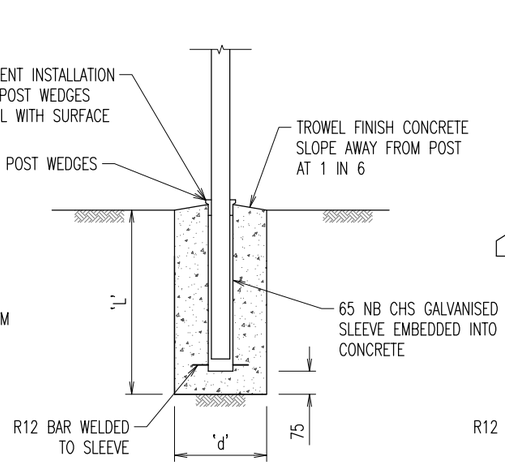
POST SPECIFICATION				FOOTINGS							
	POST DIMENSIONS	WALL THICKNESS	GRADE	COHESIVE CLAY SOILS				COHESIONLESS SAND SOILS			
				FIRM TO STIFF		VERY STIFF		LOOSE TO MEDIUM		DENSE	
				'd'	'L'	'd'	'L'	'd'	'L'	'd'	'L'
CHS	60.3 OD (50NB)	3.2	C350LO	300	450	300	450	300	750	300	750
	76.1 OD (65NB)	3.2	C350LO	300	700	300	500	300	1000	300	800



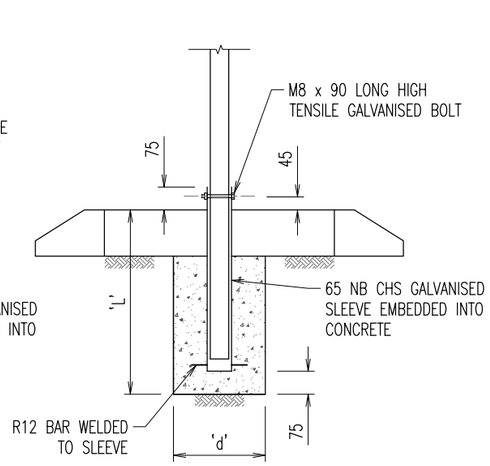
POST DETAIL – CONCRETE



POST DETAIL– ANCHOR



POST DETAIL – SLEEVE
TYPE 1 MEDIAN



POST DETAIL – SLEEVE
TYPE 2 MEDIAN

NOTES:

1. ALL SIGNS ARE TO BE APPROVED BY COUNCIL PRIOR TO ERECTION.
2. THE LATERAL AND VERTICAL PLACEMENT OF SIGNS SHALL BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
3. SIGNS THAT OVERHANG A FOOTWAY OR CYCLE WAY SHALL HAVE A HEIGHT OF 2.5m MIN ABOVE THE LEVEL OF THE FOOTWAY OR CYCLE PATH.
4. SIGN CONFIGURATION TYPE 1 FOR MEDIANS IS FOR GENERAL USE. SIGN CONFIGURATION TYPE 2 IS TO BE USED IN HIGH DAMAGE RISK AREAS.
5. CIRCULAR HOLLOW SECTIONS (CHS) SHALL BE TO AS/NZS 1163 AND HOT DIPPED GALVANISED TO AS/NZS 4680.
6. CONCRETE GRADE TO BE N32/20 IN ACCORDANCE WITH AS 1379 AND AS 3600.
7. DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.

LEGEND

⬟ WHEN SIGN OVERHANGS A FOOTPATH OR CYCLE PATH, DIMENSION TO BE 2500 MIN

● PARKING AND GUIDE SIGNS TO BE 2200 ABOVE ROAD SURFACE

▲ SOME SIGNS (KEEP LEFT, NO-U TURN, D4 HAZARD SERIES, ETC) TO BE MOUNTED AT 525 ABOVE MEDIAN SURFACE. HEIGHT CAN BE ADJUSTED IF THERE IS A VISIBILITY PROBLEM

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B	FOOTING DETAILS, NOTES ALTERED & TITLEBLOCK CHANGE		08/16
A	ORIGINAL ISSUE		01/11

Fraser Coast REGIONAL COUNCIL

TRAFFIC SIGN INSTALLATION DETAILS

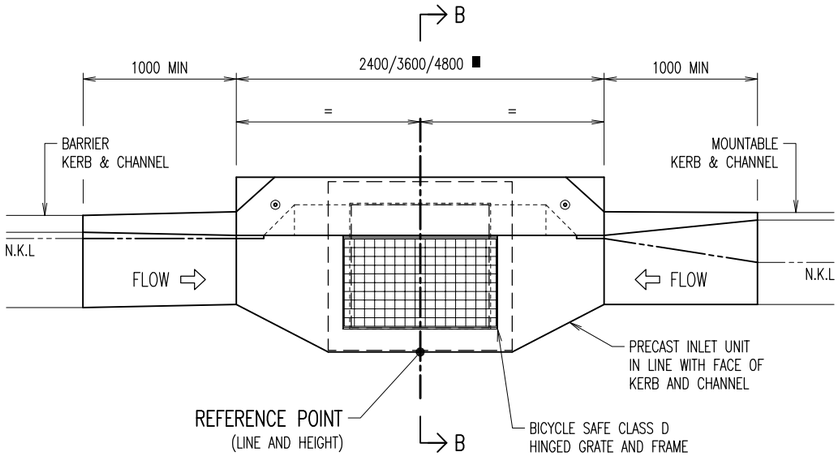
DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16
		* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE	

STANDARD DRAWING

SHEET 1 OF 1

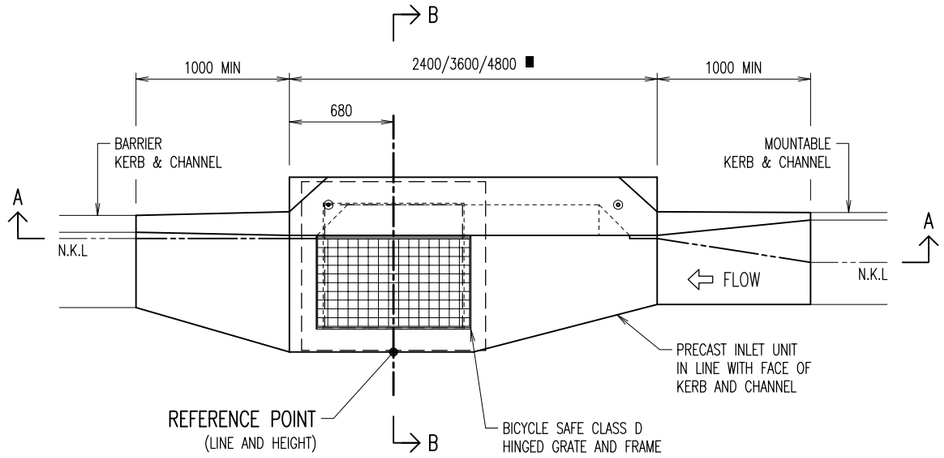
A3 | STANDARD DRAWING No: FC-260-02

A | B



PLAN VIEW

KERB IN LINE – SAG



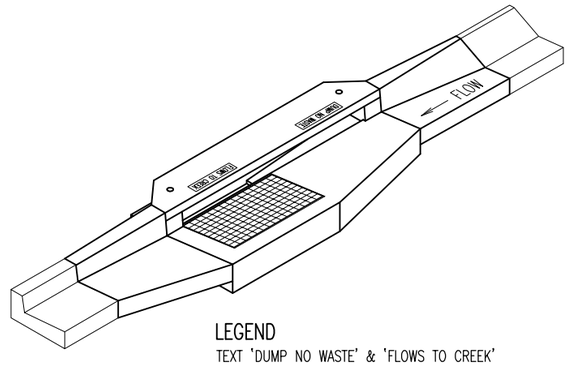
PLAN VIEW

KERB IN LINE – ON GRADE

INLET UNIT CONFIGURATION

UNIT CODE	DESCRIPTION
L24P	2400 UNIT – LEFT TROUGH
C24P	2400 UNIT – CENTRE TROUGH
R24P	2400 UNIT – RIGHT TROUGH
L36P	3600 UNIT – LEFT TROUGH
C36P	3600 UNIT – CENTRE TROUGH
R36P	3600 UNIT – RIGHT TROUGH
L48P	4800 UNIT – LEFT TROUGH
C48P	4800 UNIT – CENTRE TROUGH
R48P	4800 UNIT – RIGHT TROUGH

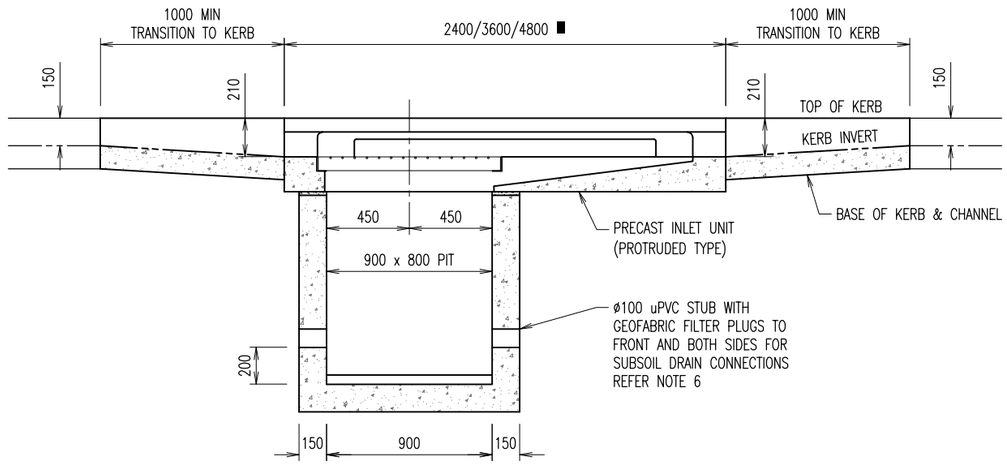
P – PROTRUDED INLET UNIT (KERB IN LINE)



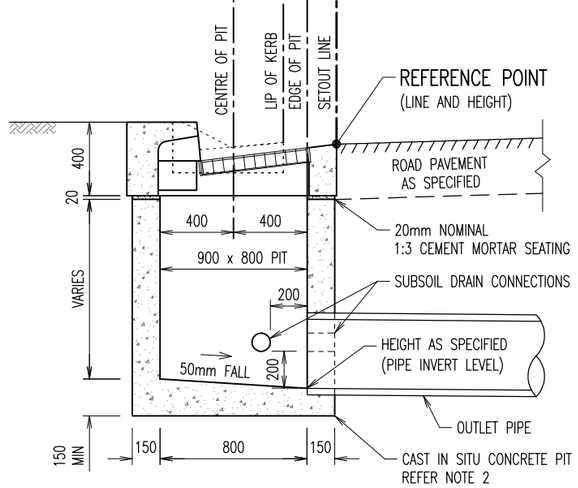
LEGEND

TEXT 'DUMP NO WASTE' & 'FLOWS TO CREEK'
(40mm HIGH LETTERS IMPRINTED 5mm INTO CONCRETE)

PERSPECTIVE VIEW



SECTION A–A



SECTION B–B

KERB IN LINE – PRECAST INLET UNIT

(PROTRUDED TYPE)

NOTES:

1. CONCRETE TO BE GRADE N32 IN ACCORDANCE WITH AS 1379 AND AS 3600.
2. CONCRETE IN SITU PITS UP TO A DEPTH OF 2.2 METRES DO NOT REQUIRE STEEL REINFORCEMENT. ONE LAYER OF SL81 REINFORCING MESH IS TO BE PLACED CENTRALLY IN THE WALLS FOR PIT DEPTHS 2.2 TO 3.0 METRES. REINFORCING MESH TO AS/NZS 4671.
3. PROVIDE 20mm MORTAR (1 CEMENT : 3 FINE SAND) JOINT BETWEEN GULLY PIT AND PRECAST INLET UNIT.
4. GRATE AND FRAME SHALL COMPLY WITH THE REQUIREMENTS OF AS 3996 CLASS D DESIGN LOAD.
5. GRATE AND FRAME SHALL BE BICYCLE SAFE TO AS 3996. HINGED GRATES ARE TO BE PROVIDED WITH A POSITIVE MECHANICAL RETAINER TO SECURE THE GRATE FIRMLY IN PLACE WHEN IN A OPEN POSITION. GRATE AND FRAME SHALL BE HOT DIPPED GALVANISED TO AS/NZS 4680.
6. WHERE SUBSOIL DRAINS ARE DISCHARGED INTO A GULLY PIT, THE OUTLET OF THE SUBSOIL DRAIN SHALL BE LOCATED A MIN 200mm ABOVE THE INVERT LEVEL OF THE GULLY PIT UNLESS OTHERWISE APPROVED BY COUNCIL. THE SUBSOIL DRAIN OUTLETS SHALL BE PROVIDED WITH PEST–PROOF FLAPS.
7. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

LEGEND

■ REFER PROJECT DRAWINGS FOR PRECAST UNIT LENGTH & TYPE

N.K.L NOMINAL KERB LINE (KERB INVERT)

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B	SECTION, PLAN & SUBSOIL ADDED, REFERENCE POINT & NOTES ALTERED & TITLEBLOCK CHANGE		08/16
A	ORIGINAL ISSUE		04/11

Fraser Coast REGIONAL COUNCIL

ROAD GULLY UNIT – KERB IN LINE (PROTRUDED)
PRECAST INLET UNIT

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16

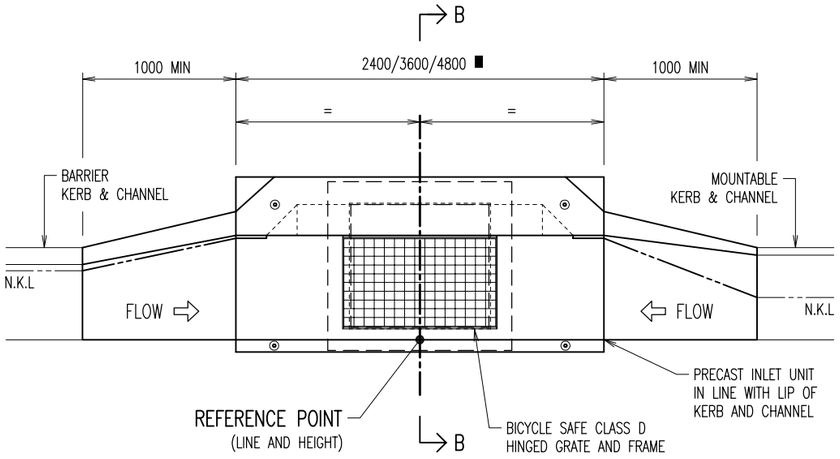
* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE

STANDARD DRAWING

SHEET 1 OF 1

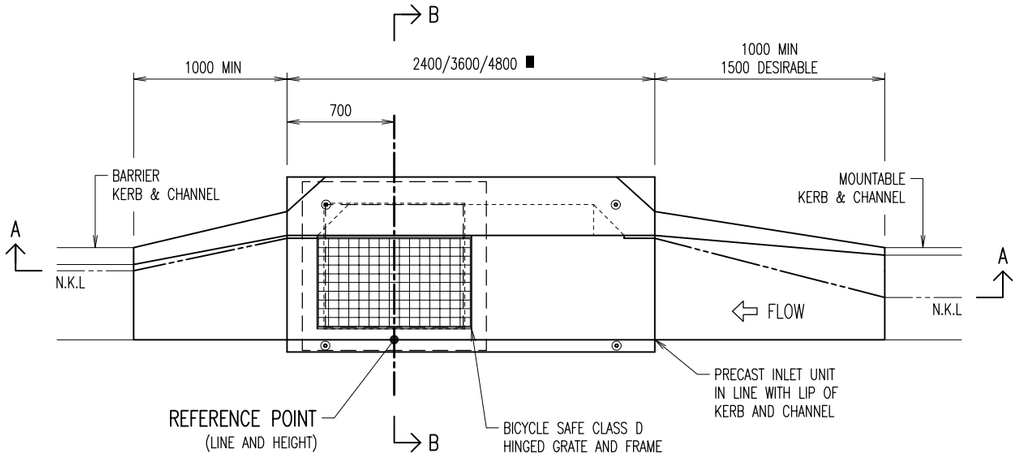
A3 | STANDARD DRAWING No: FC–310–01

A | B



PLAN VIEW

LIP IN LINE – SAG

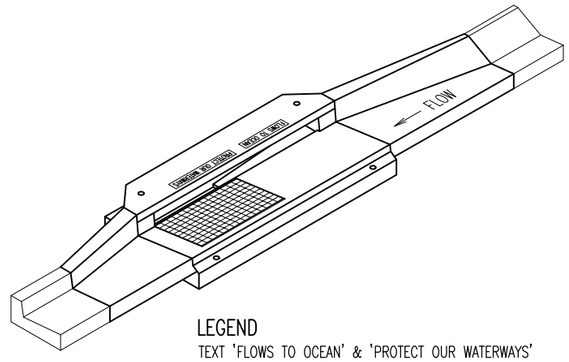


PLAN VIEW

LIP IN LINE – ON GRADE

INLET UNIT CONFIGURATION

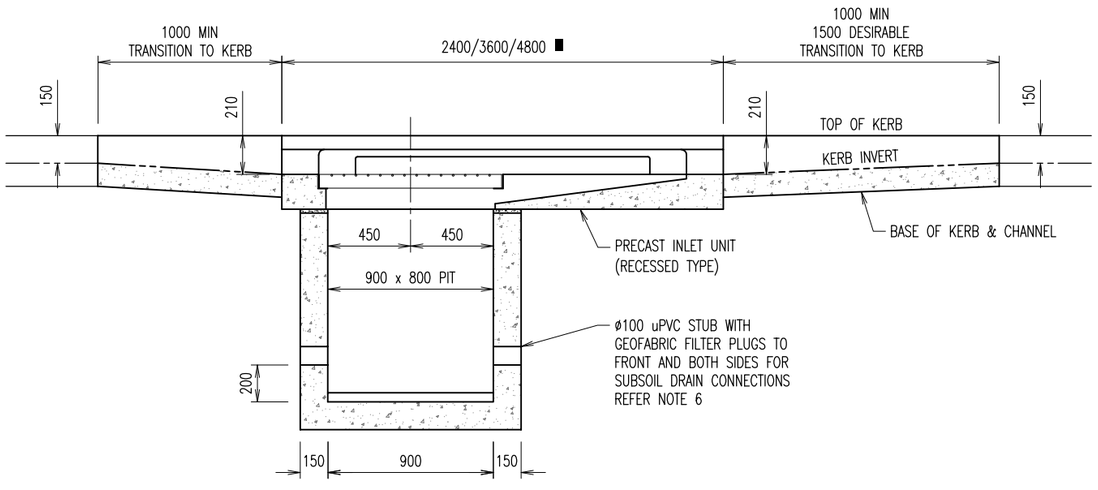
UNIT CODE	DESCRIPTION
L24R	2400 UNIT – LEFT TROUGH
C24R	2400 UNIT – CENTRE TROUGH
R24R	2400 UNIT – RIGHT TROUGH
L36R	3600 UNIT – LEFT TROUGH
C36R	3600 UNIT – CENTRE TROUGH
R36R	3600 UNIT – RIGHT TROUGH
L48R	4800 UNIT – LEFT TROUGH
C48R	4800 UNIT – CENTRE TROUGH
R48R	4800 UNIT – RIGHT TROUGH
R – RECESSED INLET UNIT (LIP IN LINE)	



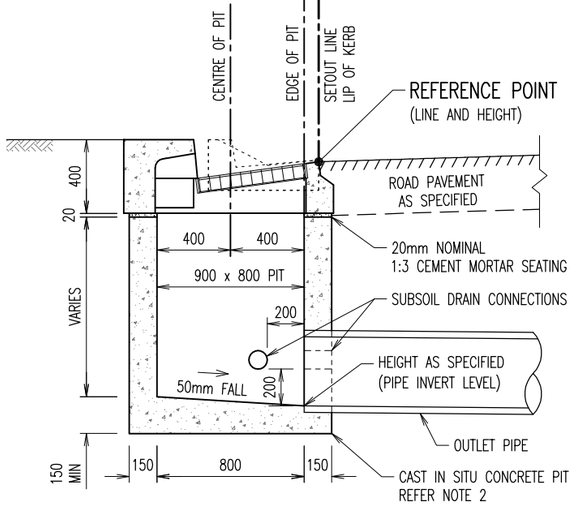
LEGEND

TEXT 'FLOWS TO OCEAN' & 'PROTECT OUR WATERWAYS'
(40mm HIGH LETTERS IMPRINTED 5mm INTO CONCRETE)

PERSPECTIVE VIEW



SECTION A–A



SECTION B–B

LIP IN LINE – PRECAST INLET UNIT

(RECESSED TYPE)

NOTES:

1. CONCRETE TO BE GRADE N32 IN ACCORDANCE WITH AS 1379 AND AS 3600.
2. CONCRETE IN SITU PITS UP TO A DEPTH OF 2.2 METRES DO NOT REQUIRE STEEL REINFORCEMENT. ONE LAYER OF SL81 REINFORCING MESH IS TO BE PLACED CENTRALLY IN THE WALLS FOR PIT DEPTHS 2.2 TO 3.0 METRES. REINFORCING MESH TO AS/NZS 4671.
3. PROVIDE 20mm MORTAR (1 CEMENT : 3 FINE SAND) JOINT BETWEEN GULLY PIT AND PRECAST INLET UNIT.
4. GRATE AND FRAME SHALL COMPLY WITH THE REQUIREMENTS OF AS 3996 CLASS D DESIGN LOAD.
5. GRATE AND FRAME SHALL BE BICYCLE SAFE TO AS 3996. HINGED GRATES ARE TO BE PROVIDED WITH A POSITIVE MECHANICAL RETAINER TO SECURE THE GRATE FIRMLY IN PLACE WHEN IN A OPEN POSITION. GRATE AND FRAME SHALL BE HOT DIPPED GALVANISED TO AS/NZS 4680.
6. WHERE SUBSOIL DRAINS ARE DISCHARGED INTO A GULLY PIT, THE OUTLET OF THE SUBSOIL DRAIN SHALL BE LOCATED A MIN 200mm ABOVE THE INVERT LEVEL OF THE GULLY PIT UNLESS OTHERWISE APPROVED BY COUNCIL. THE SUBSOIL DRAIN OUTLETS SHALL BE PROVIDED WITH PEST–PROOF FLAPS.
7. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

LEGEND

■ REFER PROJECT DRAWINGS FOR PRECAST UNIT LENGTH & TYPE

N.K.L NOMINAL KERB LINE (KERB INVERT)

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B	SECTION, PLAN & SUBSOIL ADDED, REFERENCE POINT & NOTES ALTERED & TITLEBLOCK CHANGE		08/16
A	ORIGINAL ISSUE		04/11

Fraser Coast REGIONAL COUNCIL

ROAD GULLY UNIT – LIP IN LINE (RECESSED)
PRECAST INLET UNIT

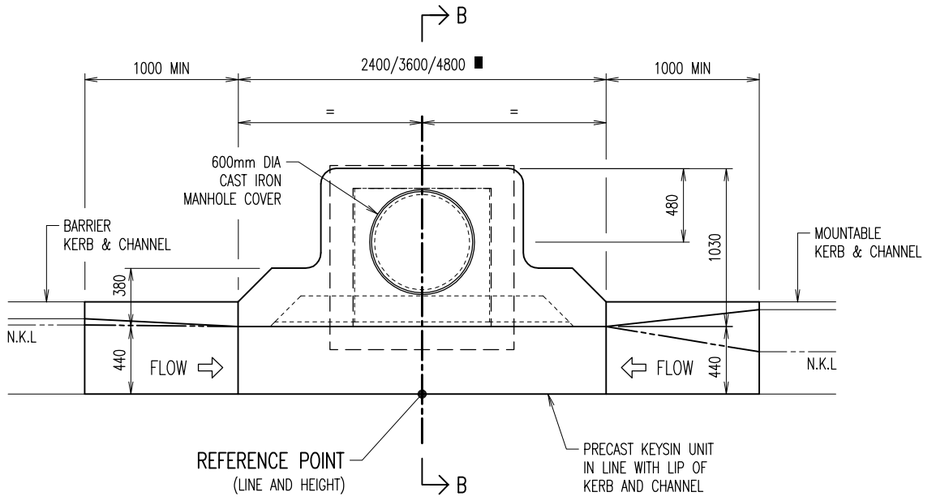
DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16
		* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE	

STANDARD DRAWING

SHEET 1 OF 1

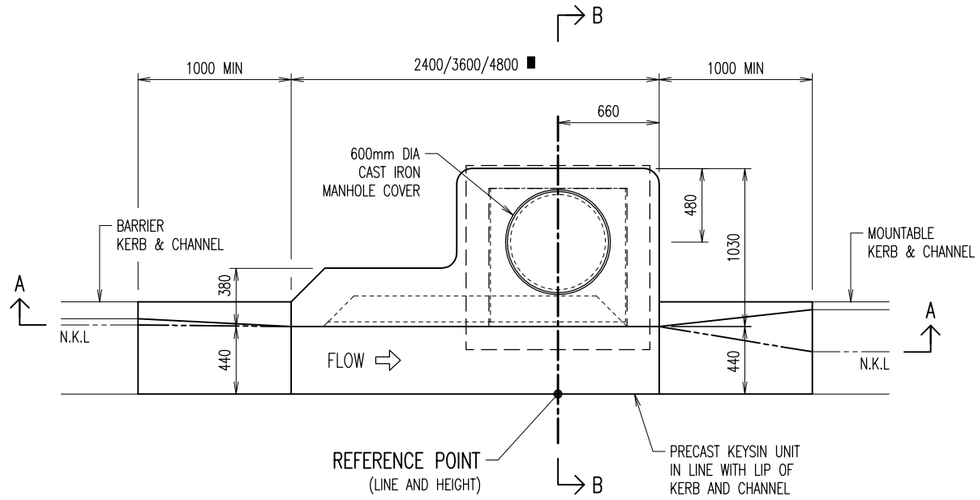
A3 | STANDARD DRAWING No: FC–310–02

A | B



PLAN VIEW

LIP IN LINE – SAG



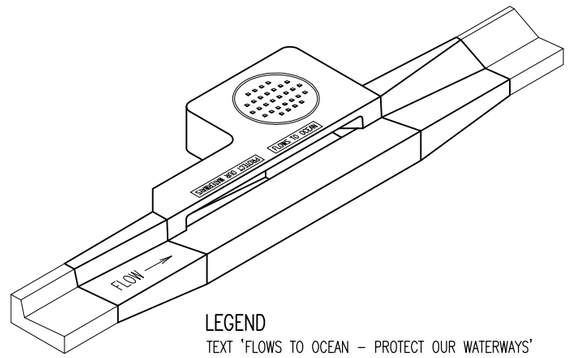
PLAN VIEW

LIP IN LINE – ON GRADE

KEYSIN UNIT CONFIGURATION

UNIT CODE	DESCRIPTION
L24K	2400 UNIT – LEFT TROUGH
C24K	2400 UNIT – CENTRE TROUGH
R24K	2400 UNIT – RIGHT TROUGH
L36K	3600 UNIT – LEFT TROUGH
C36K	3600 UNIT – CENTRE TROUGH
R36K	3600 UNIT – RIGHT TROUGH
L48K	4800 UNIT – LEFT TROUGH
C48K	4800 UNIT – CENTRE TROUGH
R48K	4800 UNIT – RIGHT TROUGH

