Planning Scheme Policies

Information Requirements for Applications

Local Government May Consult

Satisfying Asessment Criteria Relating to Maximum Building Height, Bulk and Density

Landscaping and Landscape Plans

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Refer to current Infrastructure Charging Policy

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~~Pedestrian and Bikeway Contributions~~

GUIDELINE

Transitional Planning Scheme Policies

(1) At the date of adoption of the IPA Planning Scheme Council retained various transitional planning scheme policies, some of which were prepared under a previous planning law and which used terminology which is consistent with the transitional planning scheme and the relevant Act.

(2) For the sake of clarity it is advised that in the use and application of those policies that following applies—

(a) where the circumstances require, terminology in the policies is to be interpreted to be consistent with the provisions of the *Integrated Planning Act 1997* (IPA) (example—references to 'rezonings' or 'consents' will be references to 'impact assessment' as the circumstances require);

(b) where the circumstances require references to terminology (including zones and uses) from the transitional planning scheme shall be adapted or amended to be consistent with the IPA Planning Scheme and where there is no direct equivalent term or provision the closest or nearest term having regard to, amongst other things, the purpose of the policy (see table below for example of zone conversion);

PROPOSED ZONE	TRANSITIONAL PLANNING SCHEME – WOONGARRA SHIRE	TRANSITIONAL PLANNING SCHEME – GOOBURRUM SHIRE
Business	Business	Local Business
		General Business
Community Purposes	Special Uses	Special Purposes
	Parks and Recreation	Parks and Recreation
	Special Facilities	Special Facilities
Industry	Light Industry	Local Industry
	Medium Industry	General Industry
	Heavy Industry	
Residential	Residential A	Non Urban Residential
	Residential B	Non Urban Residential B
	Future Urban	Village Residential
	Rural Residential	Residential A
	Residential C	Residential B
Rural	Rural	Rural A
		Rural B

(c) in all cases all necessary amendments or adaptations are to have regard to—

(i) the purpose of the policy; and

(ii) a fair and equitable outcome;

(d) if, notwithstanding the above, the necessary amendments or adaptations still remain unclear, application can be made to the Chief Executive Officer for a ruling.

CONTENTS

PSP 1: INFORMATION REQUIREMENTS FOR APPLICATIONS

PLANNING SCHEME POLICY

Division 1—Preliminary

1.1 Effective Date

This policy has effect on and from the day the IPA Planning Scheme for Burnett Shire Council commences.

1.2 Application of the policy

(1) The Local Government may request the information identified in Division 2 from the applicant to assist—

(a) the assessment of a development application;

(b) the Local Government decide under the IPA [1] that the conditions of a development permit for the operational works associated with the reconfiguring of a lot have been complied with before endorsing a plan of subdivision; or

[1] The local government must approve the plan of subdivision, if for a reconfiguration that requires operational works — the conditions of the development permit for the operational works have been complied with.

(c) the Local Government decides under the IPA[2] that adequate security is given before endorsing a plan of subdivision.

This policy identifies the supporting information the local government expects in a well-prepared application or may ask through an information request during the IDAS Information and Referral Stage (IPA Chapter 3, Part 3).

(2) While this planning scheme policy identifies a variety of information that may be required, it does not constitute a comprehensive list of all information. This policy does not limit the assessment manager's discretion under the *Integrated Planning Act 1997* to request further information.

Division 2—Information for assessment of development applications

The Local Government may request the following information—

1.3 Assessment of Urban Development outside the Coastal Towns Planning Area—

(1) Urban scale development outside the Coastal Towns Planning Area will only be considered where—

(a) the development takes the form of an integrated urban community that provides efficient and effective infrastructure networks in addition to social and community services of an appropriate scale that can be provided without adversely affecting the natural environment, infrastructure or services to the existing community; and

(b) there are sufficient planning grounds and community benefit.