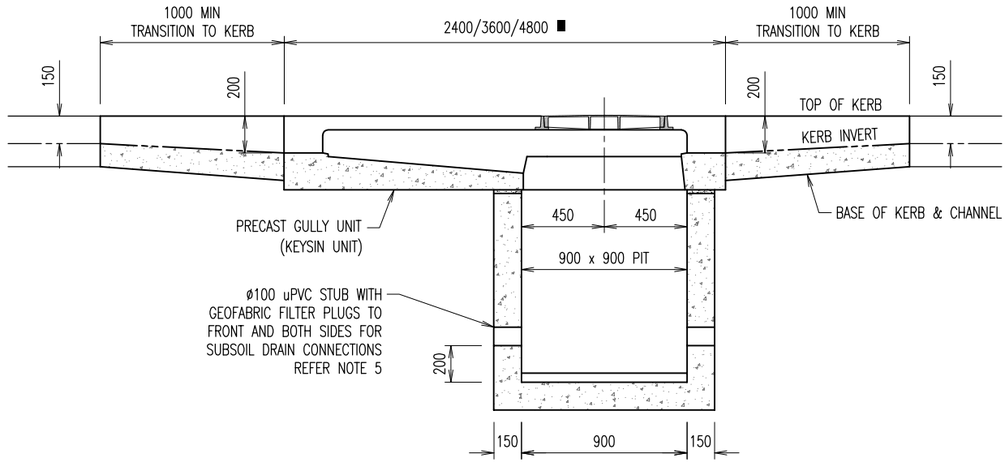
K – KEYSIN UNIT (LIP IN LINE)



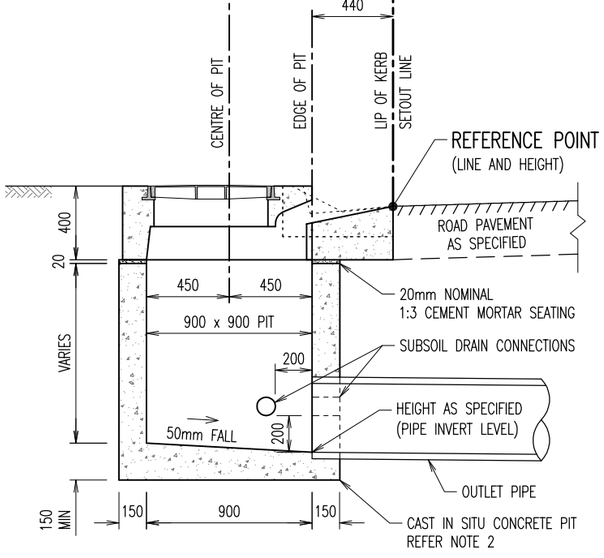
LEGEND

TEXT 'FLOWS TO OCEAN – PROTECT OUR WATERWAYS'
(40mm HIGH LETTERS IMPRINTED 5mm INTO CONCRETE)

PERSPECTIVE VIEW



SECTION A–A



SECTION B–B

NOTES:

1. CONCRETE TO BE GRADE N32 IN ACCORDANCE WITH AS 1379 AND AS 3600.
2. CONCRETE IN SITU PITS UP TO A DEPTH OF 2.2 METRES DO NOT REQUIRE STEEL REINFORCEMENT. ONE LAYER OF SL81 REINFORCING MESH IS TO BE PLACED CENTRALLY IN THE WALLS FOR PIT DEPTHS 2.2 TO 3.0 METRES. REINFORCING MESH TO AS/NZS 4671.
3. PROVIDE 20mm MORTAR (1 CEMENT : 3 FINE SAND) JOINT BETWEEN GULLY PIT AND KEYSIN UNIT.
4. COVER AND FRAME SHALL COMPLY WITH THE REQUIREMENTS OF AS 3996 CLASS D DESIGN LOAD.
5. WHERE SUBSOIL DRAINS ARE DISCHARGED INTO A GULLY PIT, THE OUTLET OF THE SUBSOIL DRAIN SHALL BE LOCATED A MIN 200mm ABOVE THE INVERT LEVEL OF THE GULLY PIT UNLESS OTHERWISE APPROVED BY COUNCIL. THE SUBSOIL DRAIN OUTLETS SHALL BE PROVIDED WITH PEST–PROOF FLAPS.
6. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

LEGEND

■ REFER PROJECT DRAWINGS FOR KEYSIN UNIT LENGTH & TYPE

N.K.L NOMINAL KERB LINE (KERB INVERT)

LIP IN LINE – KEYSIN UNIT

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B	SECTION, PLAN & SUBSOIL ADDED, REFERENCE POINT & NOTES ALTERED & TITLEBLOCK CHANGE		08/16
A	ORIGINAL ISSUE		04/11

Fraser Coast REGIONAL COUNCIL

ROAD GULLY UNIT – LIP IN LINE
KEYSIN UNIT

DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu *	08/16

* SIGNED ORIGINAL HELD IN THE DESIGN OFFICE

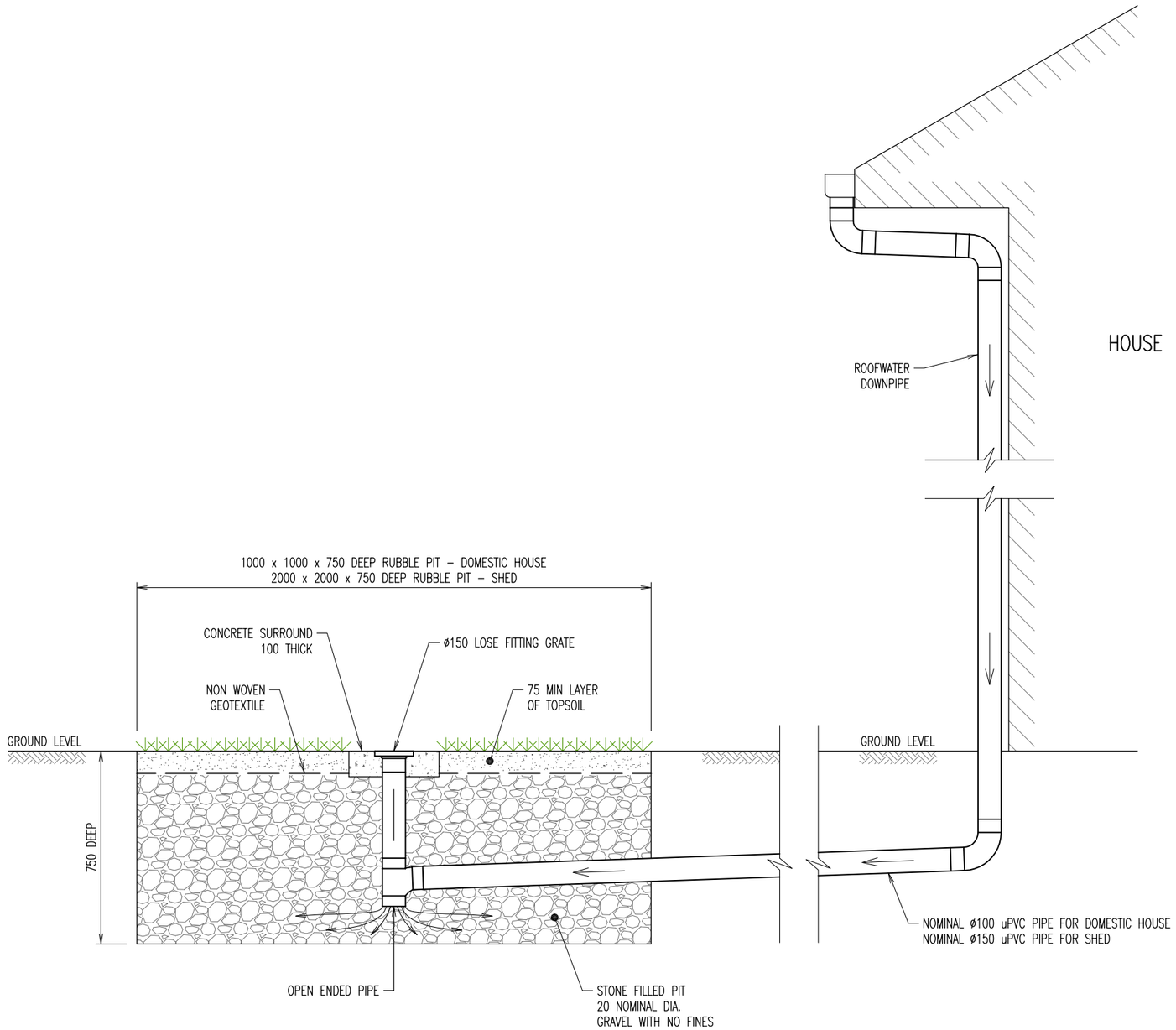
STANDARD DRAWING

SHEET 1 OF 1

A3

STANDARD DRAWING No: FC–310–03

A | B



NOTES:

1. THE SOAKAGE PIT SHOULD BE POSITIONED WELL CLEAR OF ALL PROPERTY BOUNDARIES AND STRUCTURES ON SITE.
2. ONLY TO BE USED WITH COUNCIL'S APPROVAL & WHERE IT IS IMPRACTICAL TO DISCHARGE ROOFWATER TO KERB AND CHANNEL.
3. SUITABLE FOR RURAL RESIDENTIAL AREAS.
4. DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.

REV	DETAILS OF AMENDMENTS	APPROVED	DATE
F			
E			
D			
C			
B	DETAIL, NOTES ALTERED & TITLEBLOCK CHANGE		08/16
A	ORIGINAL ISSUE		01/11

Fraser Coast REGIONAL COUNCIL

DOMESTIC AND SHED ROOFWATER ONSITE SOAKAGE PIT

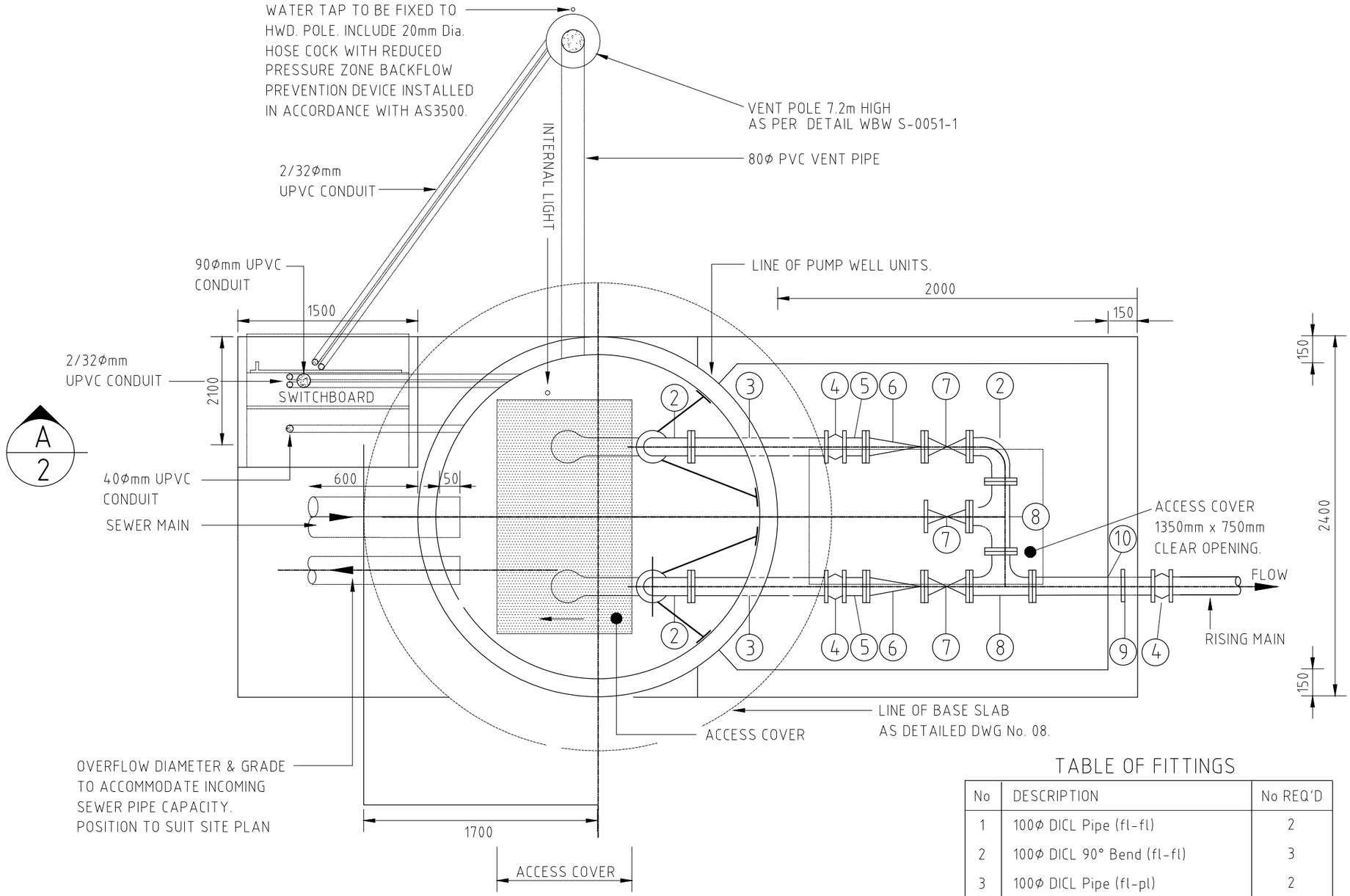
DRAWN	CHECKED	APPROVED BY DIRECTOR INFRASTRUCTURE SERVICES	DATE
DESIGN OFFICE	CWB *	Davendra Naidu * * SIGNED ORIGINAL HELD IN THE DESIGN OFFICE	08/16

STANDARD DRAWING

SHEET 1 OF 1

A3 | STANDARD DRAWING No: FC–310–07

A | B



SPECIAL NOTE:

INTERNAL FACE OF PUMP WELL TO BE COATED TO A 5mm THICKNESS WITH KL11 OR A SIMILAR PRODUCT APPROVED BY WBW.

REFER TO PS013 FOR TYPICAL SITE LAYOUT PLAN.

A 2

TABLE OF FITTINGS

No	DESCRIPTION	No REQ'D
1	100ϕ DICL Pipe (fl-fl)	2
2	100ϕ DICL 90° Bend (fl-fl)	3
3	100ϕ DICL Pipe (fl-pl)	2
4	100ϕ Gibault Joint	3
5	100ϕ DICL Connector (fl-pl)	2
6	100ϕ Reflux Valve (fl-fl) (Rubber Flap Swing Check)	2
7	100ϕ Sluice Valve (fl-fl) (AS3578)	3
8	100x100 DICL Tee (fl-fl-fl)	2
9	100ϕ "Puddle" flange	3
10	100ϕ DICL Pipe (fl-fl)	1

NOTE:

1. STANDARD DETAILS SHOWN FOR RISING MAINS SMALLER THAN OR EQUAL TO 150mm Dia. ALTERNATIVE DESIGN TO BE SUBMITTED FOR LARGER RISING MAINS
2. ALL CONDUITS FROM PUMP WELL TO BE FILLED WITH AN APPROVED VOID FILLER FOLLOWING INSTALLATION OF CABLES.

NOTE:

ALL UPVC CONDUITS & PIPEWORK LOCATION TO BE SUBJECT TO ENGINEERS PRIOR APPROVAL.

NOTE: ALL PIPES & FITTINGS WITHIN PUMP WELL TO BE F.B.E. COATED

PUMP STATION LAYOUT PLAN

WIDE BAY WATER
29-31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

1800mm DIAMETER SEWAGE PUMP STATION

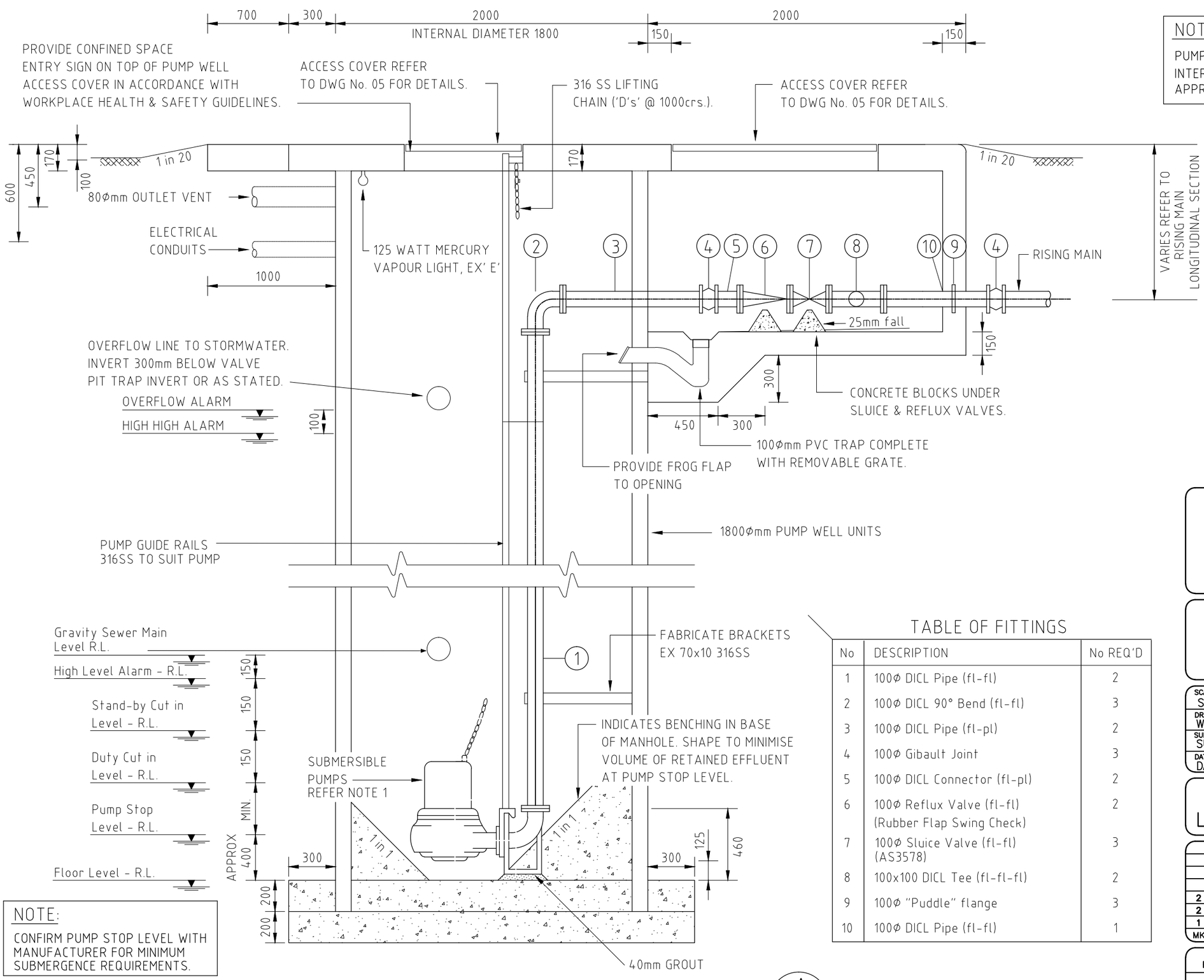
SCALE: SCALE		DESIGN: CEB	DATE: 23/07/99
DRAWN: WJF	DATE: 09/04/03	CHECKED	DATE
SURVEY: SURVEY		APPROVED: S.KHAN	DATE: 18/12/15
DATUM: DATUM		APPROVED	DATE

LAYOUT PLAN

MK	DETAILS OF AMENDMENTS	APPR'	DATE
3	UPDATED WBW LOGO	R.C.	29.8.16
2	DRAWING UPDATED	Cardno	19.11.04
1	DRAWING UPDATED	PG	12.07.04

FILE: A3 | SHEET | OF | PLAN REFERENCE No; PS01

a b c d e f g h i



NOTE:

PUMPS TO BE IN ACCORDANCE WITH WSA101 INTERNAL WETTED PARTS COATED WITH AN APPROVED CERAMIC / EPOXY COATING.

NOTE:

CONFIRM PUMP STOP LEVEL WITH MANUFACTURER FOR MINIMUM SUBMERGENCE REQUIREMENTS.

PUMP STATION – SECTION

A
1

NOTE: ALL PIPES & FITTINGS WITHIN PUMP WELL TO BE F.B.E. COATED

TABLE OF FITTINGS

No	DESCRIPTION	No REQ'D
1	100Ø DICL Pipe (fl-fl)	2
2	100Ø DICL 90° Bend (fl-fl)	3
3	100Ø DICL Pipe (fl-pl)	2
4	100Ø Gibault Joint	3
5	100Ø DICL Connector (fl-pl)	2
6	100Ø Reflux Valve (fl-fl) (Rubber Flap Swing Check)	2
7	100Ø Sluice Valve (fl-fl) (AS3578)	3
8	100x100 DICL Tee (fl-fl-fl)	2
9	100Ø "Puddle" flange	3
10	100Ø DICL Pipe (fl-fl)	1

WIDE BAY WATER

29-31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

1800mm DIAMETER SEWAGE PUMP STATION

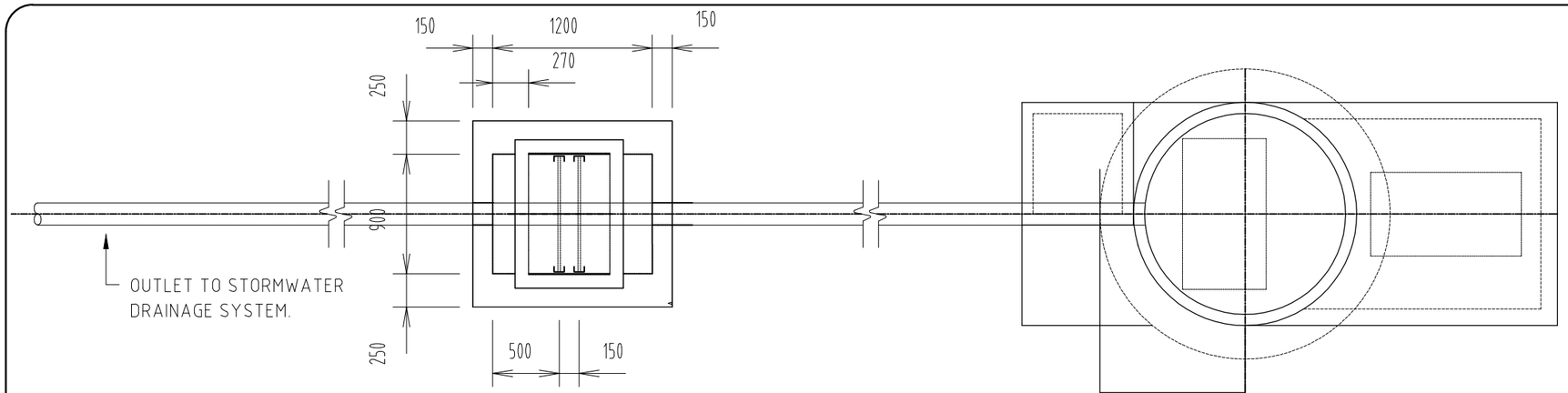
SCALE SCALE		DESIGN CEB	DATE 23/07/99
DRAWN WJF	DATE 09/04/03	CHECKED	DATE
SURVEY SURVEY		APPROVED S.KHAN	DATE 18/12/15
DATUM DATUM		APPROVED	DATE

LAYOUT PLAN

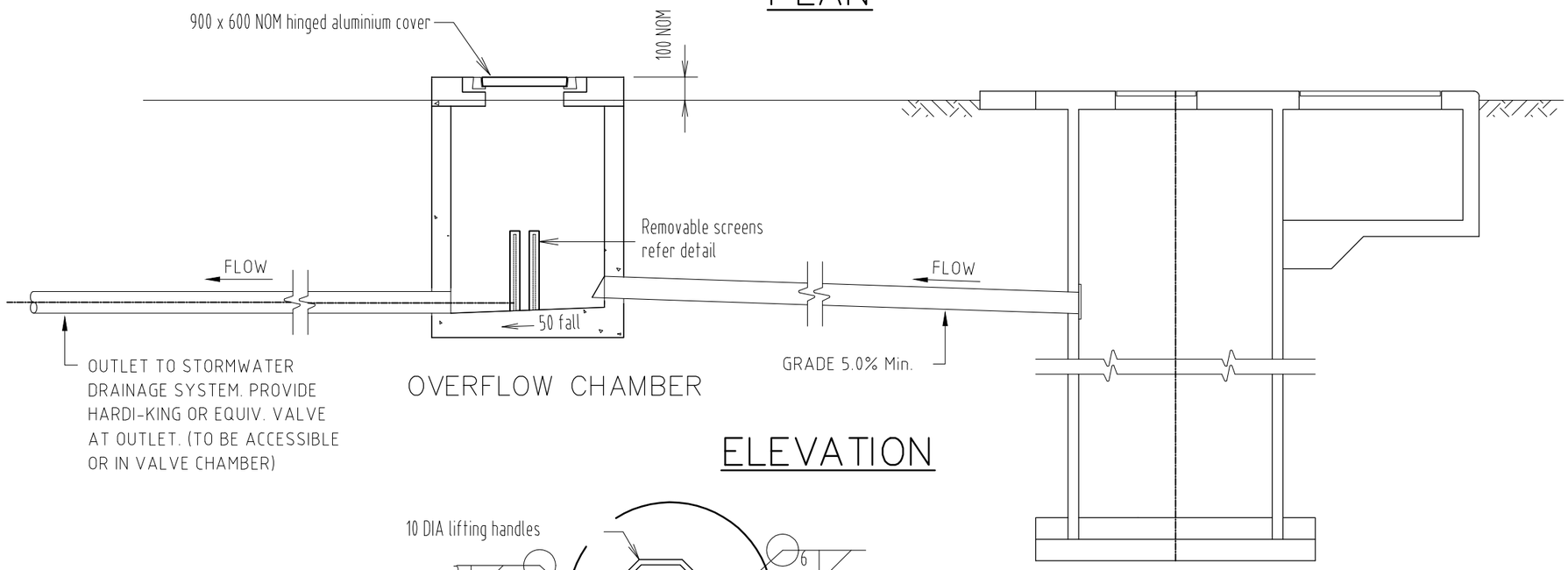
2	UPDATED WBW LOGO	R.C.	29.8.16
2	DRAWING UPDATED	Cardno	19.11.04
1	DRAWING UPDATED	PG	12.07.04
MK	DETAILS OF AMENDMENTS	APPR'	DATE

FILE A3 | SHEET OF | PLAN REFERENCE No; PS02

a b c d e f g h i



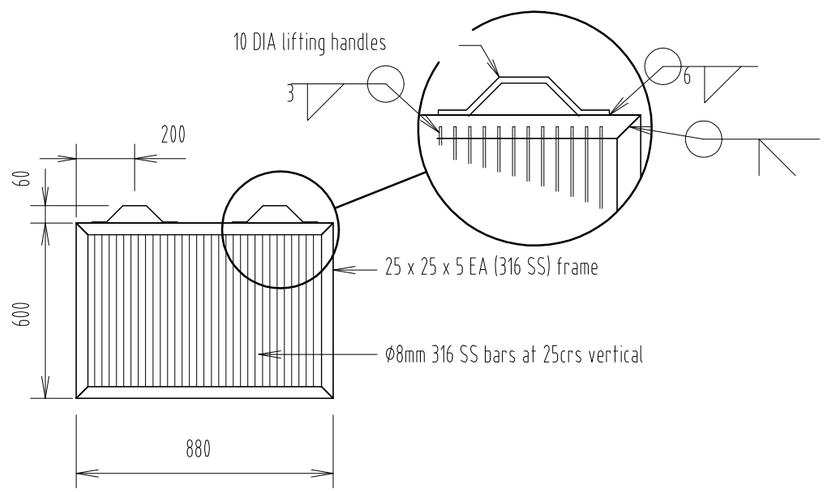
PLAN



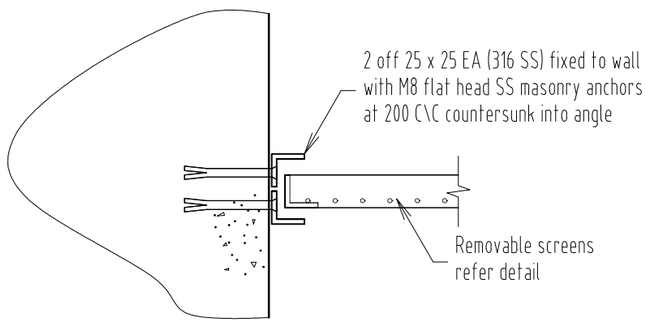
OVERFLOW CHAMBER

ELEVATION

PUMP STATION



SCREEN DETAIL



SCREEN GUIDE RAIL

OVERFLOW TYPICAL DETAILS

NOTES

1. Pipes shown are diagrammatic only, refer project drawings for layout and levels.
2. Concrete N32 in accordance with AS 1379 and AS 3600.
3. All steelwork hot dip galvanived to AS 1650 after fabrication.
4. All bars and angles Grade 250 to AS 3679.
5. All bolts, nuts and washers shall be Grade AS 2837/316 stainless steel with approved anti-galling compound.
6. All welds to AS 1554. All welding symbols comply with AS 1101.3.
7. The covers shall be gastight similar to those produced by Hallco Engineering. All components of access covers and frames shall be fabricated from aluminium alloy 6061-T6, to AS 2848. All embedded surfaces shall be painted with two coats of alkali resistant bitumous paint. The covers shall be designed as a platform in accordance with AS 1657. Fabrication details shall be submitted to the Superintendent for approval prior to manufacture.
8. If covers are subject to vehicular loading, use appropriately rated C.I. covers.
9. All dimensions in millimetres.

SPECIAL NOTE:

1. OVERFLOW SYSTEM PIPE SIZES TO BE DESIGNED FOR EACH PROJECT PRIOR TO CONSTRUCTION.
2. REFER TO PUMP STATION DETAIL, SHEET 2 FOR INVERT LEVEL OF OVERFLOW PIPE.

WIDE BAY WATER

29-31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

1800mm DIAMETER
SEWAGE PUMP STATION

SCALE: SCALE		DESIGN: CEB	DATE: 23/07/99
DRAWN: WJF	DATE: 09/04/03	CHECKED	DATE
SURVEY: SURVEY		APPROVED: S.KHAN	DATE: 18/12/15
DATUM: DATUM		APPROVED	DATE

OVERFLOW TYPICAL DETAILS

3	UPDATED WBW LOGO	R.C.	29.8.16
2	DRAWING UPDATED	Cardno	23.11.04
1	DRAWING UPDATED	PG	12.07.04
MK	DETAILS OF AMENDMENTS	APPR'	DATE

FILE | SHEET | OF

A3 | PLAN REFERENCE No; PS03

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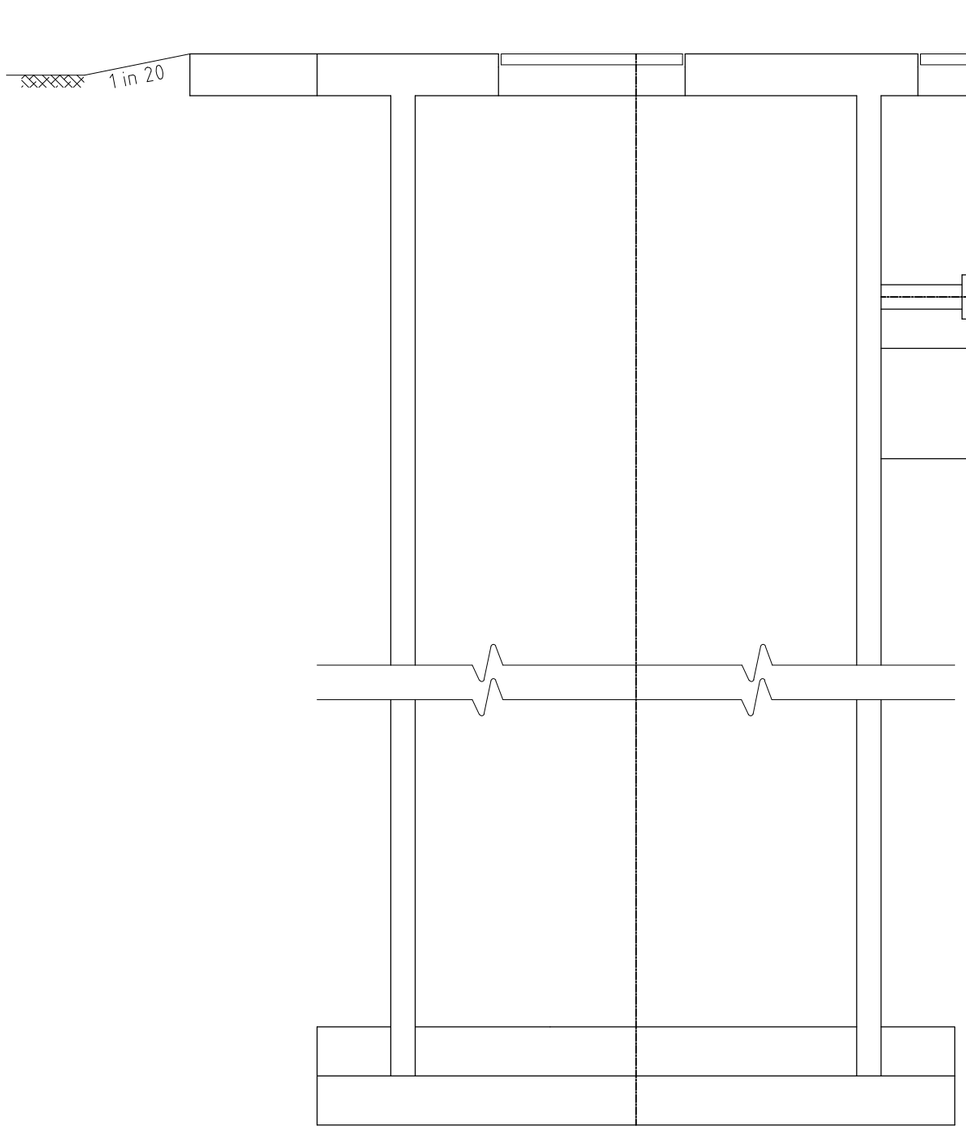
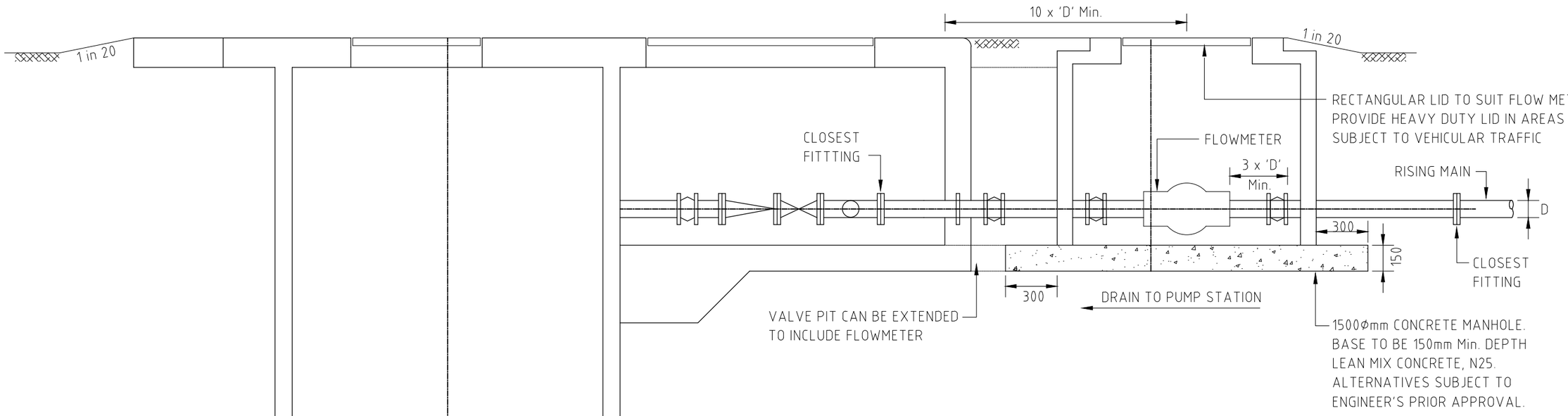


PUMP STATION



FLOWMETER PIT
(WHERE REQUIRED)

NOTE:

1. PIPE THROUGH FLOWMETER PIT TO BE D.I.C.L.
2. FLOWMETER PIT LOCATION TO BE DETERMINED FOR EACH PROJECT PRIOR TO CONSTRUCTION.
3. FLOWMETER PIT REQUIRED ONLY WHEN SPECIFIED
4. IF BEND LOCATED OUTSIDE VALVE PIT THIS THEN BECOMES CLOSEST FITTING TO DETERMINE LOCATION OF FLOWMETER.
5. THE FLOWMETER REQUIRES STRAIGHT PIPING AND NO CHANGE OF HYRAULIC STATUS BY FITTINGS (eg. BENDS, VALVES, TAPERS, etc.) OF A MINIMUM DISTANCE EQUAL TO TEN TIMES (10x) THE PIPE DIAMETER ON UPSTREAM SIDE OF FLOWMETER AND (5X) ON DOWNSTREAM SIDE.

WIDE BAY WATER

29-31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

1800mm DIAMETER SEWAGE PUMP STATION

SCALE: SCALE		DESIGN: CEB	DATE: 23/07/99
DRAWN: WJF	DATE: 09/04/03	CHECKED	DATE
SURVEY: SURVEY		APPROVED: S.KHAN	DATE: 18/12/15
DATUM: DATUM		APPROVED	DATE

FLOWMETER PIT DETAIL

MK	DETAILS OF AMENDMENTS	APPR'	DATE
2	UPDATED WBW LOGO	R.C.	29.8.16
1	DRAWING UPDATED	PG	12.7.4

FILE: A3 | SHEET | OF | PLAN REFERENCE No; PS04

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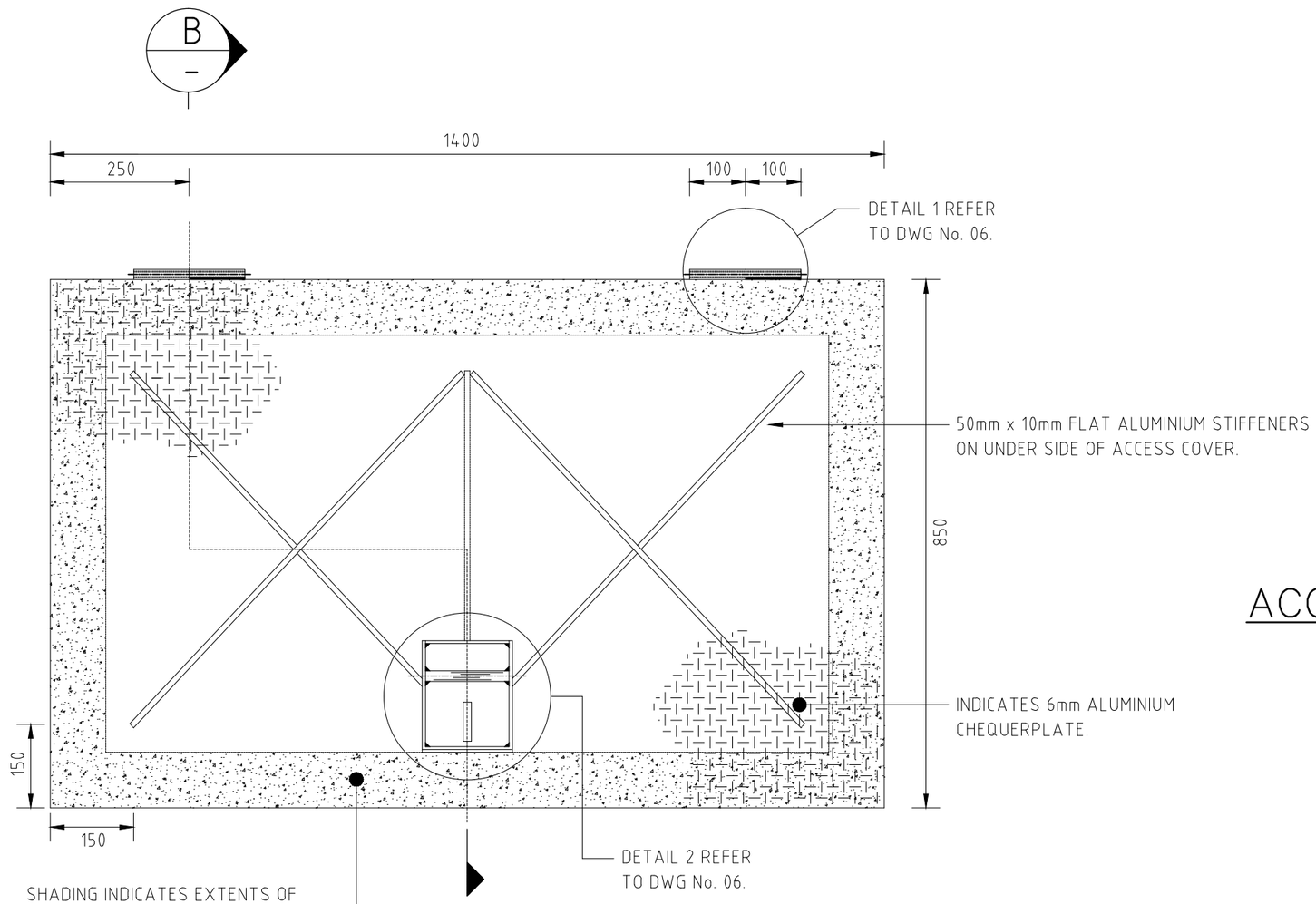
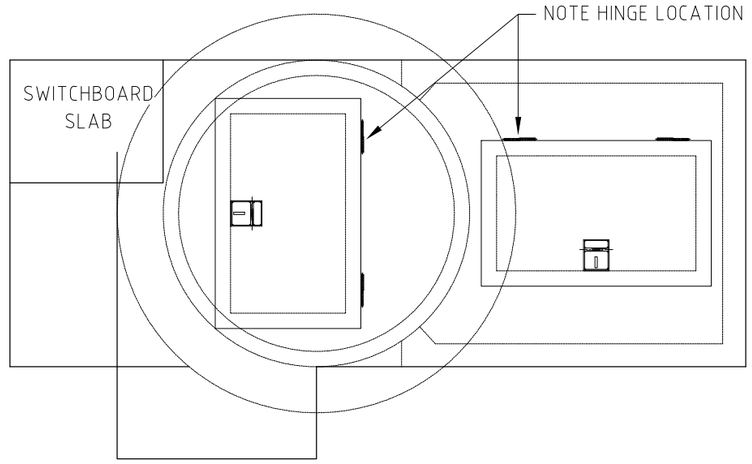
FLOWMETER PIT DETAIL

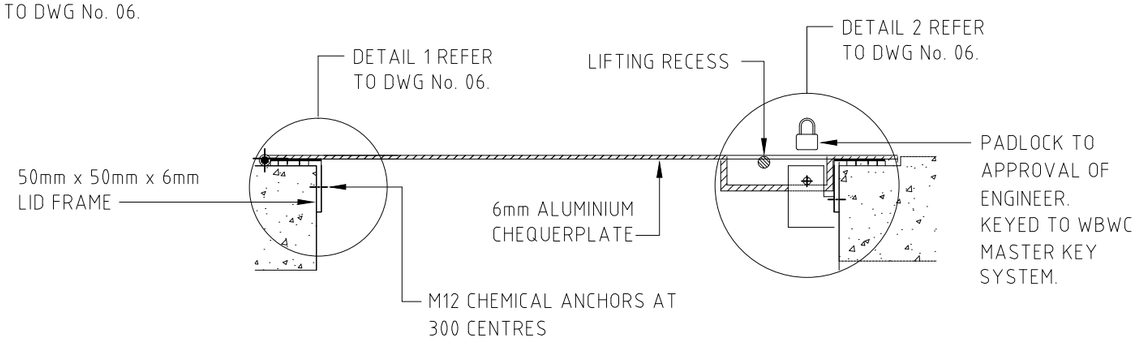


PLAN

NOTE: ALL WELDS ARE 6mm CFW (U.N.O.)



ACCESS COVER LOCATION PLAN N.T.S.



SECTION B

ACCESS COVER LAYOUT PLAN

WIDE BAY WATER

29-31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

1800mm DIAMETER SEWAGE PUMP STATION

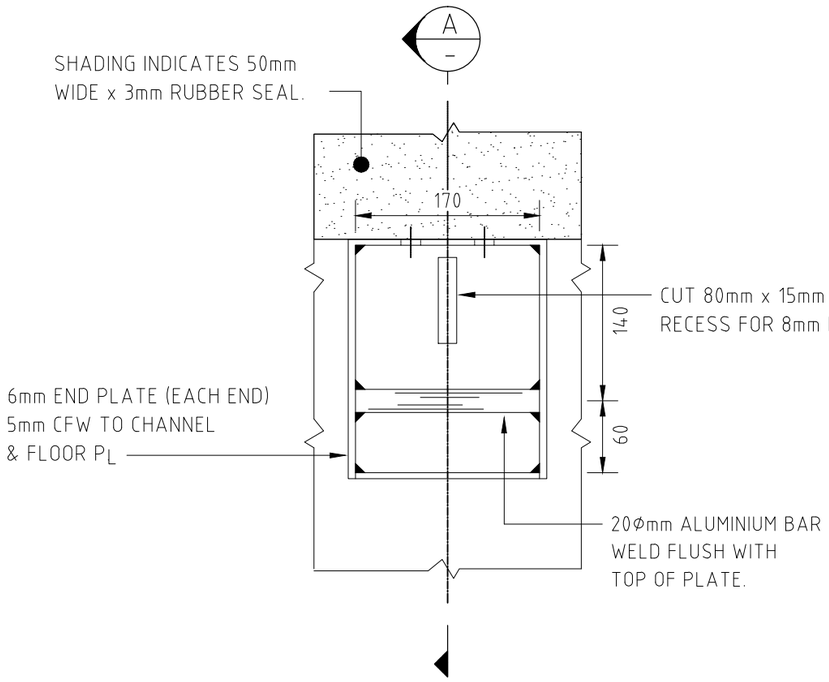
SCALE: SCALE		DESIGN: CEB	DATE: 23/07/99
DRAWN: WJF	DATE: 09/04/03	CHECKED	DATE
SURVEY: SURVEY		APPROVED: S.KHAN	DATE: 18/12/15
DATUM: DATUM		APPROVED	DATE

ACCESS COVER LAYOUT PLAN

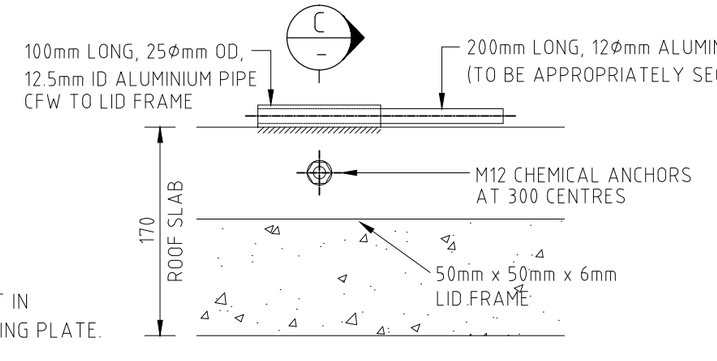
2	UPDATED WBW LOGO	R.C.	29.8.16
1	DRAWING UPDATED	PG	12.7.4
MK	DETAILS OF AMENDMENTS	APPR'	DATE

FILE	SHEET	OF
A3	PLAN REFERENCE No; PS05	

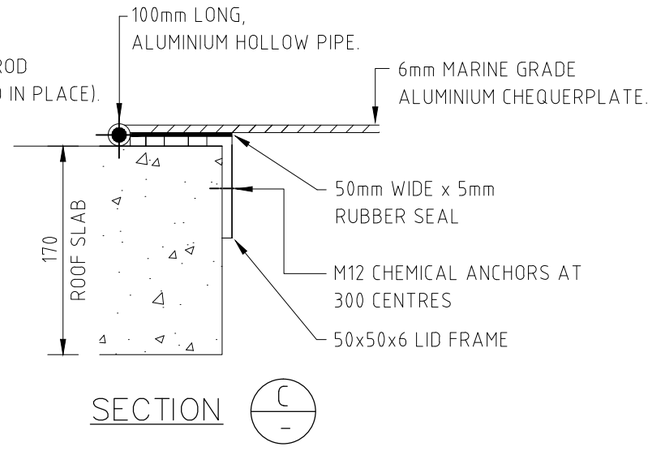
a b c d e f g h i



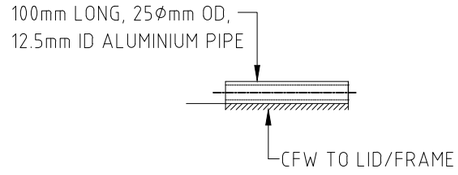
PLAN

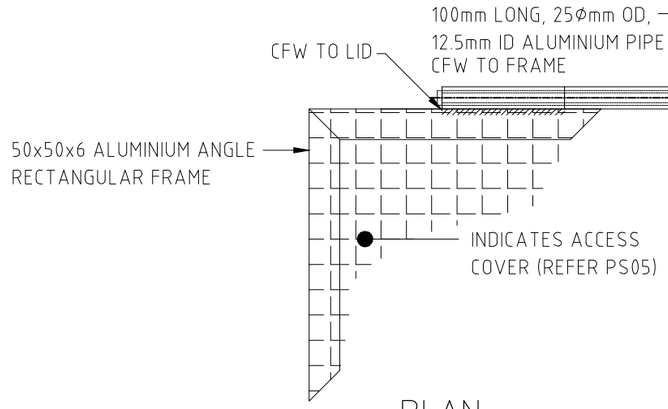


ELEVATION



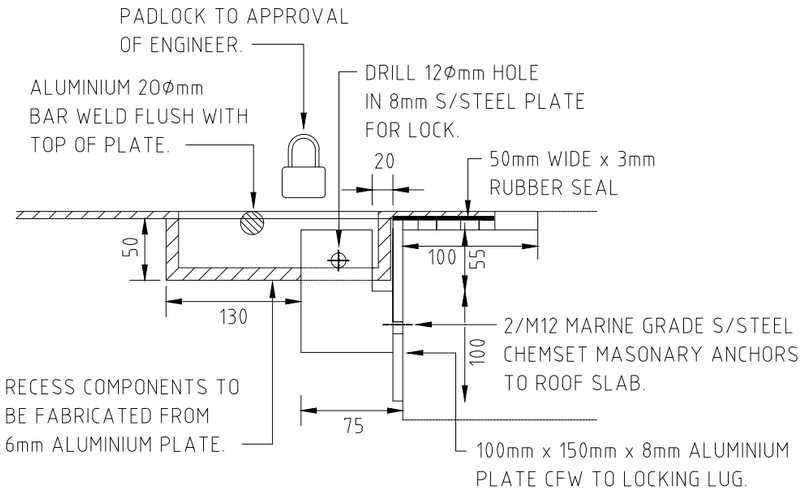
SECTION C





PLAN

DETAIL 1 – HINGES + LID FRAME 1:5



SECTION A

DETAIL 2 – ACCESS COVER 1:5

MISCELLANEOUS DETAILS

WIDE BAY WATER

29-31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

1800mm DIAMETER SEWAGE PUMP STATION

SCALE: SCALE		DESIGN: CEB	DATE: 23/07/99
DRAWN: WJF	DATE: 09/04/03	CHECKED	DATE
SURVEY: SURVEY		APPROVED: S.KHAN	DATE: 18/12/15
DATUM: DATUM		APPROVED	DATE

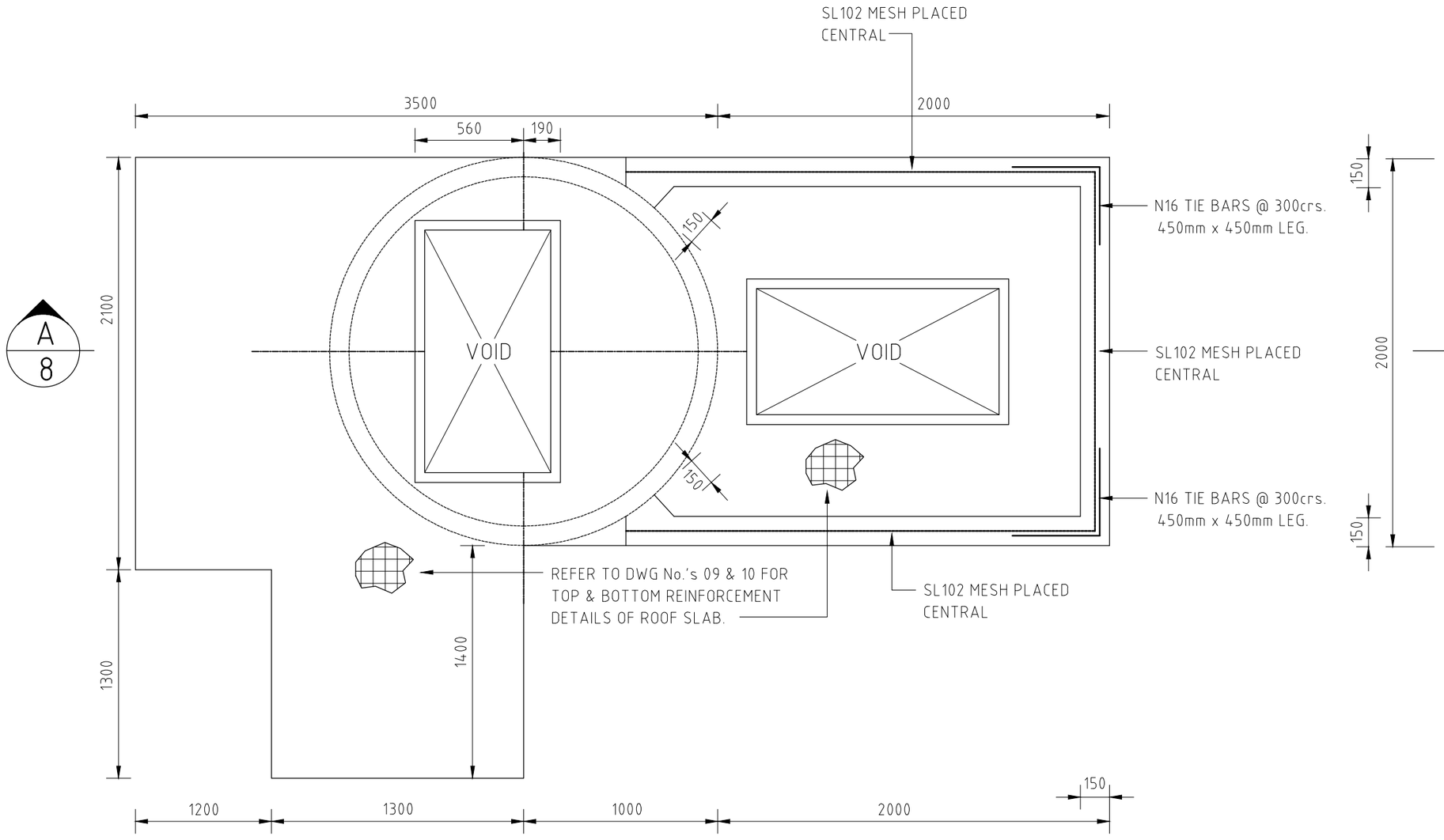
MISCELLANEOUS DETAILS

MK	DETAILS OF AMENDMENTS	APPR'	DATE
2	UPDATED WBW LOGO	R.C.	29.8.16
1	DRAWING UPDATED	PG	12.7.4

FILE	SHEET	OF
A3	PLAN REFERENCE No; PS06	

a b c d e f g h i

SPECIAL NOTE:
INTERNAL FACE OF PUMP WELL TO BE COATED TO A 5mm THICKNESS WITH KL11 OR SIMILAR PRODUCT APPROVED BY WBW.