(2) If an application is lodged for urban development outside the Coastal Towns Planning Area the following information should be lodged—

(a) the information required as detailed in this Planning Scheme Policy relating to general assessment and assessment against any of the relevant overlays;

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[2] The local government may approve the plan of subdivision if satisfactory security is given to ensure the compliance with the conditions of the development permit or the payment of outstanding rates, charges or expenses over the land.

(b) details of how the proposed development demonstrates sufficient planning grounds including consideration of the following issues—

(i) impacts on the locality as a result of traffic, amenity, need for additional facilities or services;

(ii) impacts and consideration of the balance of zones within the Planning Scheme area;

(iii) flood or storm surge inundation;

(iv) infrastructure provision;

(v) impact on the environment;

(vi) need; and

(vii) any other relevant matters.

(c) details of the proposed development including—

(i) a structure plan for the integrated development detailing proposed uses and relationship with surrounding land uses, infrastructure and services;

(ii) master plan and/or an indicative subdivision of the land including the road and lot layout, lot numbers and areas;

(iii) the proposed structure of titling over the land and staging of same and the proposed staging and sequencing or works in relation to any reconfiguration or land use proposed;

(iv) access points to the land and to each proposed lot;

(v) areas to be provided for open space and the proposed embellishment of those areas;

(vi) locations of recreational paths and pedestrian thoroughfares;

(vii) the location of any neighbourhood centre and an indication of the uses proposed in the centre;

(viii) location of community facilities;

(ix) location and nature of all proposed uses;

(x) location and nature of any cultural heritage significance, natural features or resources or infrastructure;

(d) a development summary including—

(i) number of lots by use;

(ii) the intended type of residential use of any proposed residential lot;

(iii) gross area (including floor areas where relevant) of each proposed use; and

(iv) road reserve widths and pavement widths; and

(v) descriptions and assessment criteria for the different forms of development including the proposed density, height and a statement of design;

(e) a social impact assessment of the proposal identifying—

(i) an appropriate mix of housing densities; and

(ii) the need and appropriate locations for community services and education facilities;

(f) the location of centres and their likely economic impact relative to other centres in the local government area and adjacent local government areas;

(g) details of how a "sense of place" for centres or community nodes and a "sense of community" is to be created;

(h) a detailed Transport Impact Assessment of the proposed development;

(i) details of how the proposal will facilitate orderly, integrated, efficient and coordinated development of the site with particular regard to—

(i) the existing use of the land and land in the vicinity of the proposal;

(ii) potential impacts on existing uses from the proposed development;

(iii) potential impacts on the proposed development from existing uses (eg impacts from rural activities);

(iv) transport connectivity and mobility, major road corridors and trunk collector streets and major access points to the road network;

(v) provision of public transport to the location;

(j) an open space and recreation needs assessment, particularly to identify—

(i) connectivity as part of an integrated open space network;

(ii) major recreational paths and facilities and major open space areas and linkages; and

(iii) local parks and other open space;

(k) details of the landscape design and streetscape works proposed as part of any visual impact and image strategy associated with the creation of a "sense of place" or "sense of community";

(l) details of the open space system including the type, location, extent and the key open space components to be provided at the time of development;

(m) details of any specific planning or development requirements, including proposed Assessment Tables and Assessment Criteria for the different land use precincts or sites;

(n) Information regarding—

(i) the location of existing and proposed infrastructure;

(ii) infrastructure affected by or required as a result of the development of the land, including infrastructure demand by development stage;

(iii) how these items of infrastructure relate to the orderly and integrated development of the development;

(o) a program showing for each item of infrastructure—

(i) the proposed stage that the particular infrastructure item is to be provided;

(ii) the intended provider;

(iii) other works which are dependent on its provision; and

(iv) any other relevant information, in particular any information contained in the Planning Scheme or a Planning Scheme Policy about the provision of infrastructure.

1.4 Assessment of all development applications

(1) If an application requiring assessment against a zone code—

(a) an assessment of how the development may contribute to or detract from achievement of the outcomes sought for the zone; and

(b) if applicable, an assessment of measures proposed to adequately manage the potential detraction from achievement of the outcomes.