A
8

CONC. GRADE = N32

PROVIDE 225mm MIN. LAP TO ALL REINFORCING FABRIC AS REQUIRED

WBW

WIDE BAY WATER

29-31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

1800mm DIAMETER SEWAGE PUMP STATION

SCALE SCALE		DESIGN CEB	DATE 23/07/99
DRAWN WJF	DATE 10/04/03	CHECKED	DATE
SURVEY SURVEY		APPROVED S.KHAN	DATE 18/12/15
DATUM DATUM		APPROVED	DATE

VALVE PIT & ROOF SLAB

2	UPDATED WBW LOGO	R.C.	29.8.16
1	DRAWING UPDATED	PG	12.7.4
MK	DETAILS OF AMENDMENTS	APPR'	DATE

FILE A3 | SHEET OF | PLAN REFERENCE No; PS07

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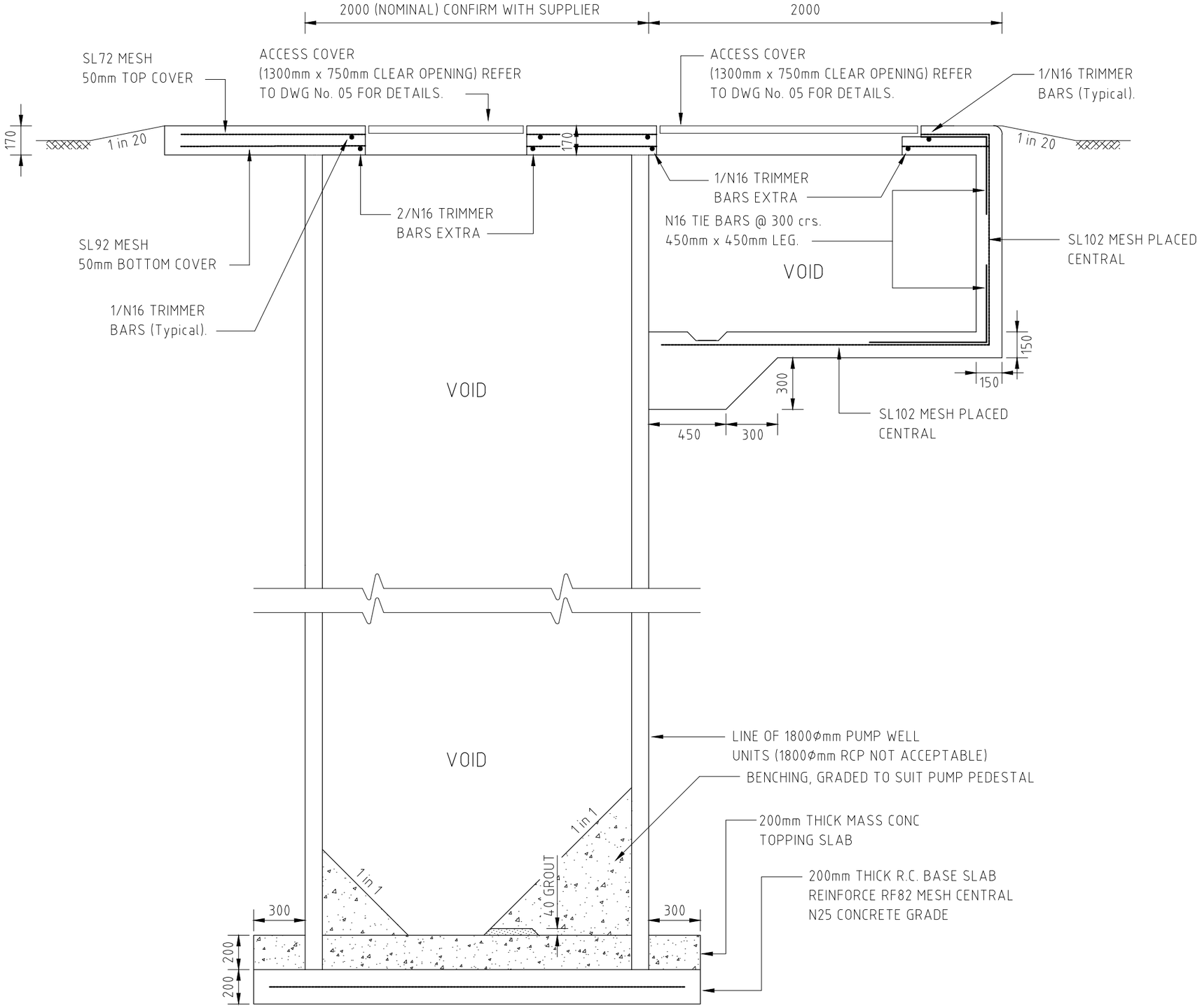
VALVE PIT & ROOF SLAB



SPECIAL NOTE:
INTERNAL FACE OF PUMP WELL TO BE COATED TO A 5mm THICKNESS WITH KL11 OR SIMILAR PRODUCT APPROVED BY WBW.

CONC. GRADE = N32

PROVIDE 225mm MIN. LAP TO ALL REINFORCING FABRIC AS REQUIRED

N.B. CHECK FOR BUOYANCY

REINFORCEMENT – SECTION

A
7

WIDE BAY WATER

29-31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

1800mm DIAMETER SEWAGE PUMP STATION

SCALE: SCALE		DESIGN: CEB	DATE: 23/07/99
DRAWN: WJF	DATE: 09/04/03	CHECKED	DATE
SURVEY: SURVEY		APPROVED: S.KHAN	DATE: 18/12/15
DATUM: DATUM		APPROVED	DATE

REINFORCEMENT – SECTION A

MK	DETAILS OF AMENDMENTS	APPR'	DATE
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1	DRAWING UPDATED	PG	12.7.4

FILE	SHEET	OF
A3	PLAN REFERENCE No; PS08	

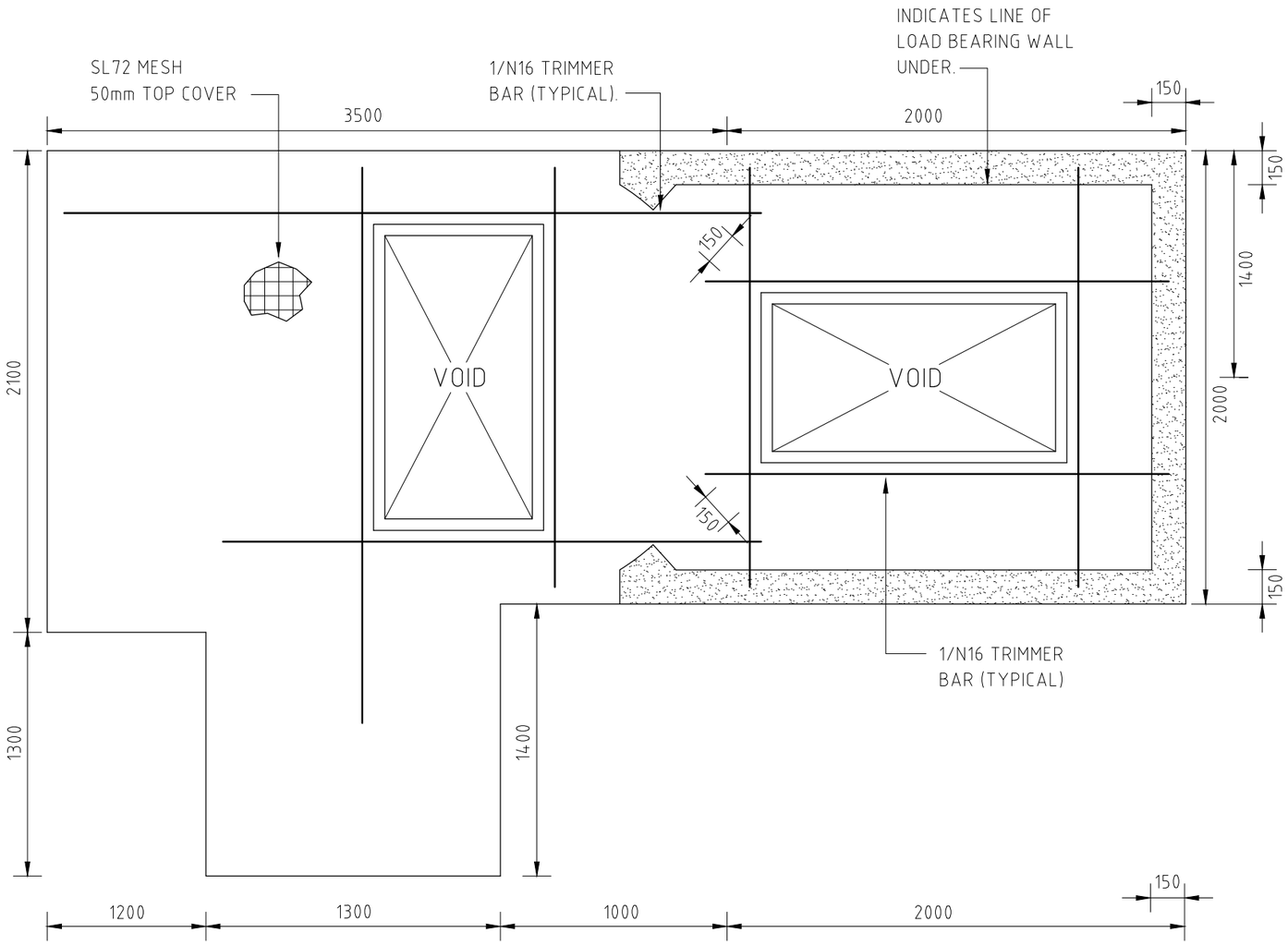
a b c d e f g h i

170 THICK R.C. SLAB
N32 CONC. GRADE

PROVIDE 225mm MIN. LAP
TO ALL REINFORCEMENT

SPECIAL NOTE:

INTERNAL FACE OF PUMP WELL TO BE COATED TO A 5mm THICKNESS WITH KL11 OR SIMILAR PRODUCT APPROVED BY WBW.



ROOF SLAB TOP STEEL

WIDE BAY WATER

29-31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

1800mm DIAMETER
SEWAGE PUMP STATION

SCALE SCALE		DESIGN CEB	DATE 23/07/99
DRAWN WJF	DATE 10/04/03	CHECKED	DATE
SURVEY SURVEY		APPROVED S.KHAN	DATE 18/12/15
DATUM DATUM		APPROVED	DATE

ROOF SLAB TOP STEEL

2	UPDATED WBW LOGO	R.C.	29.8.16
1	DRAWING UPDATED	PG	12.7.4
MK	DETAILS OF AMENDMENTS	APPR'	DATE

FILE	SHEET	OF
A3	PLAN REFERENCE No; PS09	

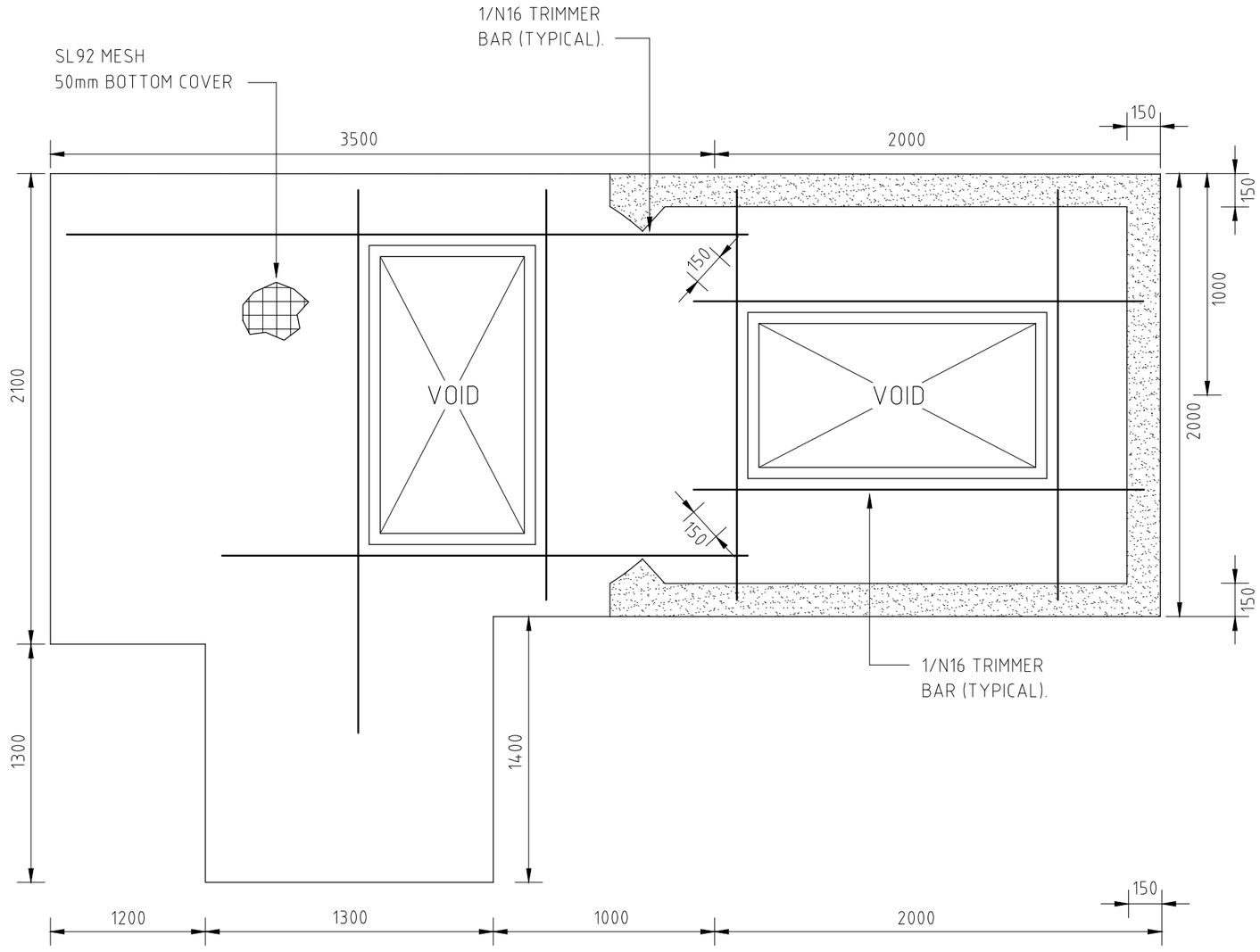
a b c d e f g h i

170 THICK R.C. SLAB
N32 CONC. GRADE

PROVIDE 225mm MIN. LAP
TO ALL REINFORCEMENT

SPECIAL NOTE:

INTERNAL FACE OF PUMP WELL TO BE COATED TO A 5mm THICKNESS WITH KL11 OR SIMILAR PRODUCT APPROVED BY WBW.



ROOF SLAB BOTTOM STEEL

WIDE BAY WATER

29-31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

1800mm DIAMETER
SEWAGE PUMP STATION

SCALE: SCALE		DESIGN: CEB	DATE: 23/07/99
DRAWN: WJF	DATE: 10/04/03	CHECKED	DATE
SURVEY: SURVEY		APPROVED: S.KHAN	DATE: 18/12/15
DATUM: DATUM		APPROVED	DATE

ROOF SLAB BOTTOM STEEL

MK	DETAILS OF AMENDMENTS	APPR'	DATE
2	UPDATED WBW LOGO	R.C.	29.8.16
1	DRAWING UPDATED	PG	12.7.4

FILE SHEET OF

A3

PLAN REFERENCE No;

PS10

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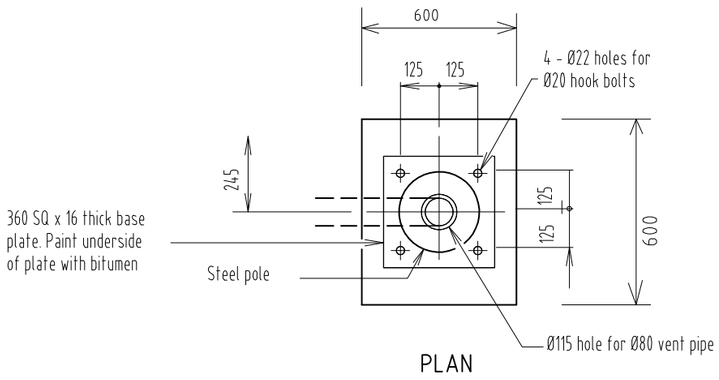
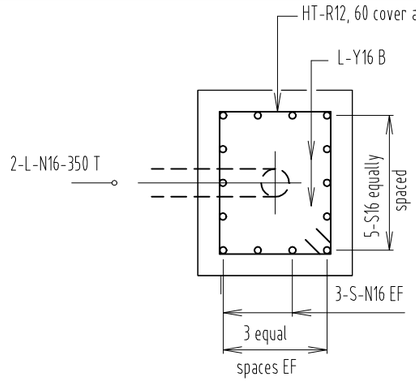
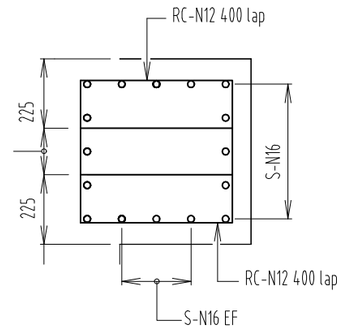


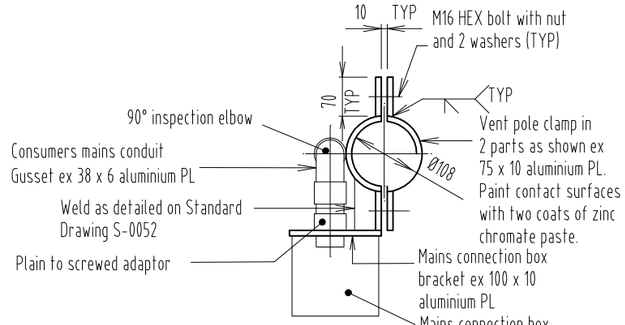
PLAN



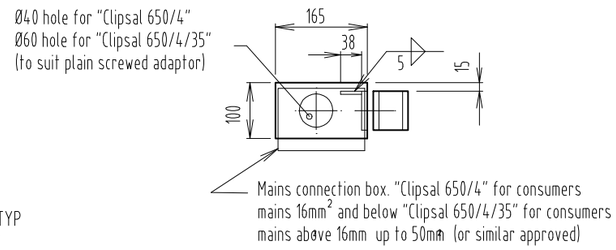
SECTION A - A



SECTION B - B

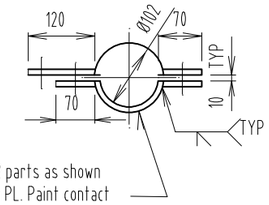


PLAN

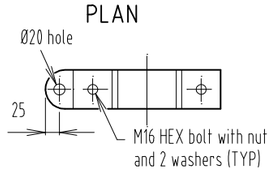


ELEVATION

MAINS CONNECTION BOX BRACKET

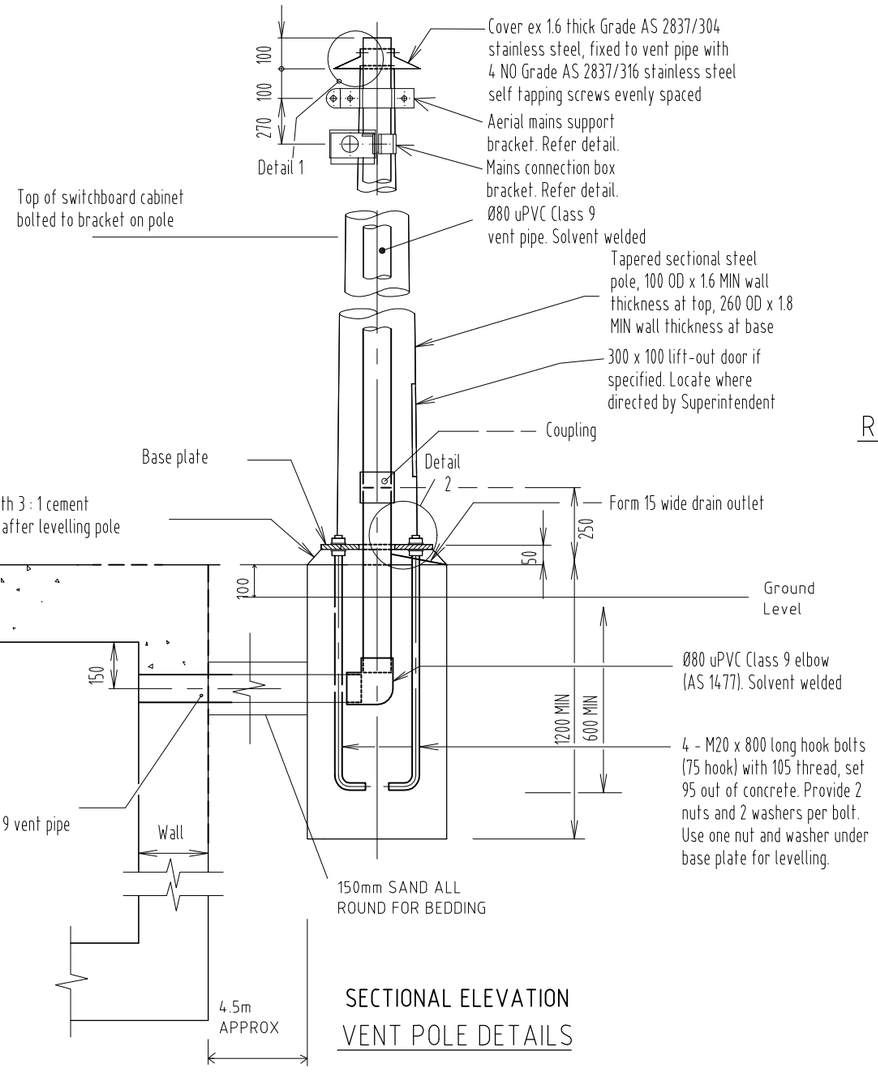


PLAN



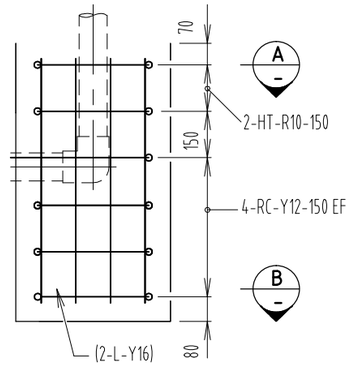
ELEVATION

AERIAL MAINS SUPPORT BRACKET



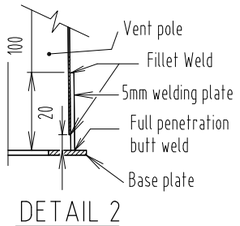
SECTIONAL ELEVATION

VENT POLE DETAILS

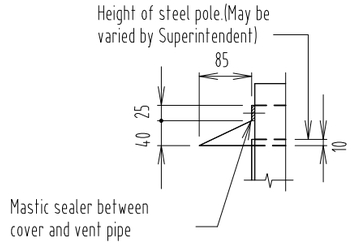


SECTIONAL ELEVATION

REINFORCEMENT DETAILS



DETAIL 2



DETAIL 1

NOTES

1. Concrete S32 in accordance with AS 1379 and AS 3600.
2. Wind loads have been calculated for Terrain Category 2 and 3 in accordance with AS1170.2. Mt = 1. Region B.
3. Unless noted otherwise, steelwork shall be hot dip galvanized after fabrication to AS 1650.
4. All bolts, nuts and washers shall be Grade AS 2837/316 stainless steel.
5. Anti-galling lubricant "Loctite 222 or 567" or similar approved shall be used on all threads and between all stainless steel abutting surfaces
6. Reinforcement identification is in accordance with Section 3 of AS 1100.501.
7. Reinforcing bars to AS 1302. Reinforcement cover 50mm MIN.
8. All electrical conduits to AS 2053.
9. All dimensions in millimetres.