(2) if an application involving the reconfiguration of land—

(a) a report detailing an appropriate Soil Erosion and Sediment Control Program prepared in accordance with Section A4 of the Soil Erosion and Sediment Control: Engineering Guidelines for Queensland Construction Sites – Institution of Engineers, Australia, QLD Division.

(3) for development involving material change of use or reconfiguration in an unsewered area—

(a) a report prepared by a suitably qualified person, in accordance with the Department of Natural Resources and Mines *On Site Sewerage Code*, detailing the suitability of the site for on site effluent disposal;

(4) for development involving a cattery or kennel—

(a) a report prepared by a suitably qualified person detailing the expected noise levels associated with the *use* of the site and measures to mitigate noise levels when measured at the site boundaries; and

(b) a report prepared by a suitably qualified person detailing how wastes from the site will be treated and disposed of.

(5) for development involving Intensive Animal Use—

(a) details of—

(A) the number of animals to be kept on the site at any time; and

(B) vehicle movements including service and delivery vehicles and proposed routes; and

(C) proposed access routes; and

(D) location of the 1:50 *ARI* level in respect of the site and all *use areas*; and

(E) existing and proposed water supply including location and capacity of existing and proposed dams; and

(F) details of all watercourses on or near the *premises*; and

(b) a report prepared by a suitably qualified person detailing the expected noise levels associated with the *use* of the site and measures to mitigate noise levels; and

(c) an agricultural land report prepared by a suitably qualified person in accordance with section 6 of *Planning Guidelines: The Identification of Good Quality Agricultural Land*; and

(d) a report prepared by a suitably qualified person detailing how wastes from the site will be treated and disposed of.

(6) For development that may create an environmental nuisance—each development submission must describe potential emissions

from the premises or activity to the surrounding environment based on the following criteria—

(a) emission characteristics or qualities;

(b) emissions amount and rate;

(c) the duration and time of an emission;

(d) whether emissions will be continuous or fluctuating;

(e) the characteristics or qualities of the environment into which an emission will be made (the receiving environment);

(f) the emissions impact on the receiving environment;

(g) the views of affected persons about the emission;

(h) the order of occupancy between the responsible person and each person affected by the proposal; and

(i) each submission should include a description of impact mitigation measures for how the potential impacts will be managed, minimised or mitigated.

(7) For development that may generate significant levels of traffic—a report prepared by a suitably qualified person detailing—

(a) the likely traffic generation associated with the *development*; and

(b) proposed measures to deal with the traffic impacts; and

(c) the likely parking requirements of the *development*; and

(d) the number of car parking spaces proposed for the *development*.

(8) for development that may result in significant environmental impact—an impact assessment and management report prepared by a suitably qualified person for development including—

(a) Extractive industry; or

(b) General agriculture; or

(c) General industry; or

(d) Intensive animal use; or

(e) Light industry; or

(f) Public utility undertaking; or

(g) Rural industry; or

(h) Undefined use.

(9) For development located in a salinity hazard area or an area with a potential to be a groundwater recharge area, a report prepared by a suitably qualified person detailing the site constraints and impacts of development in relation to salinity potential is to be submitted. The report should include the following—

(a) soil description (depth, horizon, colours, texture, moisture levels and a permeability test);

(b) Description of the landscape features and topography (including a contour plan of the site and surrounding area);

(c) water table height — assessment of soil type, landscape features (type of vegetation); level of seasonal ground water;

(d) a measurement of the salt content of soil through an electrical conductivity test; and

(e) the potential impacts of development from vegetation removal, recharging groundwater and potential risk to property.

(f) Identification of any indicators of salinity including—

(i) waterlogged areas;

(ii) crystals of salt or bare soil surfaces;

(iii) leaf damage to plants and pastures;

(iv) development of bare patches in open areas;

(v) die back of trees;

(vi) saline discharges at break of slope;

(vii) appearance of salt tolerant grasses in gardens and recreation areas;

(viii) road surfaces breaking up;

(ix) damage to structures and evidence of deterioration of bricks and mortar;

(x) rising damp in public and private buildings;

(xi) salt crusting on bricks, concrete and pavers;

(xii) deterioration of house foundations; reduced life of concrete slabs;

(xiii) corrosion of underground services (pipes and cables); and

(xiv) corrosion of metal elements; bridges and power poles.

1.5 Assessment of reconfiguration of land creating more than 20 lots

(1) A Structure Plan, in the form of a conceptual plan ensuring a comprehensive and integrated planning approach to development of land, will be required where new roads or trunk infrastructure are proposed in a development application for material change of use or reconfiguration of a lot.

(2) The Structure Plan will identify the major elements of the locality surrounding the subject site and be designed with consideration of this broader context by demonstrating how the proposed development will integrate into the existing or proposed planning framework of the surrounding community. The Structure Plan will not constitute an approval for land outside the development site, but will demonstrate that options for integration can be preserved.

(3) The major components of the site are to be designed with consideration of this broader context. It should be clear how the proposed development will integrate into the existing or proposed planning framework of the surrounding community.

(4) A Structure Plan is to include development criteria and technical reports to support the rationale of the planning framework adopted. Council will encourage innovative urban design of subdivisions to achieve the intent of the Planning Scheme.

(5) Matters to be addressed are to include, but are not limited to—

- (a) detailing proposed uses and relationship with surrounding land uses, infrastructure and services;
- (b) the local road network;
- (c) emergency services;
- (d) public transport routes;
- (e) pedestrian and cyclist networks;
- (f) land use types, lot yields and densities;
- (g) building envelopes (where involving small lot housing on lots <450m^2);
- (h) community facilities;
- (i) landscape site analysis and statement of landscape intent;
- (j) open space networks (including any waterways or wetlands);
- (k) stormwater flow paths;
- (l) environmental values and constraints;

(m) major servicing requirements;

(n) intended staging of the development.

(o) impacts on natural features or resources, cultural heritage and infrastructure;

(p) location and capacity of infrastructure to service the development; and

(q) locations of community centres including shopping, education and recreation facilities.

1.6 Assessment against Natural Features and Resource overlays

The Local Government may request the following information—

1.6.1 Extractive resources, separation areas and haul routes

(1) If an application for use or works located within an identified extractive resource or resource separation area, within 1km of an identified extractive resource area involving blasting, within 200m of an identified extractive resource area not involving blasting, or within 100m of an identified haul route—

(a) information identifying the nature and location of resources in the vicinity and assessment of how the proposed use and associated works may affect extraction of the resources.

(2) If an application is within or adjacent to a mining lease, mineral development licence or mining claim area—

(a) information identifying the nature and location of resources in the vicinity and assessment of how the proposed use and associated works may affect extraction of the resources; and

(b) information identifying the noise and dust emissions, hours of operation, proposed haul route and proposed activities.

1.6.2 Good quality agricultural land

(1) If an application involving land identified as good quality agricultural land—information in accordance with State Planning Policy 1/92 Planning Guidelines—The Identification of Good Quality Agricultural Land, including—

(a) an agricultural land report prepared by a suitably qualified person in accordance with the *Planning Guidelines*; and

(b) an agricultural economics report prepared by a suitably qualified person detailing the long term agricultural viability of the proposed lots having regard to—

(A) a range of crop types;

(B) a range of market conditions;

(C) local climatic conditions;

(D) proposed water supply; and

(E) sufficient area for proposed crops, a *dwelling* and ancillary buildings and uses.

(2) In areas where good quality agricultural land has not been identified or mapped, Council may request a detailed land suitability report to determine the agricultural status of the area for material change of use or reconfiguring a lot applications.