WIDE BAY WATER

29-31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

PUMPING STATION 7.2m VENT POLE

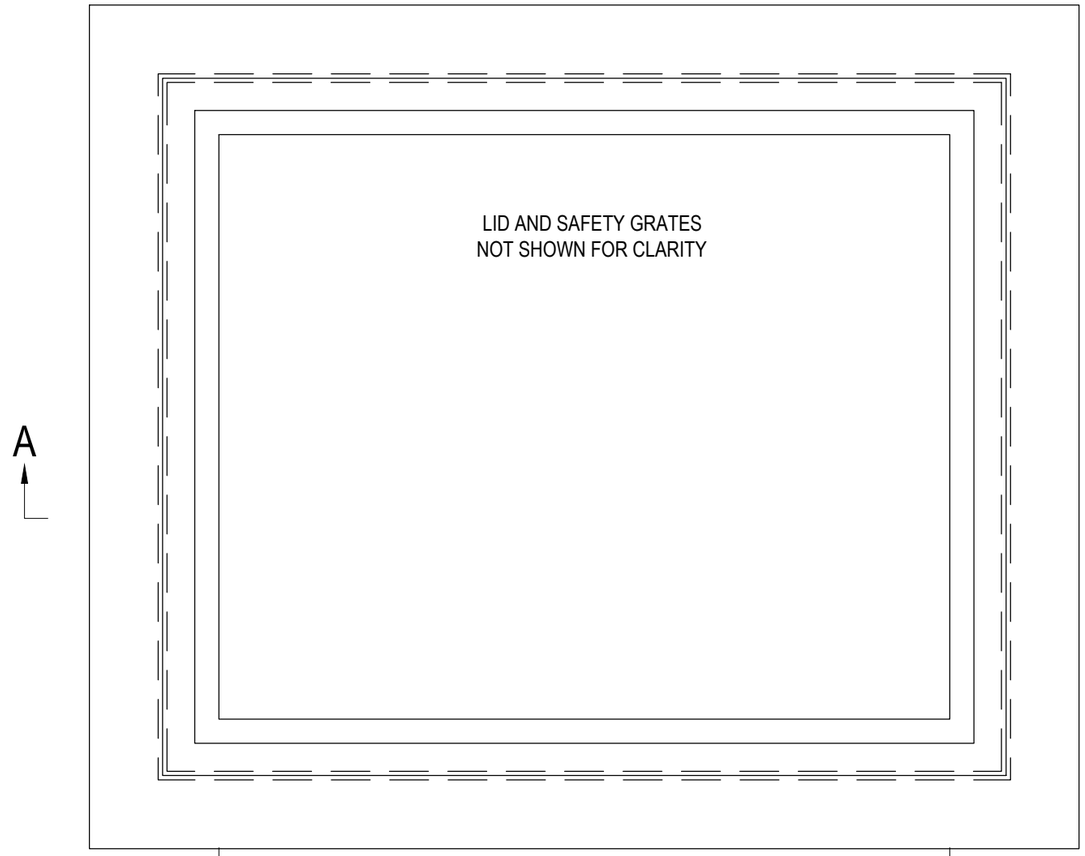
SCALE: SCALE		DESIGN: EM	DATE: 04/09/02
DRAWN: WJF	DATE: 09/04/03	CHECKED	DATE
SURVEY		APPROVED: S.KHAN	DATE: 18/12/15
DATUM		APPROVED	DATE

TERRAIN CAT 2 AND 3 (NON-CYCLONIC)

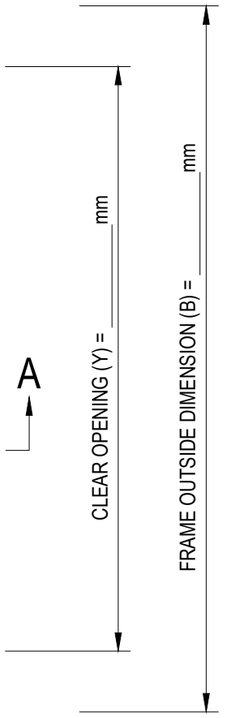
2	UPDATED WBW LOGO	R.C.	29.8.16
MK	DETAILS OF AMENDMENTS	APPR'	DATE

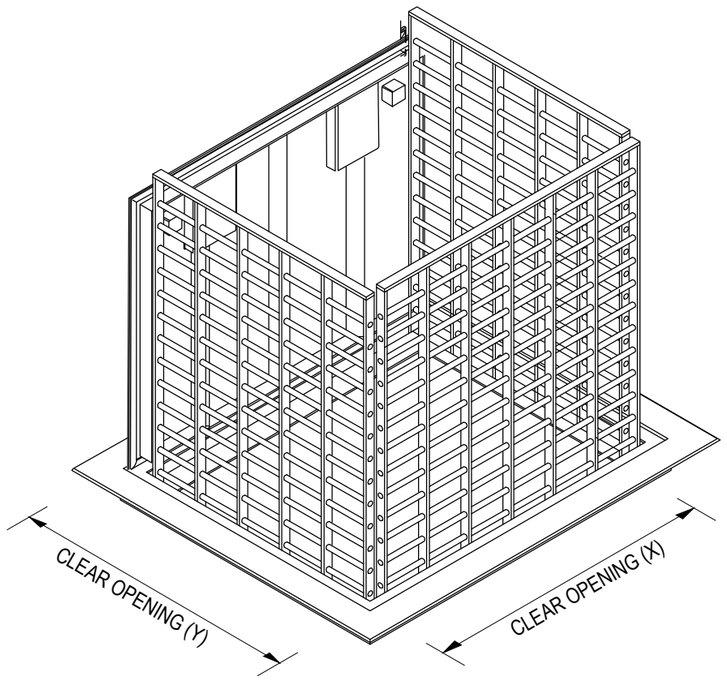
FILE	SHEET	OF
A3	PLAN REFERENCE No: PS11	

a b c d e f g h i

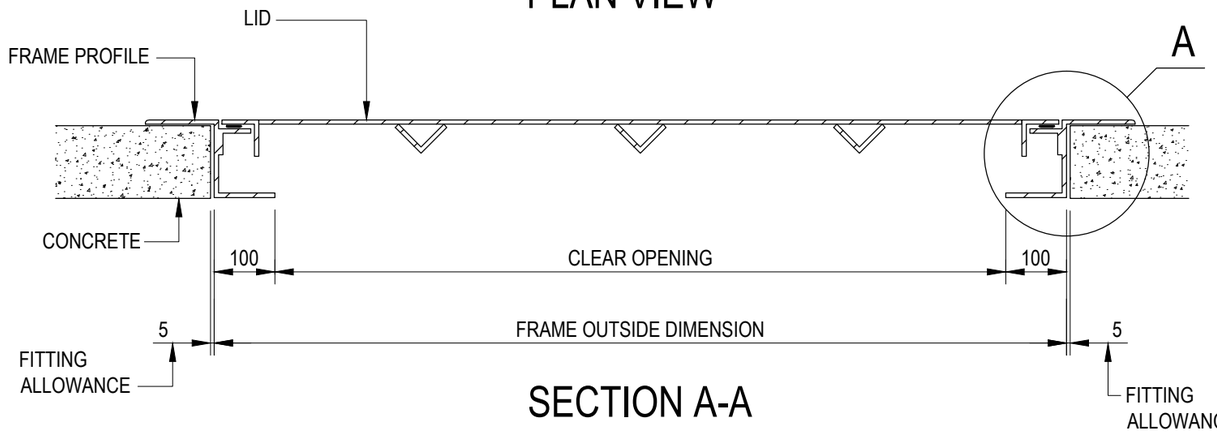


PLAN VIEW

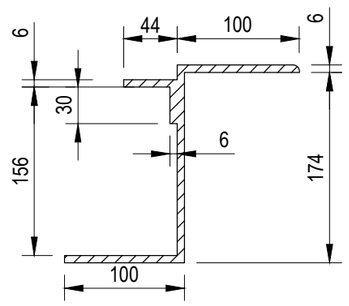




ISOMETRIC VIEW - OPEN



SECTION A-A



DETAIL A

UNLESS NOTED OTHERWISE

- REPRESENTATION ONLY.
- DIMENSIONS GIVEN IN MILLIMETERS.
- DIMENSIONS GIVEN ARE APPROXIMATE AND MAY VARY.
- DO NOT SCALE FROM DRAWINGS.
- IF IN DOUBT OR UNCLEAR, CONSULT MCBERNS PTY LTD.

FEATURES

- FLUSH MOUNTED WITH LOW PROFILE HINGES
- RUBBER SEAL UNDER LIDS
- CONCEALED LOCK BOXES WITH STANDARD KEY ENTRY
- ANTI-THEFT, NON-SLIP GREEN RUBBER COATING
- PAD LOCKABLE GREASED S/S LOCKING PIN
- PUMP-OUT FLAP IN SAFETY GRATE
- GAS SAMPLING PORT

A3

REVISION HISTORY

INDEX	DATE	REVISIONS	DRAWN	CHECKED	APPROVED
A	29/08/2016	UPDATED WBW LOGO	R.C.		S.K.

DRAWING INFORMATION

	NAME	DATE
DESIGN		
DRAWN		
CHECKED		
APPROVED	S.KHAN	18/12/15
APPROVED		

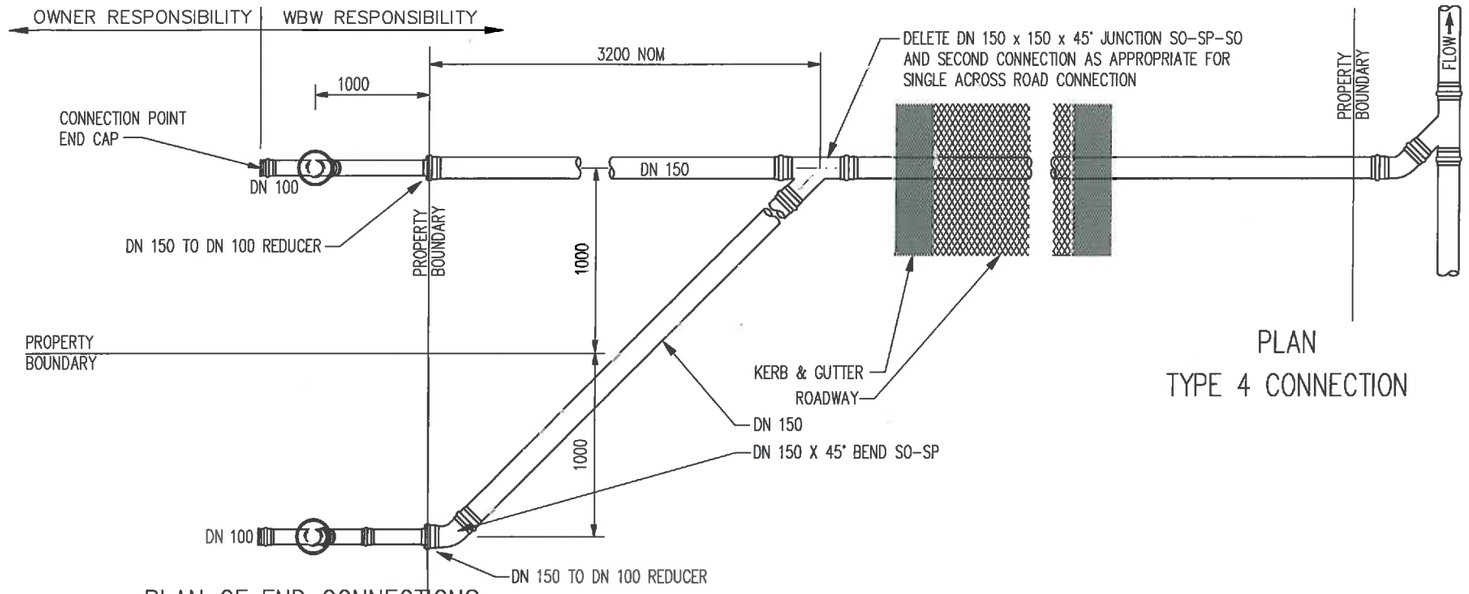
SIGNED

WIDE BAY WATER
29-31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

WIDE BAY WATER

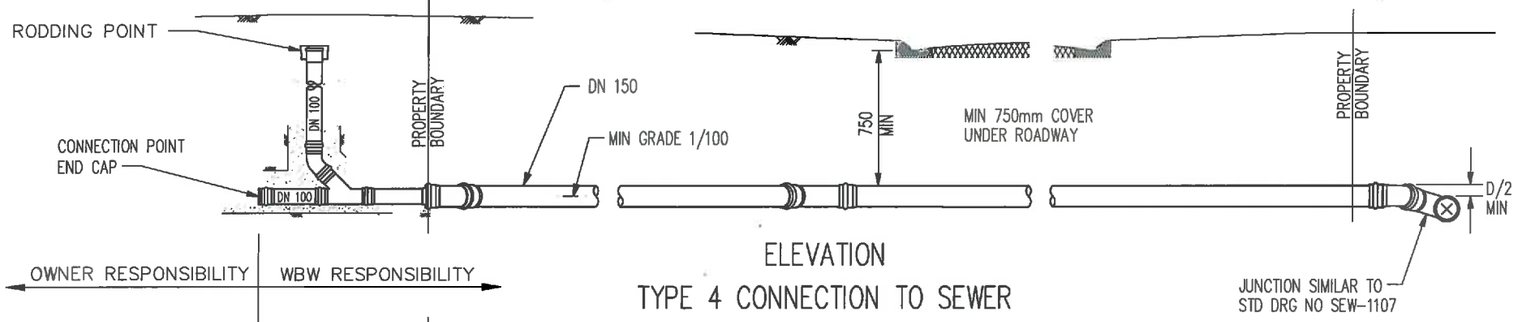
STANDARD DRAWINGS
SAFETY BARRIER SYSTEM

FILE
SCALE N.T.S.
SHEET OF
DRAWING NO. PS12
REV.

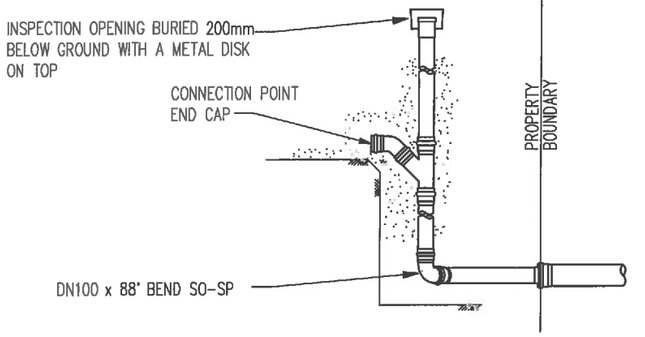


PLAN
TYPE 4 CONNECTION

PLAN OF END CONNECTIONS



ELEVATION
TYPE 4 CONNECTION TO SEWER



ALTERNATIVE END CONNECTION (TYPE 4A)

NOTES :

1. THIS DRAWING DEPICTS THE SEWER AND SEWER CONNECTION CONSTRUCTED IN PVC. OTHER APPROVED PIPELINE MATERIALS ARE PERMITTED UPON WBW APPROVAL.

2. THE CLASS OF ALL PIPES SHALL BE AS SPECIFIED ON THE PROJECT DESIGN PLANS / PROJECT SPECIFICATIONS.

3. ELASTOMERIC SEALING RINGS FOR USE WITH PIPELINE MATERIALS COMPLYING WITH AUSTRALIAN STANDARDS SHALL COMPLY WITH AS 1646. ELASTOMERIC SEALING RINGS SHALL BE OF A MATERIAL TYPE APPROVED BY WBW.

4. PVC PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH AS 2032. PIPE INSTALLATION SHALL COMPLY WITH THE PROJECT SPECIFICATION.

5. FOR SEWER CONNECTIONS LARGER THAN DN 150 DETAILS SHALL BE SUBMITTED TO WBW FOR APPROVAL.

6. INSTALL HEAVY DUTY INSPECTION OPENINGS IN ROAD OR FOOTPATH RESERVES OR WHERE SPECIFIED ON PROJECT PLANS / SPECIFICATIONS.

7. USE REINFORCED 'DEEP SEWER' JUNCTIONS WHERE INSTALLATION DEPTH IS GREATER THAN 3 METRES.

A3

REVISION HISTORY

INDEX	DATE	REVISIONS	DRAWN	CHECKED	APPROVED
C	11/2017	ADDED 150 TO DN100 REDUCER LABEL TO PLAN OF END CONNECTIONS	R.C	J.H.	P.ORR
B	05/2017	UPDATED DRAWING	R.C.	J.H.	
A	08/2016	UPDATED WBW LOGO	R C	J.H.	
	12/2015	ORIGINAL APPROVED VERSION	R.C.	S.K.	S.K.

DRAWING INFORMATION

	NAME	DATE
DESIGN	J.HINDMARSH	9/05/17
DRAWN	R.CATLING	12/05/17
CHECKED	J.HINDMARSH	12/05/17
APPROVED	J.MANN	12/05/17
APPROVED	T.DEAN	29/11/17

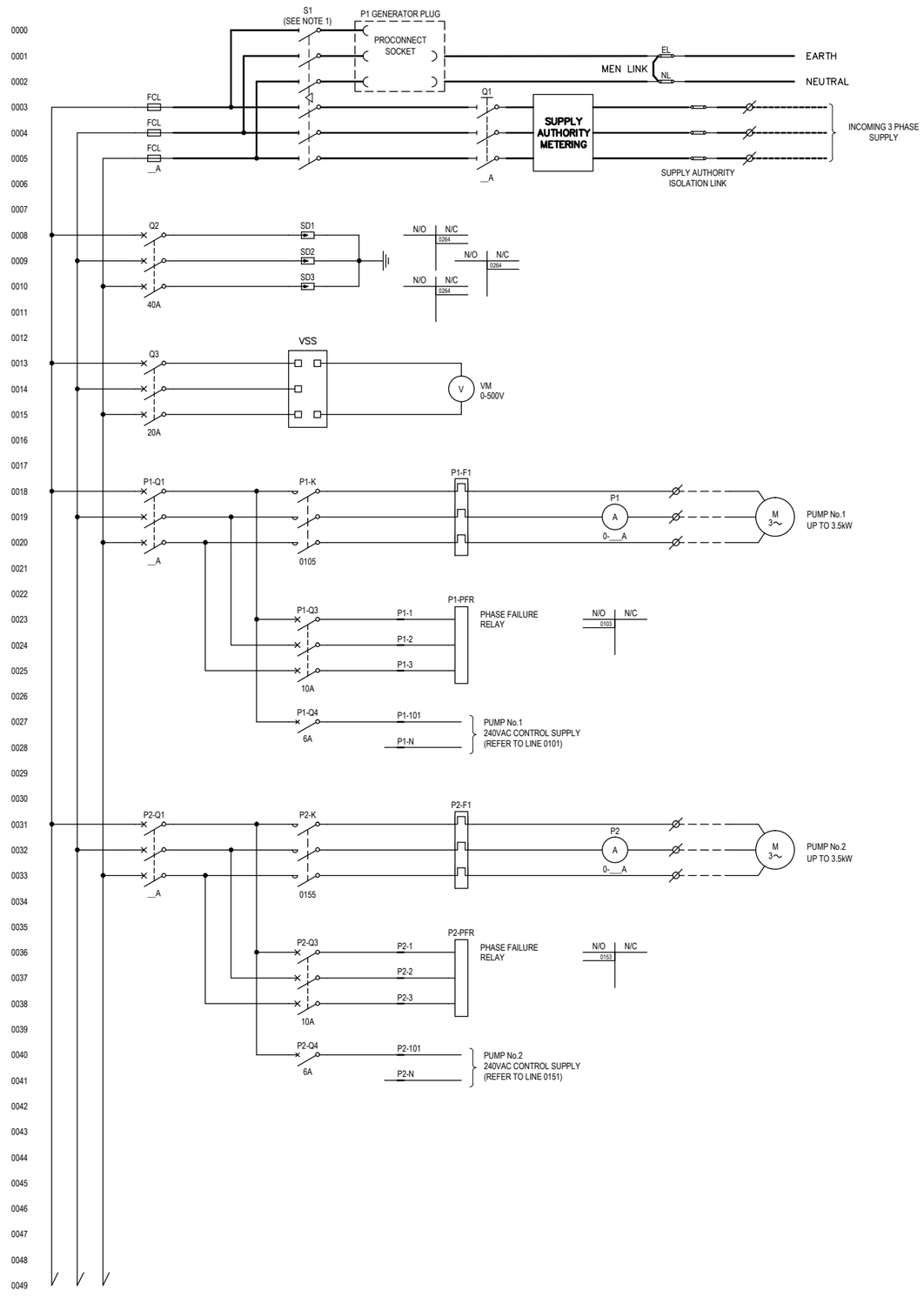
SIGNED
Trevor Dean
RPEQ 19458

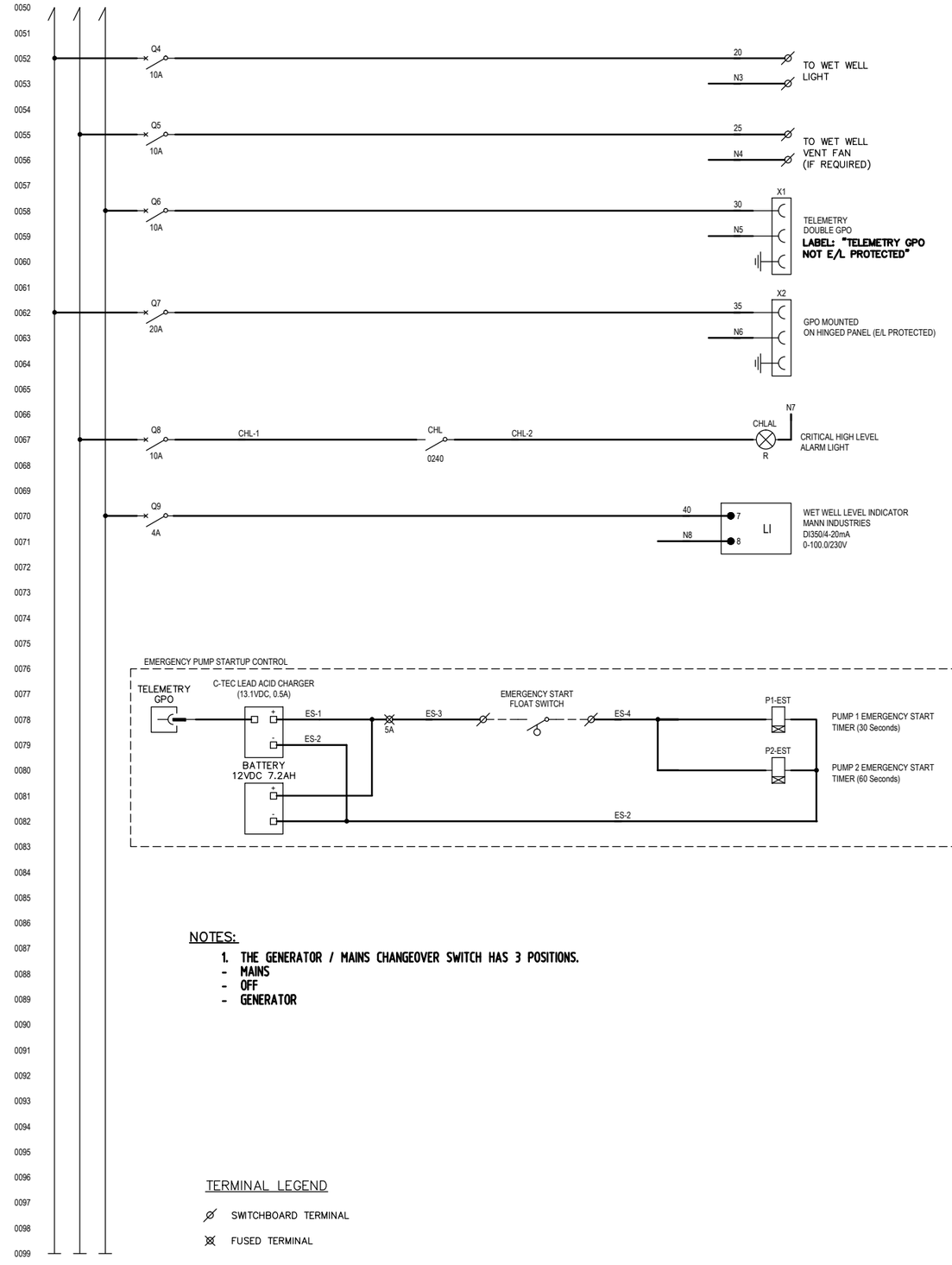
WIDE BAY WATER
29-31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

WIDE BAY WATER

STANDARD DRAWINGS
SEWER SERVICE CONNECTIONS
CONNECTION ACROSS ROAD

FILE
SCALE N.T.S.
SHEET OF
DRAWING NO. SHC 01
REV. C





NOTES:

1. THE GENERATOR / MAINS CHANGEOVER SWITCH HAS 3 POSITIONS.
   - MAINS
   - OFF
   - GENERATOR

TERMINAL LEGEND

- SWITCHBOARD TERMINAL
- FUSED TERMINAL

A3

REVISION HISTORY

INDEX	DATE	REVISIONS	DRAWN	CHECKED	APPROVED
B	29/08/16	UPDATED WBW LOGO	R.C.		S.K.
A	30/11/2015	FOR CONSTRUCTION	T.M	T.M	

DRAWING INFORMATION

	INITIALS	DATE
DRAWN	T.M	30/11/2015
CHECKED	T.M	30/11/2015
APPROVED		

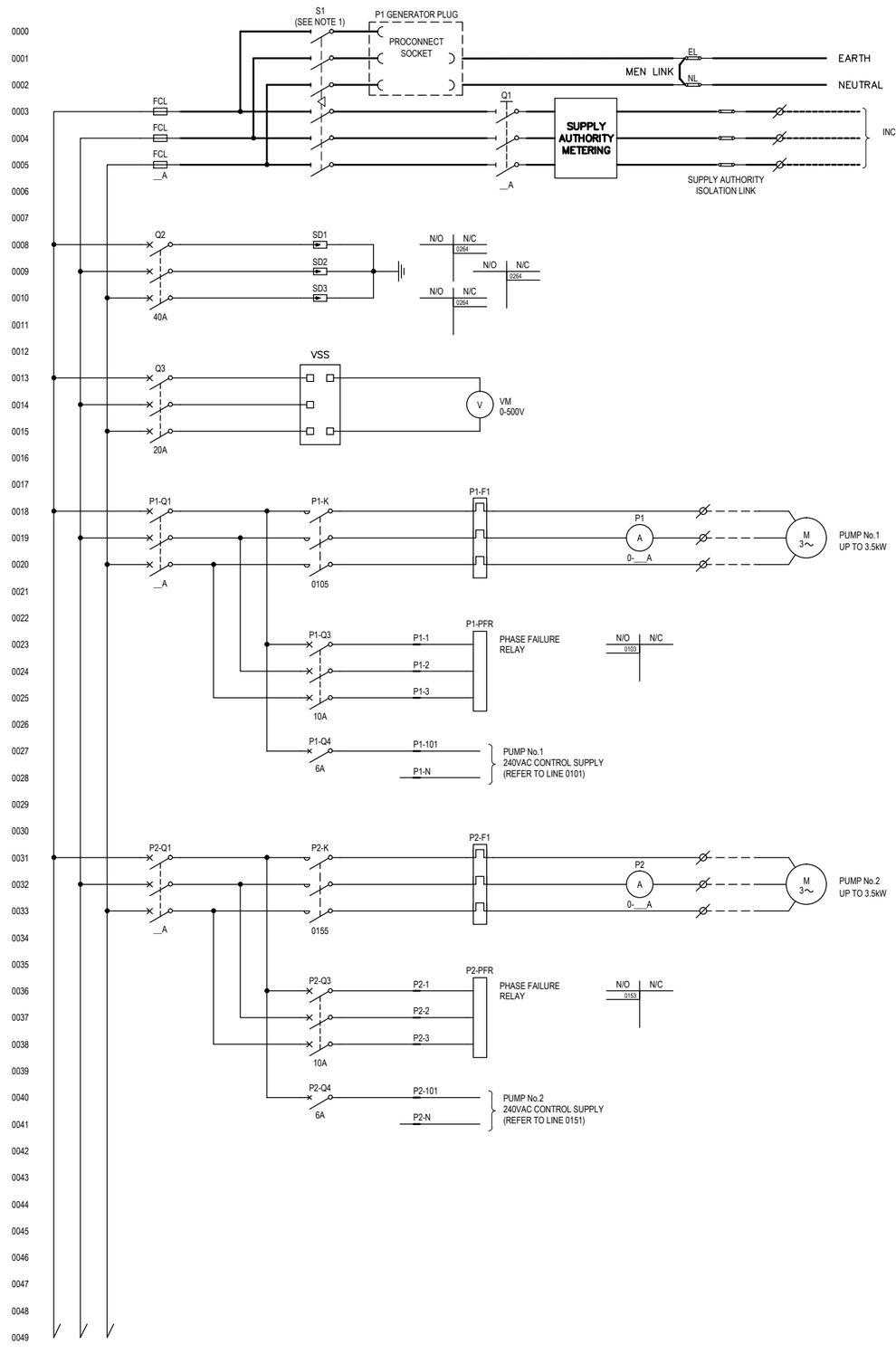
CONTRACTOR INFORMATION

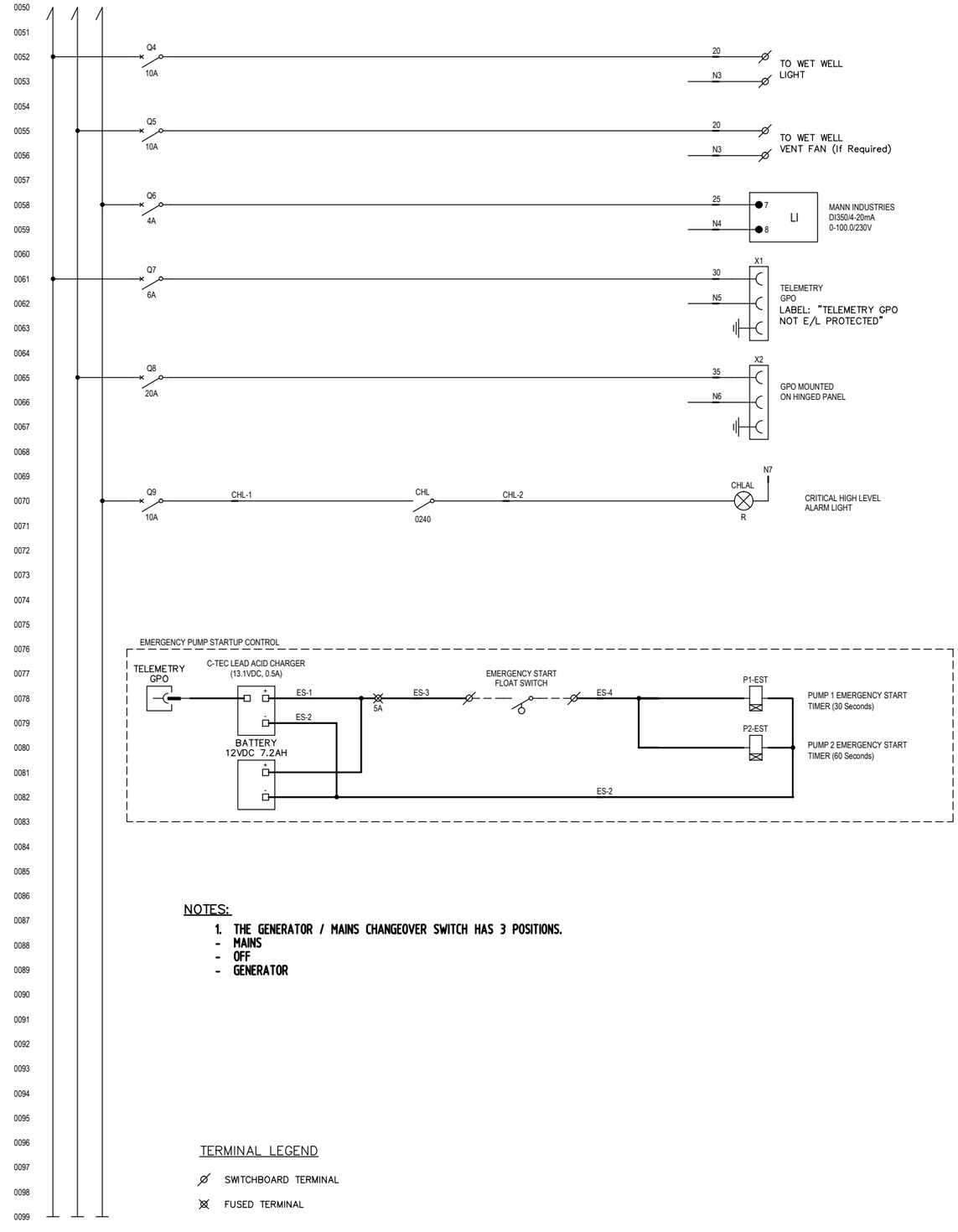
WIDE BAY WATER
31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