1.6.3 Acid sulfate soils

(1) If on land identified as being at risk from containing acid sulfate soils—

(a) identification of the lowest surface elevation, in metres above *Australian Height Datum* ("AHD"), of the subject site;

(b) identification of any filling activities of more than 500m^3 of material with an average depth of more than 0.5m^2 on any part of the site that has a surface elevation at or below 5 metres AHD;

(c) identification of any excavation of more than 100m^3 of material at or below 5m AHD or lower;

(d) identification of the maximum volume of material to be excavated at or below 5 metres AHD;

(e) information about—

(i) the height, measured in metres above AHD, of land to be filled—including a plan showing the finish level; and

(ii) volume and average depth of any fill to be placed on any part of the site below 5 metres AHD.

(f) a detailed *Acid Sulfate Soils Investigation Report* in accordance with the State Planning Policy Guideline for

SPP2/02: Planning and Managing Development Involving Acid Sulfate Soils and associated supporting technical documents to determine if acid sulfate soils are present—

(i) in the area to be disturbed by the development (see the *Guideline for Sampling and Analysis of Lowland Acid Sulfate Soils in Queensland* or updated versions for further information); and

(ii) the location, depth and severity of acid sulfate soils relevant to the proposed disturbance; and

(g) if groundwater will be extracted, including through drainage, pumping or other means of removal—a groundwater investigation in accordance with the information requirements set out in the State Planning Policy Guidelines; and

(h) if acid sulfate soil investigations demonstrate that acid sulfate soils are present and may be disturbed by the proposed excavation, filling or associated groundwater extraction—

(i) the specific location and amount of soil acidity; and

(ii) a suitably detailed management plan that demonstrates how the proposed development will achieve specific outcomes relating to acid sulfate soils in the Natural Features and Resources Overlay Code[3].

1.6.4 Declared catchment areas

(1) If an application is within a declared catchment area—information sufficient to establish the likely effect on water quality including—

(a) water quality objectives for receiving waters;

(b) site-specific discharge standards;

(c) separation distances between works and uses including wastewater discharge areas on land and—

[3] The information in both the acid sulfate soils investigation report and any proposed management strategy should be of sufficient detail for the assessment manager and any referral agencies to be satisfied that the specific outcomes of relating to acid sulphate soils in the Natural Features and Resource Overlay Code will be met.

(i) catchment waters, including watercourses, lakes and springs; and

(ii) the full supply level, planned full supply level or flood margin reserve, whichever will provide the greater distance.

(d) the capacity of vegetation or other natural features to maintain water quality by filtering sediments, nutrients and other contaminants; and

(e) any changes to storm water runoff characteristics.

1.6.5 Declared groundwater areas

(1) If an application is within a declared groundwater area—

(a) information sufficient to establish the likely effect on water quality including—

(i) land uses that may have an adverse affect; and

(ii) how land conditions have been protected.

1.6.6 Town water supply bores

(1) If an application is within 400 metres of a town water supply bore—

(a) an assessment of the capacity of existing infrastructure and the effect of the proposed use connecting; and

(b) an assessment of how the proposed use does not deteriorate the quality of water supply obtainable.

1.6.7 Watercourses, wetlands and riparian vegetation

(1) An impact assessment and management report detailing—

(a) likely impacts of the development on the integrity and function of the watercourse; and

(b) measures available or proposed to mitigate any identified likely adverse impacts of the development on the integrity and function of the natural watercourse, including the identification of distances appropriate for buffer areas; and

(c) retention of existing on-site vegetation; and

(2) an impact assessment and management report detailing measures taken in the design of the development to—

(a) arrange lots so that buildings and associated infrastructure are located outside areas of natural watercourses; and

(b) arrange higher density development in clusters in areas of the site least likely to impact upon natural watercourses and wetland areas (lot sizes may be calculated to enable an increased lot yield in return for the conservation of natural watercourses and wetland areas and buffers); and

(c) intersect and treat runoff from developed sites; and

(d) avoid artificial walls or rock structures along watercourses except where such materials are used for rehabilitation purposes.