HERVEY BAY SPS

STANDARD SEWAGE PUMP STATION (DOL < 3.5KW)
THREE LINE 415V POWER DISTRIBUTION
SCHEMATIC DIAGRAM

FILE
SCALE N.T.S
SHEET OF
DRAWING NO.
DOL-001
A





NOTES:

1. THE GENERATOR / MAINS CHANGEOVER SWITCH HAS 3 POSITIONS.
   - MAINS
   - OFF
   - GENERATOR

TERMINAL LEGEND

- SWITCHBOARD TERMINAL
- FUSED TERMINAL

A3

REVISION HISTORY

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DRAWN	T.M	30/11/2015
CHECKED	T.M	30/11/2015
APPROVED		

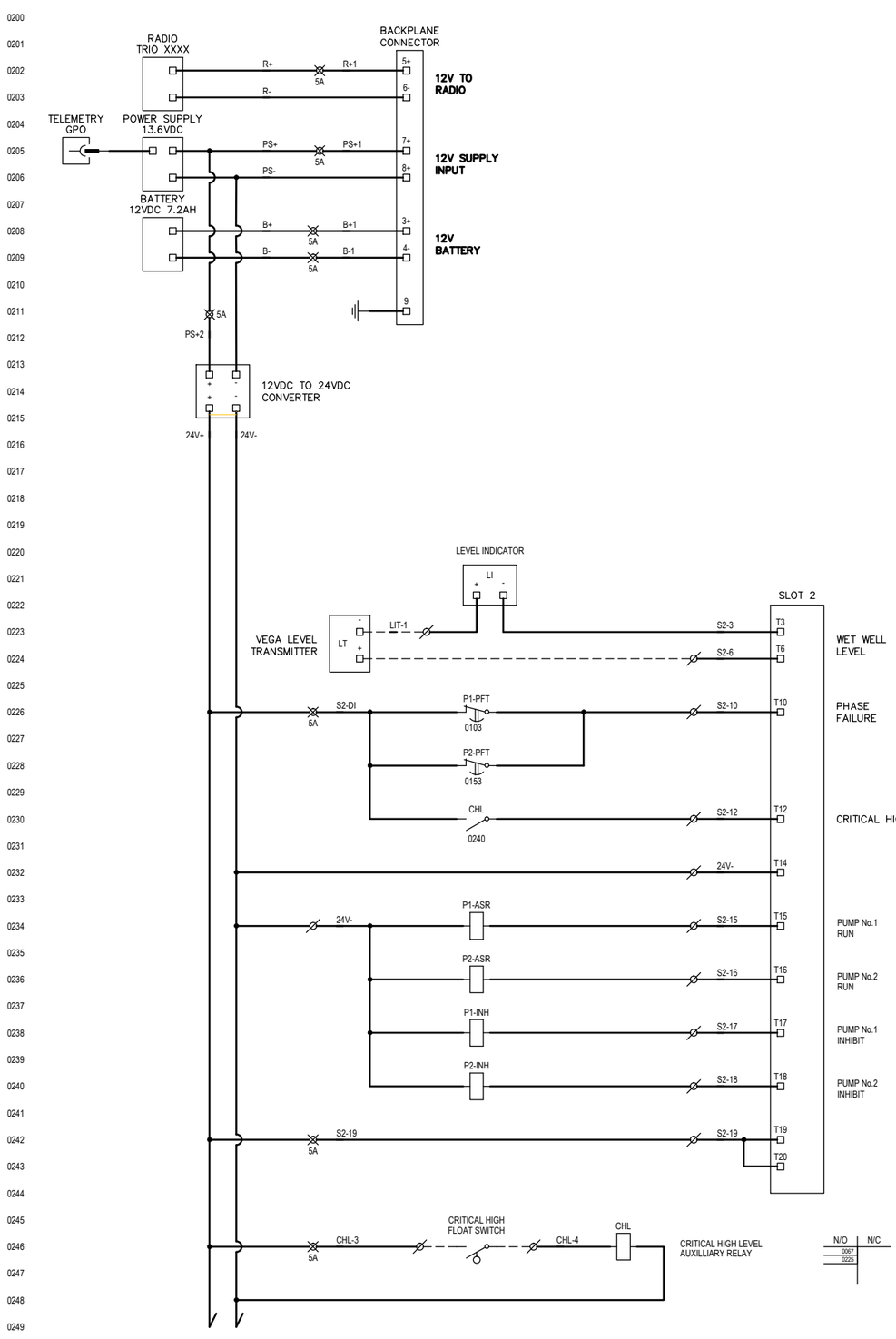
CONTRACTOR INFORMATION

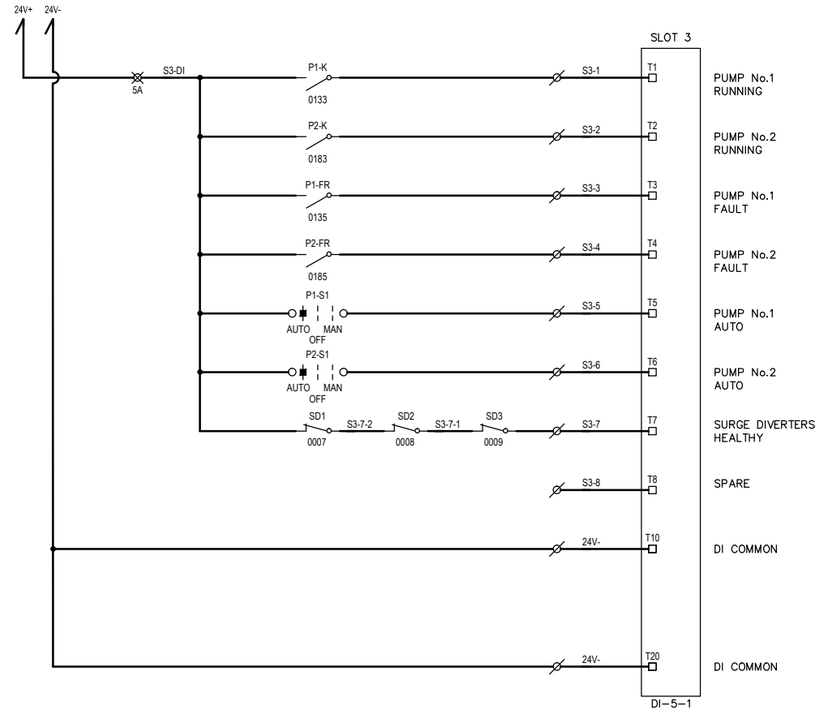
WIDE BAY WATER
31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

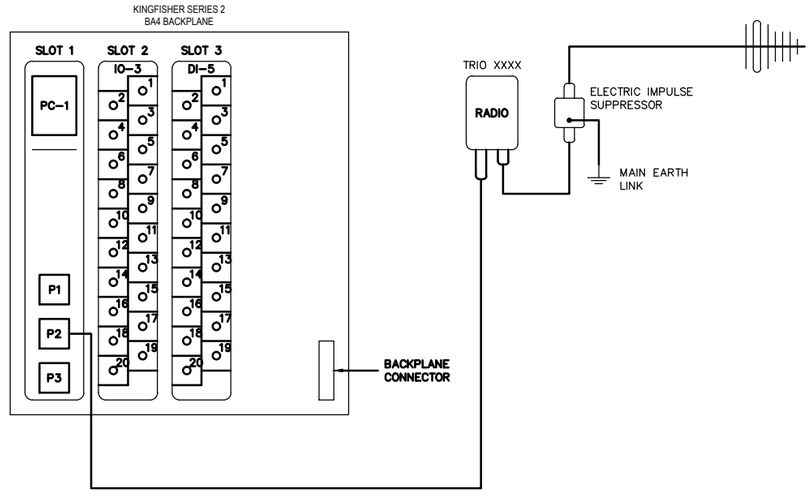
HERVEY BAY SPS

STANDARD SEWAGE PUMP STATION (DOL < 3.5KW)
THREE LINE 415V POWER DISTRIBUTION
SCHEMATIC DIAGRAM

FILE
SCALE N.T.S
SHEET OF
DRAWING NO.
DOL-001
A







TERMINAL LEGEND

- SWITCHBOARD TERMINAL
- FUSED TERMINAL

A3

REVISION HISTORY

INDEX	DATE	REVISIONS	DRAWN	CHECKED	APPROVED
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DRAWING INFORMATION

	INITIALS	DATE
DRAWN	T.M	30/11/2015
CHECKED	T.M	30/11/2015
APPROVED		

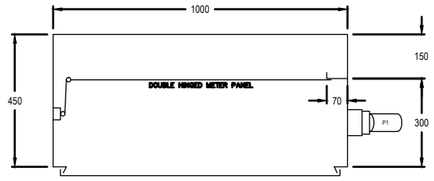
CONTRACTOR INFORMATION

WIDE BAY WATER
31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

HERVEY BAY SPS

STANDARD SEWAGE PUMP STATION (DOL < 3.5KW)
TELEMETRY WIRING
SCHEMATIC DIAGRAM

FILE
SCALE N.T.S
SHEET OF
DRAWING NO.
DOL-003
A



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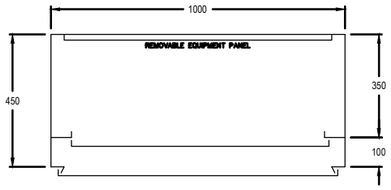

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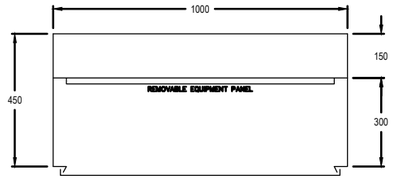

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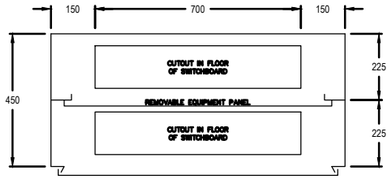

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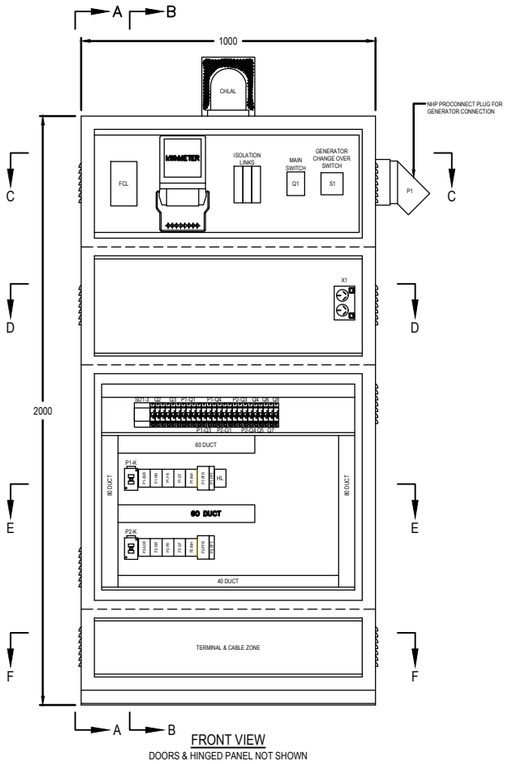
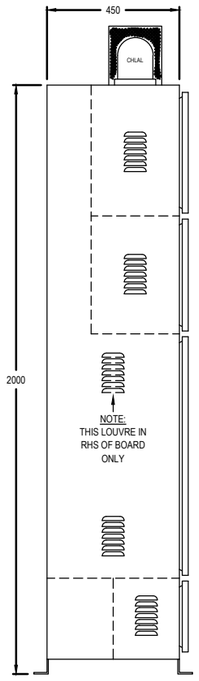


FRONT VIEW
DOORS & HINGED PANEL NOT SHOWN



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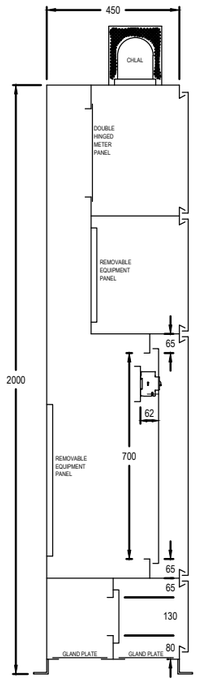
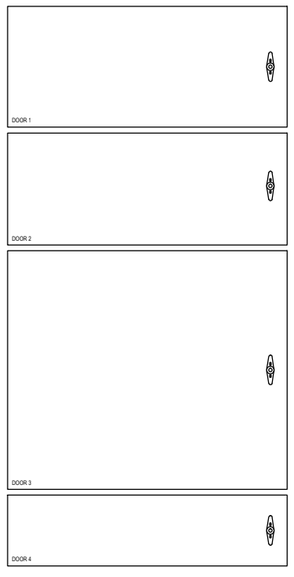
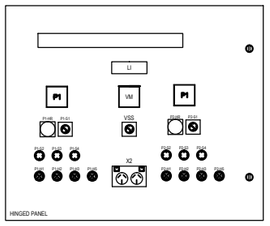


SECTION B - B



DOORS



HINGED PANEL

A3

REVISION HISTORY

INDEX	DATE	REVISIONS	DRAWN	CHECKED	APPROVED
B	29/08/2016	UPDATED WBW LOGO	R.C.		S.K.
A	30/11/2015	FOR CONSTRUCTION	T.M	T.M	

DRAWING INFORMATION

	INITIALS	DATE
DRAWN	T.M	30/11/2015
CHECKED	T.M	30/11/2015
APPROVED		

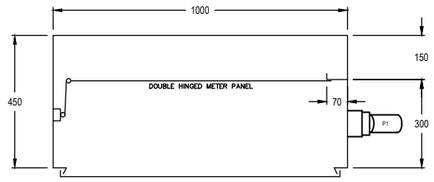
CONTRACTOR INFORMATION

WIDE BAY WATER
31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

HERVEY BAY SPS

STANDARD SEWAGE PUMP STATION (DOL < 3.5KW)
GENERAL LAYOUT

FILE
SCALE N.T.S
SHEET OF
DRAWING NO.
DOL-004
A



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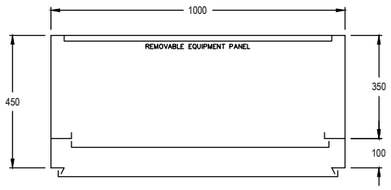

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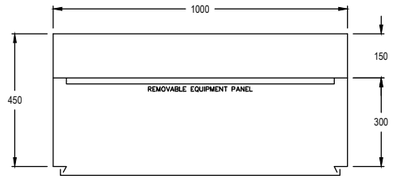

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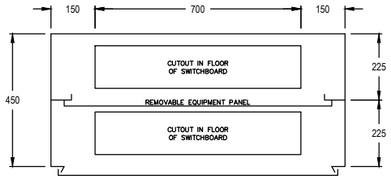
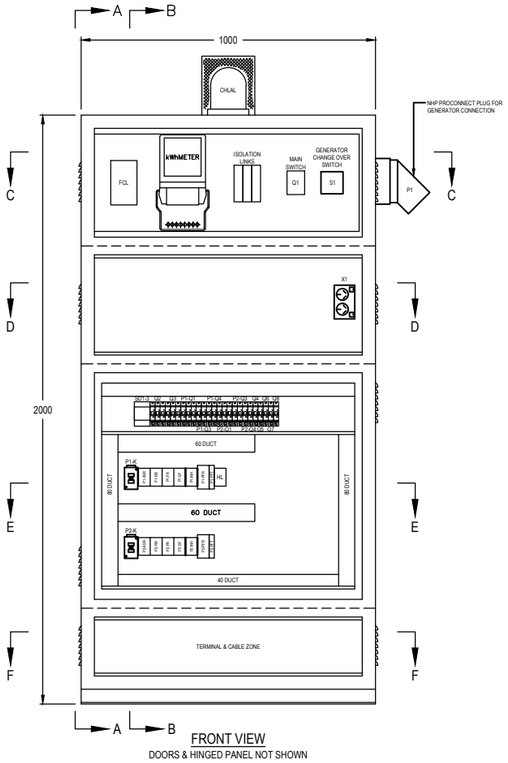
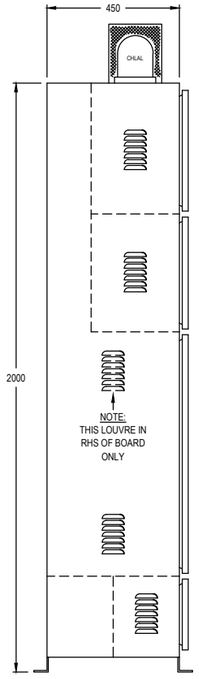


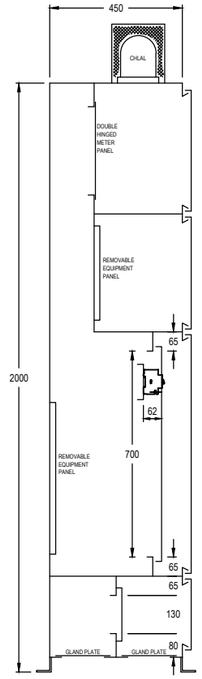
SECTION F - F



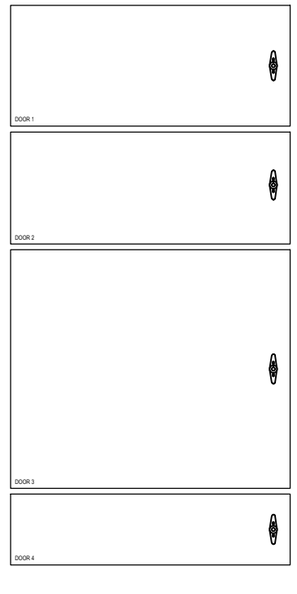
FRONT VIEW
DOORS & HINGED PANEL NOT SHOWN



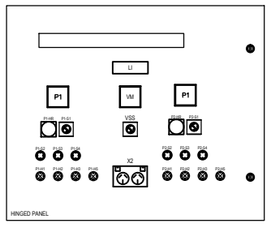
SECTION A - A



SECTION B - B



DOORS



HINGED PANEL

A3

REVISION HISTORY

INDEX	DATE	REVISIONS	DRAWN	CHECKED	APPROVED
B	29/08/2016	UPDATED WBW LOGO	R.C.		S.K.
A	30/11/2015	FOR CONSTRUCTION	T.M	T.M	

DRAWING INFORMATION

	INITIALS	DATE
DRAWN	T.M	30/11/2015
CHECKED	T.M	30/11/2015
APPROVED		

CONTRACTOR INFORMATION

WIDE BAY WATER
31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

HERVEY BAY SPS

STANDARD SEWAGE PUMP STATION (DOL < 3.5KW)
GENERAL LAYOUT
SCHEMATIC DIAGRAM

FILE
SCALE N.T.S
SHEET OF
DRAWING NO.
DOL-004
A

Item	Make & Number	Description	Label
Q1	CLIPSAL PT_____	LOAD SWITCH	MAIN SWITCH
Q2	HAGER NT340C	CIRCUIT BREAKER	Q2
Q3	HAGER NT320C	CIRCUIT BREAKER	Q3
Q4,5,6,8	HAGER NT110C	CIRCUIT BREAKERS	Q4,5,6,8
Q7,Q9	HAGER NT120C, NT104C	CIRCUIT BREAKERS	Q7,Q9
P1,2–Q1	HAGER NDN3__A	CIRCUIT BREAKERS	PUMP No.1,2
P1,2–Q3	HAGER NT310C	CIRCUIT BREAKERS	P1,2–Q3
P1,2–Q4	HAGER NT106C	CIRCUIT BREAKERS	P1,2–Q4
SD1–3	HAGER SP140D c/w AUX. CONTACT	SURGE ARRESTORS	SD1–3
NL	CLIPSAL L10A	NEUTRAL LINK	NEUTRAL
EL	CLIPSAL L10P	EARTH LINK	EARTH
FCL	NHP _____	FAULT CURRENT LIMITER FUSES	FCL
VSS	KRAUS & NAIMER CA10–A004–FT2	VOLTMETER SELECTOR SWITCH	VSS
VM	NHP 72mm SQUARE (0–500V)	VOLTMETER	VM
X1	HPM XL/777PA c/w 140CH	DOUBLE GPO	X1
X2	HPM XL/777EL30	DOUBLE E/L GPO	X2
CHLAL	CLIPSAL 545 RED c/w 547 BASE & 60W LAMP	CRITICAL HIGH LEVEL FAULT LIGHT	CHLAL
P1,2	NHP 72mm SQUARE (5xOVERRANGE)	AMMETERS	P1,2
P1,2–PFR	RHOMBERG BRASSLER SP430D	PHASE FAILURE RELAYS	PFR1,2
P1,2–PFT	NAIS PM4H MULTI RANGE	TIMERS	P1,2–PFT
P1,2–S1	KRAUS & NAIMER CA10–A211–623–FT2	SELECTOR SWITCHES	P1,2–S1
P1,2–H2	MOELLER M22–L–W c/w M22–A & M22–LED230–W	PILOT LIGHTS	AVAILABLE
P1,2–H3,4	MOELLER M22–L–Y c/w M22–A & M22–LED230–Y	PILOT LIGHTS	FAULT/WATER IN OIL
P1,2–H1	MOELLER M22–L–G c/w M22–A & M22–LED230–G	PILOT LIGHTS	RUN
P1,2–S3	MOELLER M22–DL–G c/w M22–AK10	PUSHBUTTON	START
P1,2–S2	MOELLER M22–DL–R c/w M22–AK01	PUSHBUTTON	STOP
P1,2–S4	MOELLER M22–DL–B c/w M22–AK01, & M22–K01	PUSHBUTTON	RESET
P1,2–HR	GRASSLIN UWZ48E 240V	HOUR RUN METERS	P1,2–HR
P1,2–K	SPRECHER & SCHUH CA7–____	CONTACTOR	P1,2–K
P1,2–RR,FR	FINDER	240VAC RELAY	P1,2–RR,FR
P1,2–SF	ATC 78562	WATER IN OIL RELAYS	P1,2–SF
P1,2–ASR	FINDER	24VDC RELAYS	P1,2–ASR
P1,2–F1	SPRECHER & SCHUH CEP7–___ c/w CEP7–33–P–A	ELECTRONIC OVELOAD	P1,2–F1
	SIEMENS 4mm?	TERMINALS	
P1,2–OT	TELEMECANIQUE LT3SMOOM	THERMISTOR RELAY	P1,2–OT
LI	MANN INDUSTRIES DI350	LEVEL INDICATOR	LI
	MEANWELL 5–60–12	TELEMETRY 13.6VDC POWER SUPPLY	POWER SUPPLY
	MEANWELL SD–50A–24	12/24VDC CONVERTER	DC CONVERTER
FLOAT SWITCH	ITT FLYGT HEAVY DUTY FLOAT SWITCH	CRITICAL HIGH LEVEL FLOAT SWITCH	FLOAT SWITCH
LEVEL TRANS.	VEGAWELL 72 SERIES PRESSURE TRANSDUCER	WELL LEVEL TRANSMITTER	LEVEL TRANSMITTER
	WEIDMULLER SA SERIES	TELEMETRY FUSED TERMINAL BLOCKS	
EPS	MEANWELL DR–4524	240VAC TO 24VDC POWER SUPPLY	EPS

A3

REVISION HISTORY

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DRAWING INFORMATION

	INITIALS	DATE
DRAWN	T.M	30/11/2015
CHECKED	T.M	30/11/2015
APPROVED		

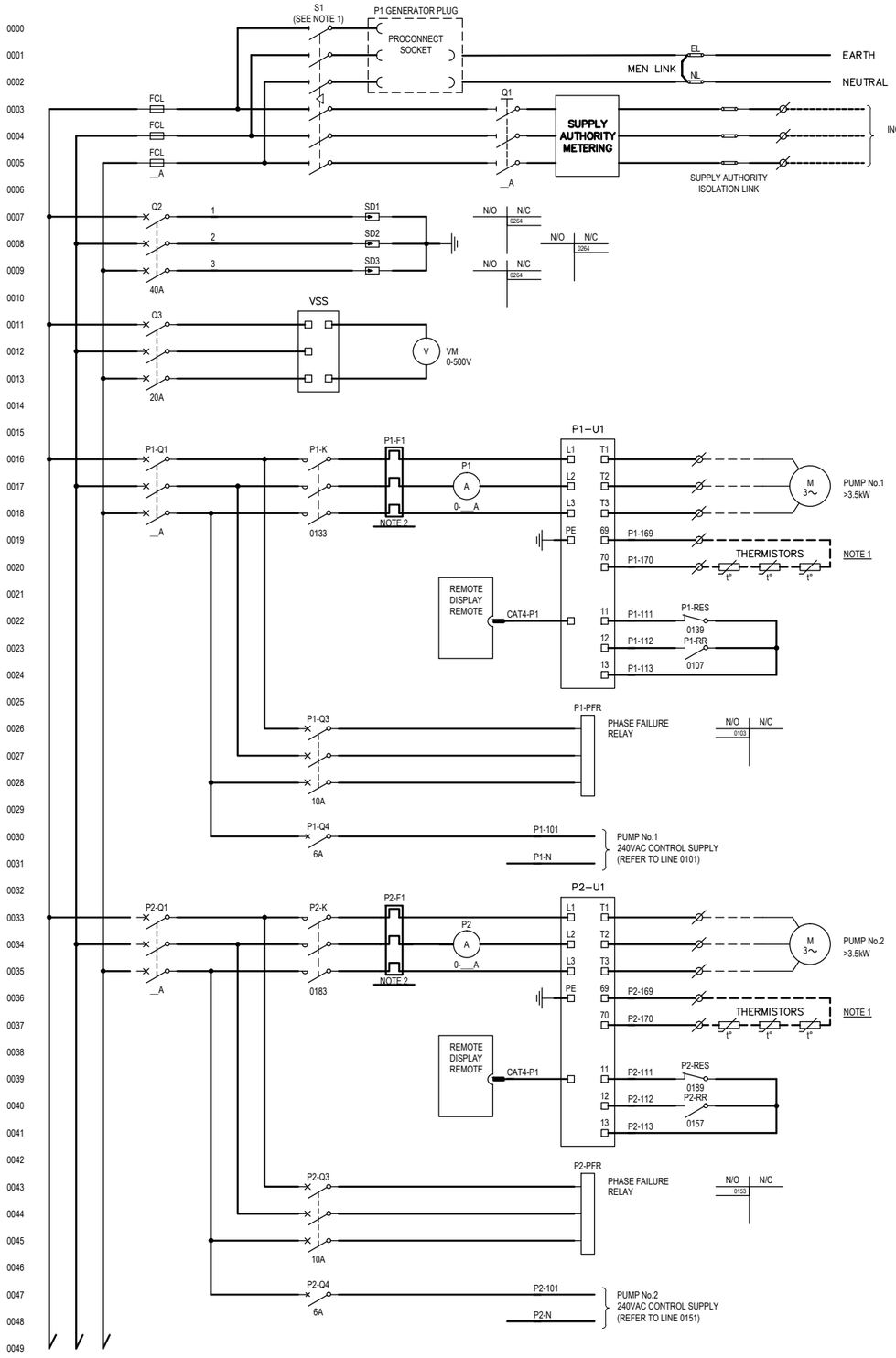
CONTRACTOR INFORMATION

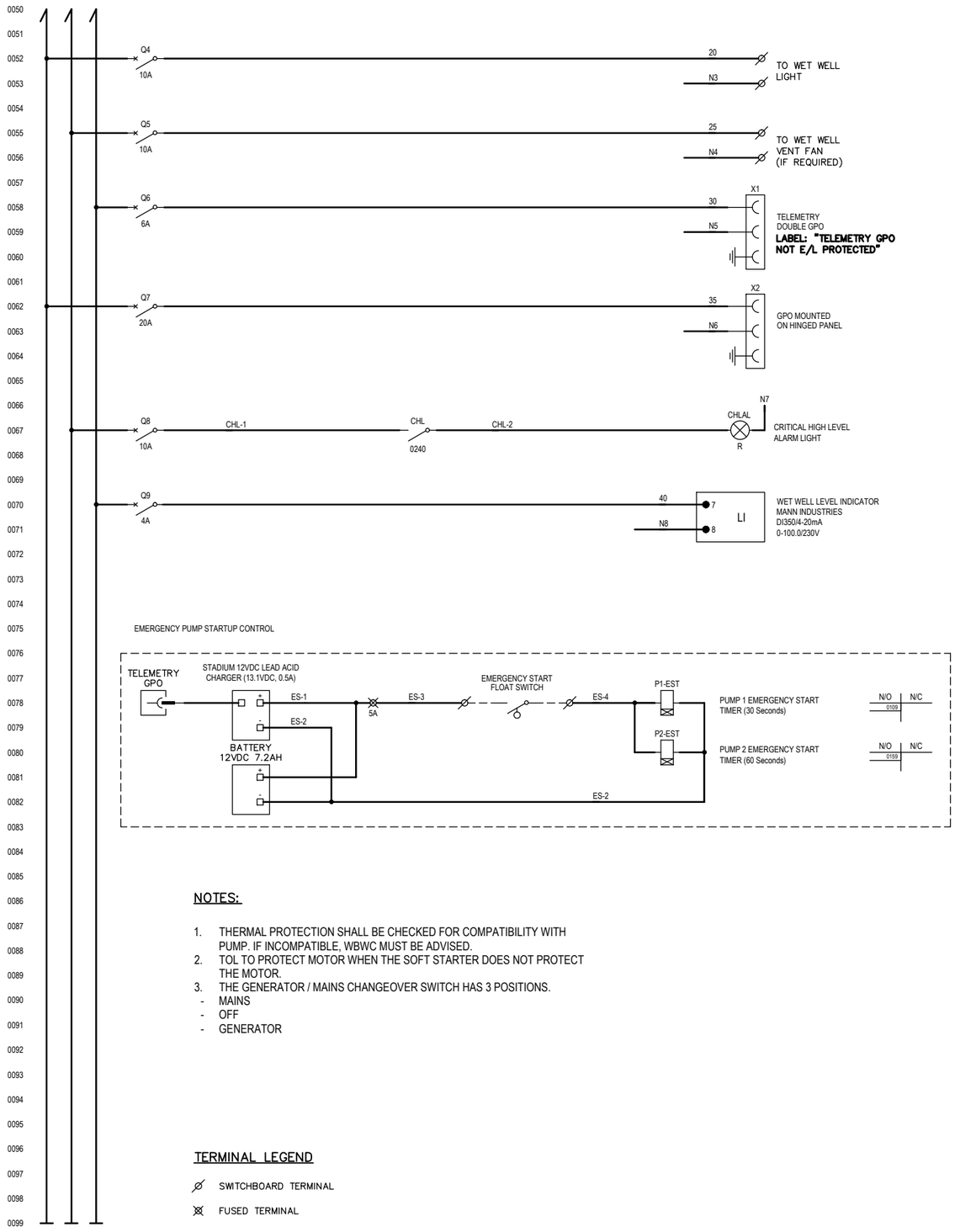
WIDE BAY WATER
31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

HERVEY BAY SPS

STANDARD SEWAGE PUMP STATION (DOL < 3.5KW)
EQUIPMENT LIST

FILE
SCALE N.T.S
SHEET OF
DRAWING NO. DOL-006
A





NOTES:

1. THERMAL PROTECTION SHALL BE CHECKED FOR COMPATIBILITY WITH PUMP. IF INCOMPATIBLE, WBWC MUST BE ADVISED.
2. TOL TO PROTECT MOTOR WHEN THE SOFT STARTER DOES NOT PROTECT THE MOTOR.
3. THE GENERATOR / MAINS CHANGEOVER SWITCH HAS 3 POSITIONS.
   - MAINS
   - OFF
   - GENERATOR

TERMINAL LEGEND

- ⌀ SWITCHBOARD TERMINAL
- ⊠ FUSED TERMINAL

A3

REVISION HISTORY

INDEX	DATE	REVISIONS	DRAWN	CHECKED	APPROVED
B	29/08/16	UPDATED WBW LOGO	R.C.		S.K.
A	30/11/2015	FOR CONSTRUCTION	T.M	T.M	

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DRAWN	T.M	30/11/2015
CHECKED	T.M	30/11/2015
APPROVED		

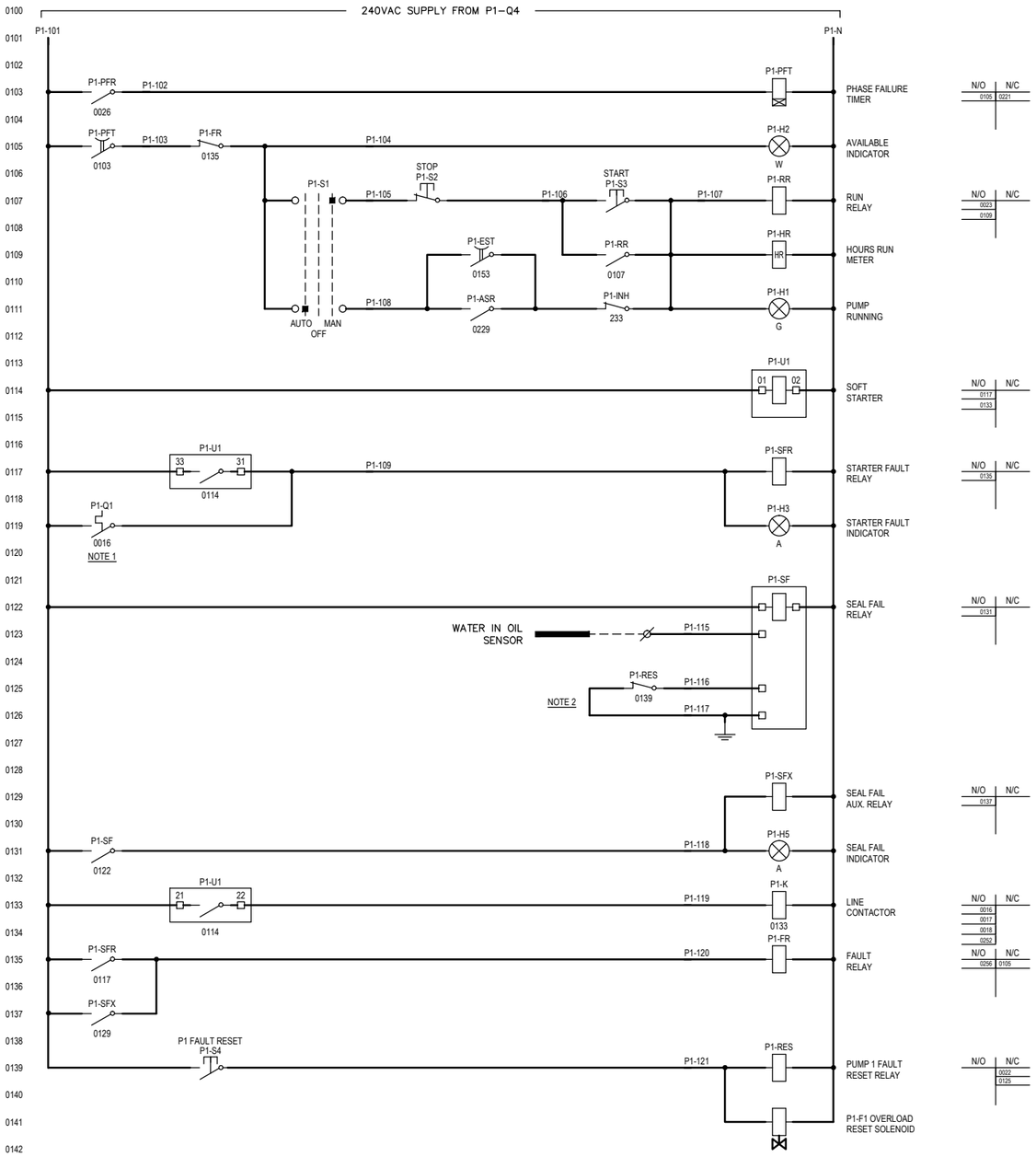
CONTRACTOR INFORMATION

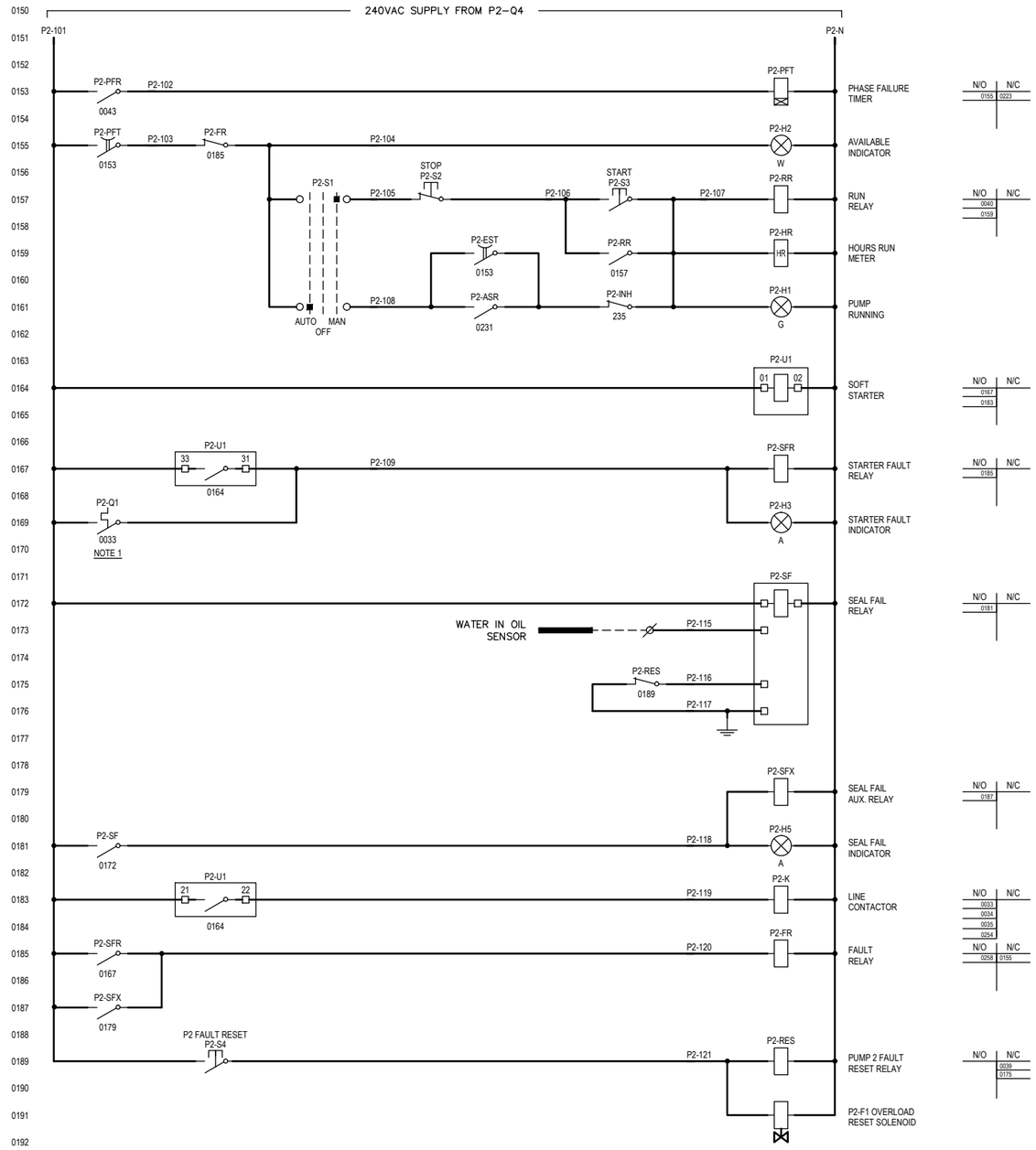
WIDE BAY WATER
31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

HERVEY BAY SPS

STANDARD SEWAGE PUMP STATION (SS > 3.5KW)
THREE LINE 415V POWER DISTRIBUTION
SCHEMATIC DIAGRAM

FILE
SCALE N.T.S
SHEET OF
DRAWING NO.
SS-001
A





NOTE:

1. ADJUSTABLE TOL TO PROTECT MOTOR WHEN THE SOFT STARTER DOES NOT PROTECT THE MOTOR.
2. SEAL FAILURE PROTECTION SHALL BE CHECKED FOR COMPATABILITY WITH PUMP.

TERMINAL LEGEND

- SWITCHBOARD TERMINAL
- FUSED TERMINAL

A3

REVISION HISTORY

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APPROVED		

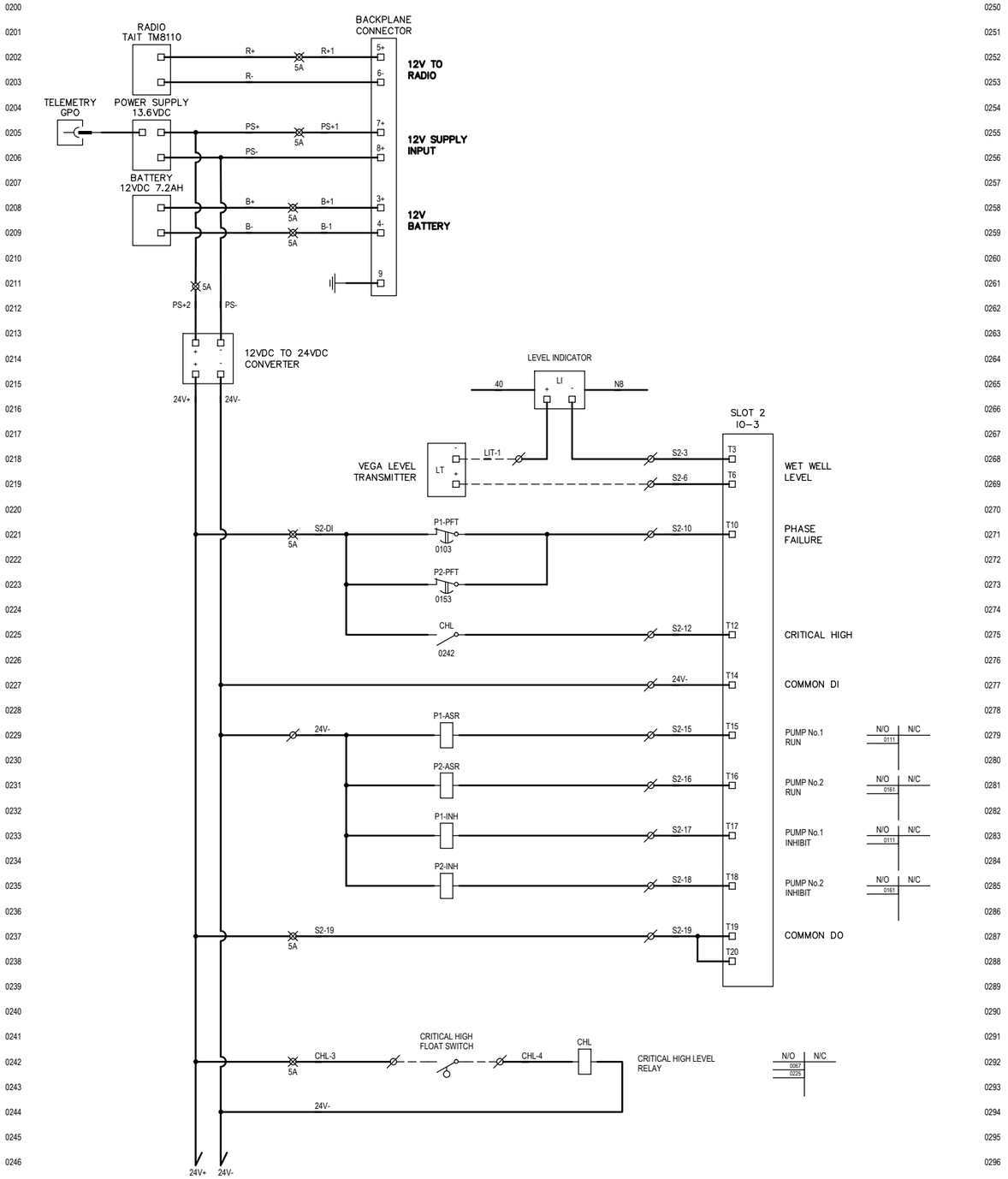
CONTRACTOR INFORMATION

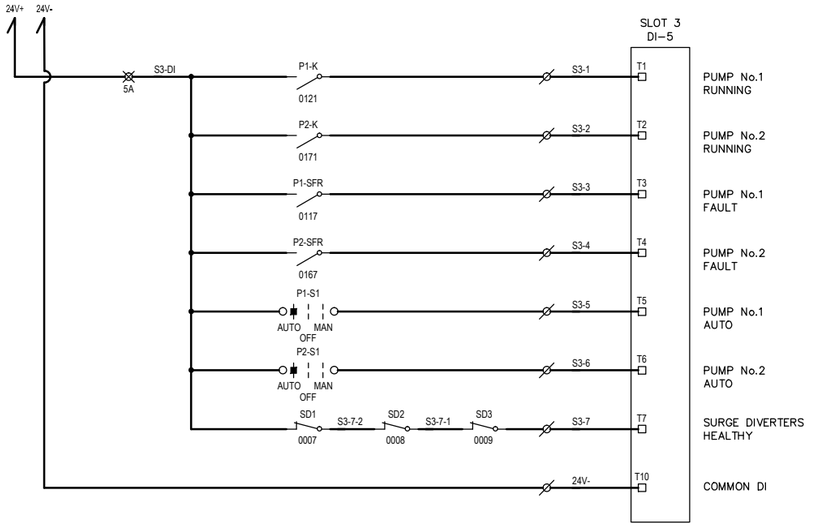
WIDE BAY WATER
31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

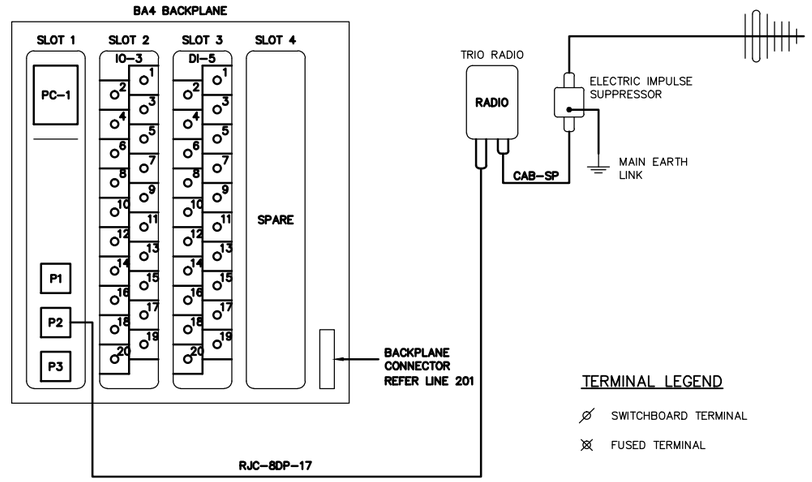
HERVEY BAY SPS

STANDARD SEWAGE PUMP STATION (SS > 3.5KW)
PUMP CONTROLS
SCHEMATIC DIAGRAM

FILE
SCALE N.T.S
SHEET OF
DRAWING NO.
SS-002
A







A3

REVISION HISTORY

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CHECKED	T.M	30/11/2015
APPROVED		

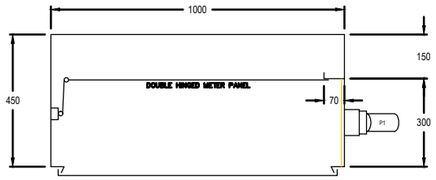
CONTRACTOR INFORMATION

WIDE BAY WATER
31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

HERVEY BAY SPS

STANDARD SEWAGE PUMP STATION (SS > 3.5KW)
TELEMETRY WIRING
SCHEMATIC DIAGRAM

FILE
SCALE N.T.S
SHEET OF
DRAWING NO.
SS-003
A



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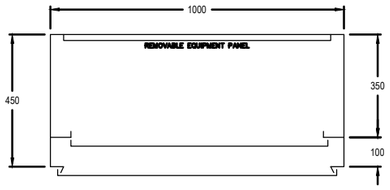

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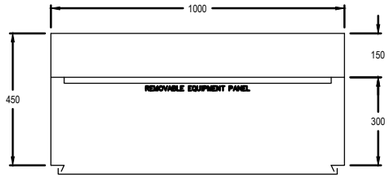

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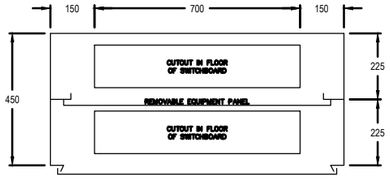

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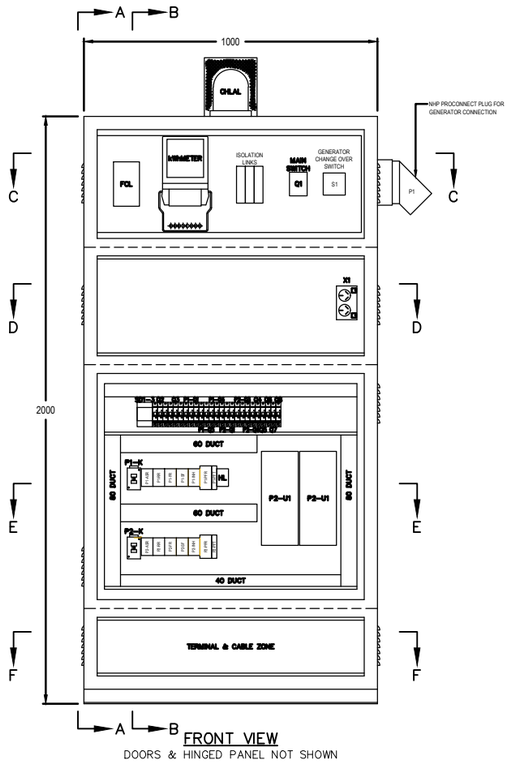
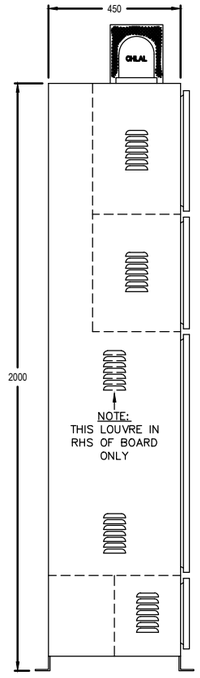


FRONT VIEW

DOORS & HINGED PANEL NOT SHOWN



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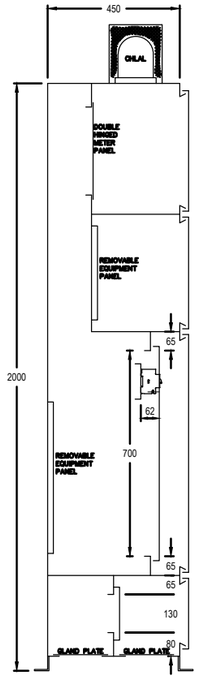

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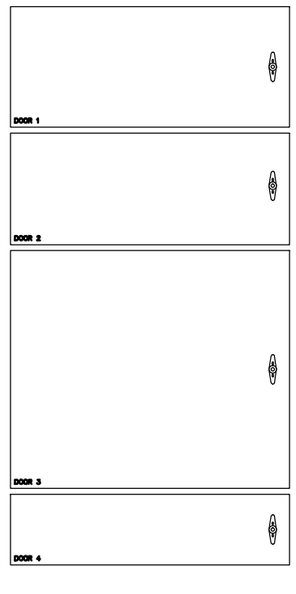
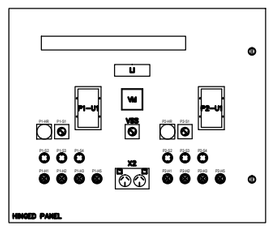


DOORS



HINGED PANEL

A3

REVISION HISTORY

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CONTRACTOR INFORMATION

WIDE BAY WATER
31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

HERVEY BAY SPS

STANDARD SEWAGE PUMP STATION (SS > 3.5KW)
GENERAL LAYOUT

FILE

SCALE N.T.S

SHEET OF

DRAWING NO.