1.6.8 Biodiversity significance areas

(1) If an application is within an identified area with local, regional or State biodiversity significance or State Habitat for EVR taxa—

(a) an ecological assessment prepared by a suitably qualified person which—

(i) identifies the extent of significant habitat areas;

(ii) identifies the location, alignment, width and composition of any ecological corridors;

(iii) defines the extent to which the site contributes to an ecological corridor;

(iv) identifies the connection and relationship between contiguous remnant vegetation, water and endangered ecosystems;

(v) demonstrates how the habitat areas are being retained and protected; and

(vi) indicates that areas of the site identified as significant habitat or ecological corridors are not part of the proposal;

(vii) identifies the impact on the values for which the area has been assigned significance; and

(viii) highlights specific factors relevant to the remnant and the locality including—

(A) significant habitat for 'at risk' species,

(B) relative size of the ecosystem,

(C) condition, and

(D) ecosystem diversity.

1.6.9 Erosion prone areas

(1) If developing within an erosion prone area—

(a) a sediment and erosion control plan will be required for the site works which—

(i) complies with Soil Erosion and Sediment Control - Engineering Guidelines for Queensland Construction Sites (IEAUST); and

(ii) the *Stormwater Management Planning Scheme Policy*; and

(b) a report outlining how the proposed development will not significantly contribute to erosion or sediment.

1.6.10 Nesting sea turtles

(1) If an application is within a turtle sensitivity area—

(a) a detailed description of—

(i) all proposed lighting associated with the proposed development; and

(ii) where abutting a foreshore, foreshore reserve or foreshore road—any proposed access between the site and the foreshore.

(b) an assessment of the potential and likely effects of the proposed development on nesting sea turtles and their hatchlings; and

(c) a management plan to manage the potential adverse effects of the ongoing use of the premises and ensure compliance of the ongoing use with the applicable code.

1.6.11 Fish habitat areas (including 100 metre buffer)

(1) If an application is within a fish habitat area (including the 100m buffer area), a report which establishes the appropriateness of the development in accordance with the *Fisheries Guidelines for Fish Habitat Buffer Zones*.

1.6.12 Natural hazard (flood)

(1) If an application is within a natural hazard (flood) area, or is known to have drainage problems the following information will be required—

(a) contour plans of the site showing existing and proposed finished levels and the locations of the 1% AEP;

(b) a stormwater drainage plan indicating overland flows before and after development and velocities of flows in the drainage catchment; and

(c) the depth of expected inundation at a 1% AEP event.

1.6.13 Natural hazard (bushfire)

(1) If an application is within a Natural hazard (bushfire) area, either—

(a) for development in a medium or high hazard area that involves the reconfiguring of a lot that results in an increase in the number of lots, or material change of use of premises—a Bushfire Management Plan prepared in accordance with State Planning Policy 1/03 Guideline, Mitigating the Adverse Impacts of Flood, Bushfire and Landslide; or

(b) a site-specific natural hazard assessment carried out in accordance with of State Planning Policy 1/03 Guideline, Mitigating the Adverse Impacts of Flood, Bushfire and Landslide that concludes that the bushfire hazard is low; and

(c) a report that demonstrates the proposed development does not result in an unacceptable level of risk to people or property.

1.6.14 Natural hazard (landslide)

(1) If an application within a Natural hazard (landslide) area, either—

(a) sufficient information about site levels to ascertain that the subject development will not be carried out on slopes greater than 15%; or

(b) a site-specific geotechnical analysis carried out by a registered professional engineer that demonstrates that the proposed development is not subject to landslide hazard; or

(c) a report that demonstrates the proposed development does not result in an unacceptable level of risk to people or property.