SS-004

A

PROJECT:	STANDARD SEWAGE PUMP STATION
JOB NO:	_____
ITEM:	MCC Construction Notes
DOCUMENT NO:	Drawing No._____
DESIGN DETAILS: -	
Place of installation	Outdoor
Type of installation	Stationary
S.C.A. Design	Custom
S.C.A. Detail	Front Access, Front Connect, Bottom Entry / Exit
Current Rating	80A
Frequency	50 Hz
Rated Voltage (operational)	415 VAC 3 Phase and Neutral
Control Voltage	240VAC / 24VDC
Insulation Rating	0.6 / 1 kV
Short Circuit withstand Current	___ kA for 1 second
Type Tested in accordance with	AS3439.1
Arc Fault Containment	Not Specified
Segregation Classification	Form 2 to AS3439.1
Degree of Protection	IP55 to AS1939
Internal Degree of Protection	IP20
Design Ambient Temperature	40°C
Design Temperature Rise	50°C above Ambient
Earthing System	Men
Men Link	Required
CONSTRUCTION DETAILS: -	
Cubicle Material	3mm thick Marine Grade Aluminium
Equipment Panels	2mm thick Marine Grade Aluminium
Fixings	All Fixings shall be Chrome Plated
Welding	Fully Welded
Sealing Against Sewer Gas	Switchboard to be Sealed to Limit Ingress of Sewer Well Gases
Stiffening	To prevent warping and form a rigid enclosure
Plinth – Material Type	Steel Angle
Plinth – Material Dimensions	50 x 50 x 6 mm
Plinth – Finish	Hot Dip Galvanised
Gland Plates	3mm thick Aluminium fitted with gasket and fixed with M6 Hex Head Bolts, Earthed as Necessary
Door Sealing	Adhesive backed Neoprene Rubber
Hinges Doors / Hinged Panel	Stainless Steel
Door Lock – Door 1	Chrome Plated "T" Handle Lockwood LW8474 for Ergon (Qld Locksmiths)
Door Locks – Doors 2, 3, 4	Chrome Plated Lockable (keyed 92268) "T" Handles
Escutcheon Locks	1/4 turn with Slotted Insert
Three Point Locking	Required
Door Earthing	Earth Doors with 6mm? Tinned Copper Braid
Door Opening	110° min
Door Stays	Drop Stays
Equipment Shrouding	IP20 for Controlgear
Drawing Holder	Fit to Rear of Door 3
Legend Card Holder	Fit to Rear of Door 3
Meter Panel	Double Hinged / 6mm Laminated Phoenelic Resin
Ventilation	Louvres with Mesh Gauze and removable Filter Material, refer drawing for detail
Door Switch Brackets	Fit Door Switch Brackets to Cubicle Body, refer drawing for detail

PAINTING: -	
Paint Type	Polyester Powdercoat to 40 Micron Minimum thickness
Preparation	Grind Smooth all Welds, Descale and Degrease
Exterior / Doors Colour	Dulux Mist Green No.36648
Interior Colour	Dulux White No.19143
Equipment Panel Colour	White
Escutcheon Colour	White
CABLE DETAILS: -	
Power	V75 0.6 / 1 kV Multi–Stranded, Min. Size 2.5mm (7/0.67)
Control	V75 0.6 / 1 kV Tinned Flexible, Min. Size 1.5mm (30/0.25)
Protection / Metering	V90 0.6 / 1 kV Tinned Flexible, Min. Size 1.5mm (30/0.25)
Colours:	
Power Wiring to 16mm	Red, White, Blue
Power Wiring above 16mm	Red With Phase Identification at Cable Ends
Phase Neutral	Black
Earth	Green Yellow
Control Active 240VAC	Pump 1 – Red / Pump 2 – White
Control Neutral 240VAC	Black
Control Positive ELV	Brown
Control Negative ELV	Grey
Thermistors & No Volt Contacts	Orange
Telemetry	Violet
Screen Analog Positive	White
Screen Analog Negative	Black
Terminations:	
Control Cable Identification	Brady Marking System (Clear Plastic Sleeves with Insertable Tabs)
Cable Ends	Metal Ferrules / Crimp Lugs as Necessary
Mains Incoming	Direct into Main Switch
Outgoing	Direct Onto Terminals
Control	Terminals
LABELS: -	
Material	Traffolyte
Fixings External	316 Grade Stainless Steel Metal Threads and Adhesive
Fixings Internal	316 Grade Stainless Steel Metal Threads and Adhesive
Mounting	Labels to be secured to Equipment Panels
General Labels	WBW / 4mm Letters
Warning Labels	WRW / 6mm Letters
Danger Labels	RWR / 6mm Letters
Drive Labels	WBW / 6mm Letters
Main Switch Labels	RWR / 8mm Letters
S.C.A. Main Label	WBW / 20mm Letters

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REVISION HISTORY

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A	30/11/2015	FOR CONSTRUCTION	T.M	T.M	

DRAWING INFORMATION

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CHECKED	T.M	30/11/2015
APPROVED		

CONTRACTOR INFORMATION

WIDE BAY WATER
31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

HERVEY BAY SPS

STANDARD SEWAGE PUMP STATION (SS > 3.5KW)
CONTRUCTION NOTES

FILE
SCALE N.T.S
SHEET OF
DRAWING NO.
SS-005
A

Item	Make & Number	Description	Label
Q1	CLIPSAL PT__	LOAD SWITCH	MAIN SWITCH
Q2	HAGER NT340C	CIRCUIT BREAKER	Q2
Q3	HAGER NT320C	CIRCUIT BREAKER	Q3
Q4,5,6,8	HAGER NT110C	CIRCUIT BREAKERS	Q4,5,6,8
Q7,Q9	HAGER NT120C, NT104C	CIRCUIT BREAKERS	Q7,Q9
P1,2–Q1	HAGER NDN3__A	CIRCUIT BREAKERS	PUMP No.1,2
P1,2–Q3	HAGER NT310C	CIRCUIT BREAKERS	P1,2–Q3
P1,2–Q4	HAGER NT106C	CIRCUIT BREAKERS	P1,2–Q4
SD1–3	HAGER SP140D c/w AUX. CONTACT	SURGE ARRESTORS	SD1–3
NL	CLIPSAL L10A	NEUTRAL LINK	NEUTRAL
EL	CLIPSAL L10P	EARTH LINK	EARTH
FCL	NHP 80AMP	FAULT CURRENT LIMITER FUSES	FCL
VSS	KRAUS & NAIMER CA10–A004–FT2	VOLTMETER SELECTOR SWITCH	VSS
VM	NHP 72mm SQUARE (0–500V)	VOLTMETER	VM
X1	HPM XL/777PA c/w 140CH	DOUBLE GPO	X1
X2	HPM XL/777EL30	DOUBLE E/L GPO	X2
CHLAL	CLIPSAL 545 RED c/w 547 BASE & 60W LAMP	CRITICAL HIGH LEVEL FAULT LIGHT	CHLAL
P1,2	NHP 72mm SQUARE (5xOVERRANGE)	AMMETERS	P1,2
P1,2–PFR	RHOMBERG BRASSLER SP430D	PHASE FAILURE RELAYS	PFR1,2
P1,2–PFT	NAIS PM4H MULTI RANGE	TIMERS	P1,2–PFT
P1,2–S1	KRAUS & NAIMER CA10–A211–623–FT2	SELECTOR SWITCHES	P1,2–S1
P1,2–H2	MOELLER M22–L–W c/w M22–A & M22–LED230–W	PILOT LIGHTS	AVAILABLE
P1,2–H3	MOELLER M22–L–Y c/w M22–A & M22–LED230–Y	PILOT LIGHTS	FAULT
P1,2–H1	MOELLER M22–L–G c/w M22–A & M22–LED230–G	PILOT LIGHTS	RUN
P1,2–S3	MOELLER M22–DL–G c/w M22–AK10	PUSHBUTTON	START
P1,2–S2	MOELLER M22–DL–R c/w M22–AK01	PUSHBUTTON	STOP
P1,2–S4	MOELLER M22–DL–B c/w M22–AK01, & M22–K01	PUSHBUTTON	RESET
P1,2–HR	GRASSLIN UWZ48E 240V	HOUR RUN METERS	P1,2–HR
P1,2–K	SPRECHER & SCHUH CA7–____	CONTACTOR	P1,2–K
P1,2–RR,FR	FINDER	240VAC RELAY	P1,2–RR,FR
P1,2–ASR	FINDER	24VDC RELAYS	P1,2–ASR
P1,2–F1	SPRECHER & SCHUH CEP7–___ c/w CEP7–33–P–A	ELECTRONIC OVELOAD	P1,2–F1
	SIEMENS 4mm?	TERMINALS	
LI	MANN INDUSTRIES DI350	LEVEL INDICATOR	LI
	MEANWELL 5–60–12	TELEMETRY 13.6VDC POWER SUPPLY	POWER SUPPLY
	MEANWELL SD–50A–24	12/24VDC CONVERTER	DC CONVERTER
FLOAT SWITCH	ITT FLYGT HEAVY DUTY FLOAT SWITCH	CRITICAL HIGH LEVEL FLOAT SWITCH	FLOAT SWITCH
FLOAT SWITCH	ITT FLYGT HEAVY DUTY FLOAT SWITCH	EMERGENCY START FLOAT SWITCH	FLOAT SWITCH
LEVEL TRANS.	VEGAWELL 72 SERIES PRESSURE TRANSDUCER	WELL LEVEL TRANSMITTER	LEVEL TRANSMITTER
	WEIDMULLER SA SERIES	TELEMETRY FUSED TERMINAL BLOCKS	
EPS	MEANWELL DR–4524	240VAC TO 24VDC POWER SUPPLY	EPS
P1,2–U1	EMOTRON SOFT STARTER MSF RANGE	SOFT STARTER	P1,2–U1

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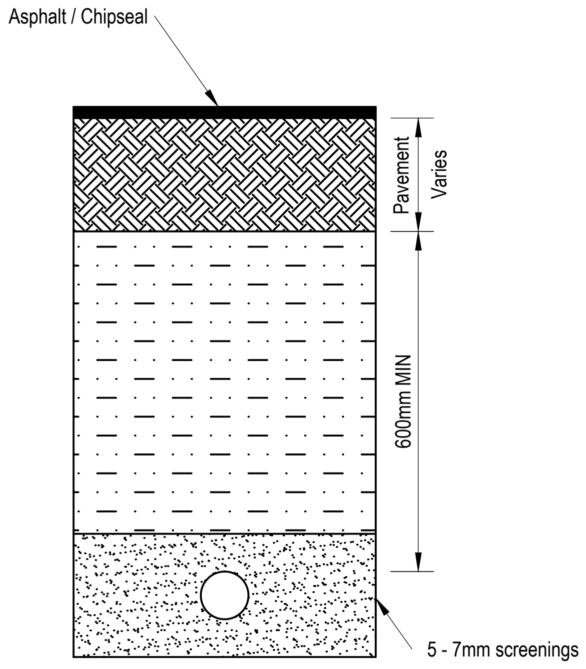
CONTRACTOR INFORMATION

WIDE BAY WATER
31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

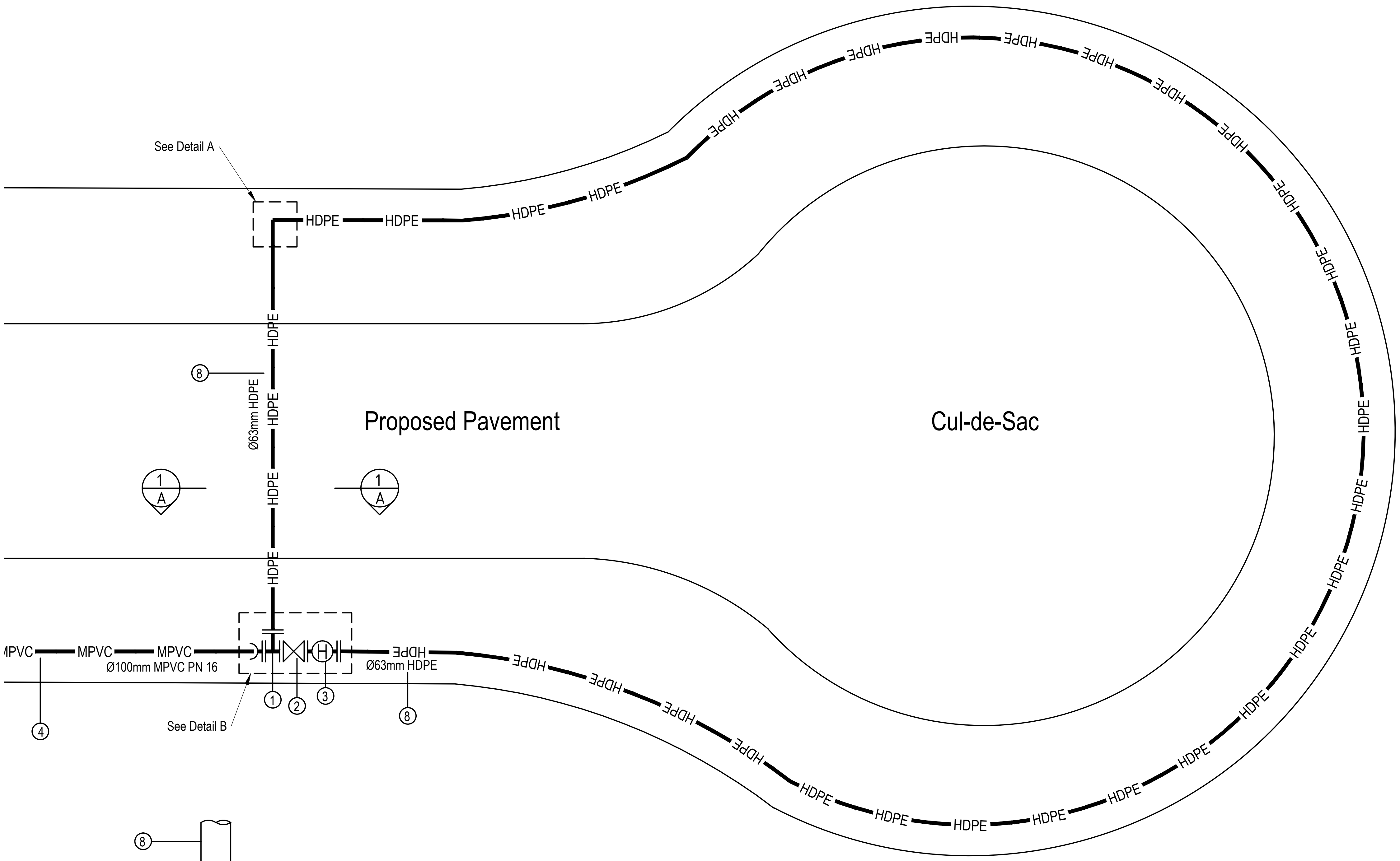
HERVEY BAY SPS

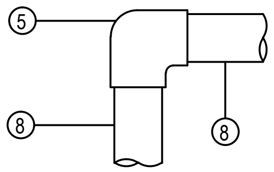
STANDARD SEWAGE PUMP STATION (SS > 3.5KW)
EQUIPMENT LIST

FILE
SCALE N.T.S
SHEET OF
DRAWING NO. SS-006 A



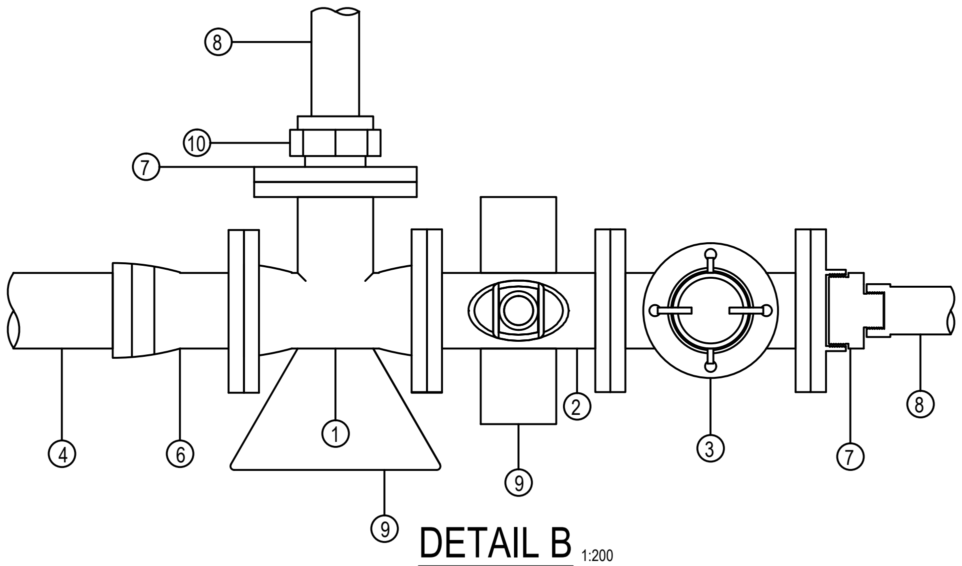
SECTION A 1:200





DETAIL A 1:200

FITTING NO.	DESCRIPTION
1	100mm FL-FLxFL Tee
2	100mm FL RSV
3	100mm x 80mm FL-FLxFL Hydrant Assembly
4	100mm Pipe SO-SP
5	63mm Plasson Elbow
6	100mm SO-FL Connector
7	100mm x 63mm Vinidex FL Reducer
8	63mm OD HDPE Pipe
9	Thrust Block to Suit
10	100mm to 63mm Plasson Reducer



DETAIL B 1:200

2 0 2 4 m
1 : 150

A3

REVISION HISTORY

INDEX	DATE	REVISIONS	DRAWN	CHECKED	APPROVED
A	29/08/2016	UPDATED WBW LOGO	R.C.		S.K.

DRAWING INFORMATION

	NAME	DATE
DESIGN	R.CATLING	16/12/15
DRAWN	R.CATLING	16/12/15
CHECKED		
APPROVED	S.KHAN	18/12/15
APPROVED		

SIGNED

WBW
WIDE BAY WATER
29-31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

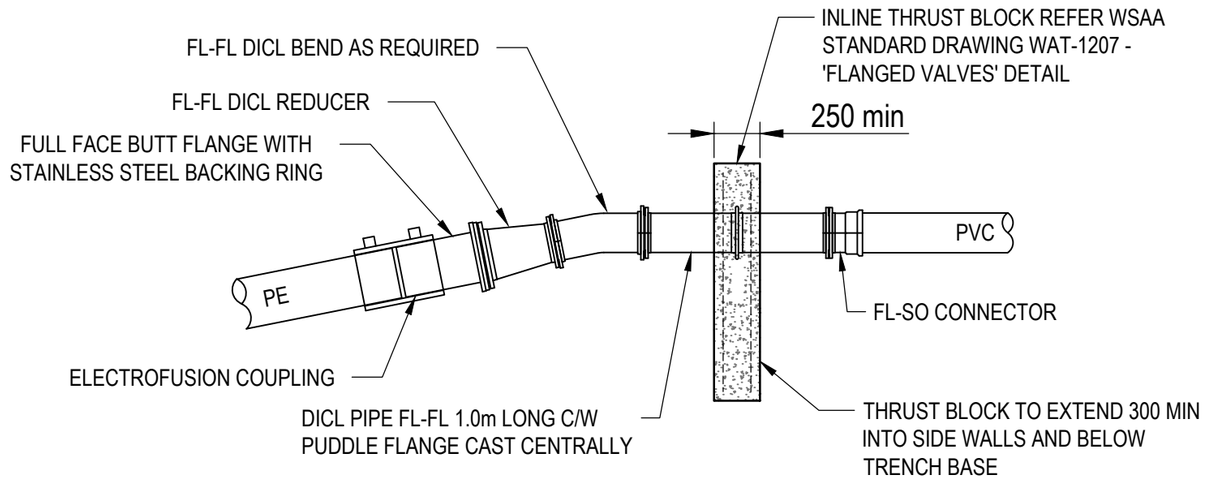
WIDE BAY WATER

STANDARD DRAWINGS
CUL-DE-SAC DETAIL

FILE
SCALE N.T.S.
SHEET OF
DRAWING NO. WM 01
REV.

NOTES:

1. THRUST BLOCKS MUST MEET MINIMUM DIMESIONAL REQUIREMENTS AS SPECIFIED IN CONNECTION DETAIL AS WELL AS MINIMUM VOLUME REQUIREMENTS SPECIFIED IN WSA 02-2002 DRAWING NO. WSA1207



TYPICAL PVC TO PE CONNECTION

ELEVATION DETAIL - NOT TO SCALE

COMPONENT SIZES WITH SIMILAR INTERNAL DIAMETERS						
PVC-O PN16	HDPE100 PN16			HDPE100 PN20		
NOMINAL DIAMETER	NOMINAL DIAMETER	SS BACKING RING	DICL TAPER	NOMINAL DIAMETER	SS BACKING RING	DICL TAPER
DN100	DN140	140x125	100x125	DN160	160x150	150x100
DN150	DN200	200x200	200x150	DN225	225x200	200x150
DN200	DN280	280x250	250x200	DN280	280x250	250x200
DN250	DN355	355x300	300x250	DN355	355x300	300x250
DN300	DN400	400x375	375x300	DN450	450x450	450x300
DN375	DN500	500x500	500x375	DN500	500x500	500x375

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APPROVED	S.KHAN	18/12/15
APPROVED		
	NAME	DATE

SIGNED

WIDE BAY WATER

29-31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

WIDE BAY WATER

STANDARD DRAWINGS
PE TO PVC CONNECTION DETAIL

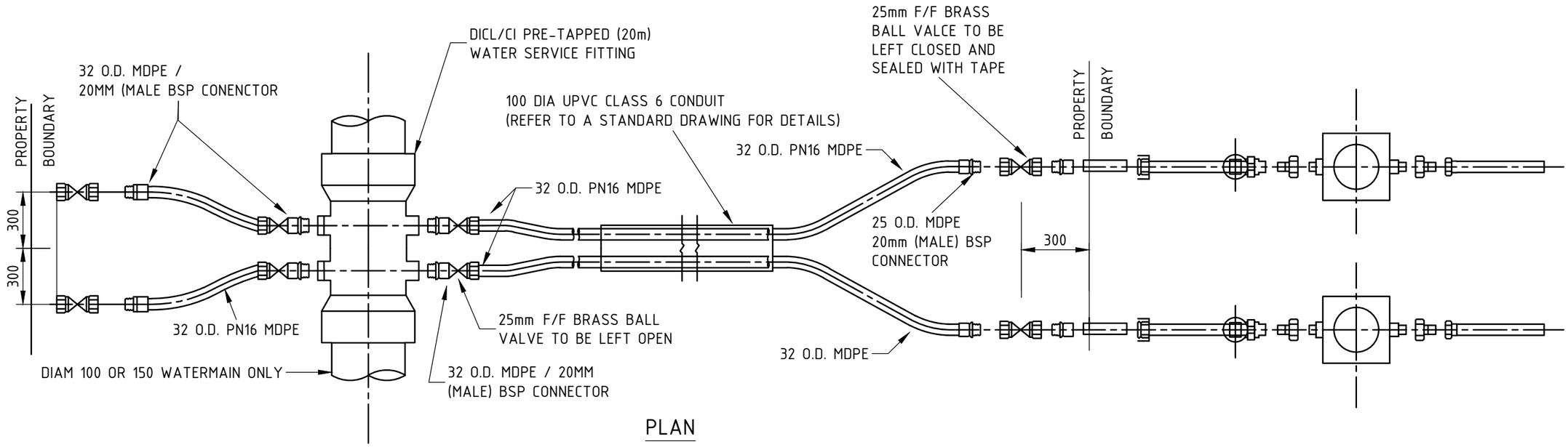
FILE

SCALE N.T.S.

SHEET OF

DRAWING NO. WM 02

REV.

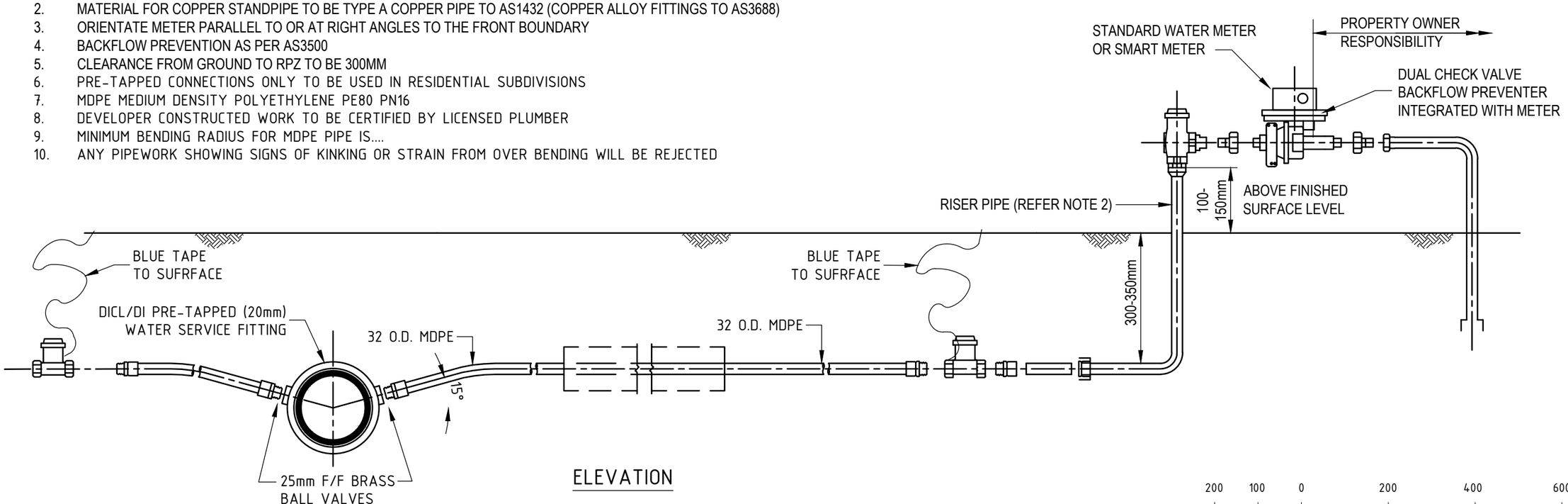


PLAN

32 O.D. [25 NOM. DIA.]
TYPICAL SERVICE CONNECTION

NOTES:

1. ALL DIMENSIONS IN MILLIMETERS
2. MATERIAL FOR COPPER STANDPIPE TO BE TYPE A COPPER PIPE TO AS1432 (COPPER ALLOY FITTINGS TO AS3688)
3. ORIENTATE METER PARALLEL TO OR AT RIGHT ANGLES TO THE FRONT BOUNDARY
4. BACKFLOW PREVENTION AS PER AS3500
5. CLEARANCE FROM GROUND TO RPZ TO BE 300MM
6. PRE-TAPPED CONNECTIONS ONLY TO BE USED IN RESIDENTIAL SUBDIVISIONS
7. MDPE MEDIUM DENSITY POLYETHYLENE PE80 PN16
8. DEVELOPER CONSTRUCTED WORK TO BE CERTIFIED BY LICENSED PLUMBER
9. MINIMUM BENDING RADIUS FOR MDPE PIPE IS....
10. ANY PIPEWORK SHOWING SIGNS OF KINKING OR STRAIN FROM OVER BENDING WILL BE REJECTED



ELEVATION

200 100 0 200 400 600 mm

1 : 10

A3

REVISION HISTORY

INDEX	DATE	REVISIONS	DRAWN	CHECKED	APPROVED
A	29/08/2016	UPDATED WBW LOGO	R.C.		S.K.

DRAWING INFORMATION

	NAME	DATE
DESIGN	R.CATLING	16/12/15
DRAWN	R.CATLING	16/12/15
CHECKED		
APPROVED	S.KHAN	18/12/15
APPROVED		

SIGNED

WIDE BAY WATER

29-31 ELLENGOWAN ST
P.O BOX 5499
HERVEY BAY, QLD, 4655

WIDE BAY WATER

STANDARD DRAWINGS
25-32mm SMART WATER METER

FILE
SCALE N.T.S.
SHEET OF
DRAWING NO. WS 01
REV.

Appendix SC6.3E List of acronyms

Abbreviation/Acronym	Description
AC	Asphaltic Concrete
ADWF	Average Dry Weather Flow
ARI	Average Recurrence Interval
AS	Australian Standard
CBR	California Bearing Ratio
CPTED	Crime Prevention Through Environmental Design
DICL	Ductile Iron Cement Lined
DN	Nominal Internal Diameter
DTMR	Department of Transport and Main Roads
EP	Equivalent Persons
ED	Equivalent Dwelling
ED	Equivalent Demand
ESA	Equivalent Standard Axles
FCRC	Fraser Coast Regional Council
FRP	Fibre Reinforced Plastic
HAT	Highest Astronomical Tide
IECA	International Erosion Control Association
IFD	Intensity-Frequency-Duration
IO	Inspection Outlet
IPWEAQ	Institute of Public Works Engineering Australia Queensland Division
L	Litre
L/ED/day	Litres /Equivalent Dwelling/Day
LIDAR	Light Detection and Ranging
MH	Maintenance Holes, Man Holes
MHWS	Mean High Water Springs
mm	Millimetre
NATA	National Association of Testing Authorities, Australia
NATSPEC	National Specification System of Australia
PE	Polyethylene
QUDM	Queensland Urban Drainage Manual
RPEQ	Registered Professional Engineer of Queensland
uPVC	Unplasticised Polyvinyl Chloride
WSUD	Water Sensitive Urban Design

Appendix SC6.3F Glossary

Terms used in the Planning scheme policy for development works have the following meaning for the purpose of this planning scheme policy.

Development Category	Definition
Commercial development category	Land included in the Principal centre zone, District centre zone, Local centre zone, Neighbourhood centre zone, High density residential (Precinct HDR1 – Hervey Bay Tourism Nodes) zone, Mixed use (Precinct MU1 – Urangan harbour) zone and Specialised centre zone.
Industrial development category	Land included in the Low impact industry zone, Medium impact industry zone and High impact industry zone.
Urban residential development category	Land included in the Low density residential zone, Medium density residential zone and High density residential zone (excluding the High density residential precinct (HDR1).