1.7 Assessment against Infrastructure Overlays

The Local Government may request the following information—

1.7.1 Bundaberg Airport

(1) If an application is within 3 km of the Bundaberg Airport (Area C on the INFRA 1.1 to INFRA 1.16)—

(a) an assessment of whether the development is likely to penetrate the operational airspace, including—

(i) a plan identifying the height of physical structures (including trees close to the runway);

(ii) external lighting likely to interfere with the aviation facility (including street lighting);

(iii) the emission of plumes or airborne particulates;

(iv) the propensity to attract wildlife, particularly birds and bats, into the flight path of aircrafts; or

(v) aviation activities such as parachuting or hot air ballooning.

(2) If a development is likely to impair the functionality of aviation facilities by resulting in the following penetration into Area C on the INFRA 1.1 to INFRA 1.16—

(a) a plan that identifies the height, shape and any reflective surfaces of physical structure; or

(b) a report for any high levels of electro-magnetic transmission such as those associated with arc welding.

(3) A strategy of how the applicant intends to manage any potential adverse effects of the development proposal on operational space, or the functionality of the aviation facility.

1.7.2 Port of Bundaberg

(1) If development is within the Strategic Port Land Buffer Zone—

(a) a detailed landscaping plan that provides a buffer between the port and the adjoining land use; and

(b) a plan showing the design, siting, orientation and construction standard of buildings and works; and

(c) a report outlining how the dust, noise and lighting impacts from the port will not adversely affect the proposal.

(2) If developing within 250 metres of the Strategic Port Land frontage to Buss Street or along Powers Street—

(a) an acoustic assessment of the site, resulting in a recreation or work environment of not greater than 40dB and for sleeping areas not greater than 35dB when measured during—

(i) the loading/unloading operations of the Port; and

(ii) the transport of cargo to the Port along Powers Street.

1.7.3 Sugar cane rail lines

(1) If development adjoins a sugar cane rail line—

(a) a detailed landscaping plan providing a buffer between the sugar cane rail line and the proposed use;

(b) a plan showing the design, siting, orientation and construction standard of buildings and works; or

(c) a report outlining how the dust, noise and lighting impacts from operations along the sugar cane lines will not adversely affect the proposal; or

(d) a site plan showing the physical separation of buildings and uses from the rail line.

1.7.4 Schools

(1) If a proposed use within Area D of the INFRA 1.1 to INFRA 1.16 produces airborne particulates—

(a) an assessment identifying that the use does not cause the level of airborne contaminants within school premises to exceed those stated in Table 7.3 of the planning scheme.

1.8 Assessment against Cultural Heritage Features Overlays

The Local Government may request the following information—

1.8.1 Cultural heritage (places and buildings)

(1) if an application involves assessment against the Cultural Heritage Features Overlay Code—

(a) a cultural heritage assessment report prepared by a professional cultural heritage consultant holding an authorised permit under the *Cultural Record (Landscapes Queensland and Queensland Estate) Act 1987*, or as amended or repealed by subsequent legislation; and

(b) a cultural heritage management plan approved by the Environmental Protection Agency, outlining—

(i) how the form, scale, design, finish and colour of an identified cultural heritage building (listed in Schedule 1) respects the heritage place and significant architectural features; and

(ii) how physical structures including fencing, landscaping and advertising devices do not detract from or obstruct the views of a heritage place.

1.9 Other overlay assessment

The Local Government may request the following information—

(1) If an application requiring assessment against an overlays code (other than covered elsewhere in this policy)—

(a) an assessment of how the development or effects of the development may affect the values of the relevant feature or resource; or

(b) an assessment of how the development may create or increase a risk of significant adverse effects on the natural or built environment or human health or safety; and

(c) if applicable, an assessment of measures proposed to adequately manage the potential significant adverse effects arising from the development.

1.10 Information requirements for specific development

1.10.1 Extractive industry code

(1) If an application involving assessment against the Extractive industry code—a rehabilitation plan that addresses the following matters—

(a) after use options, including the most likely or preferred option;

(b) conceptual design of after use infrastructure;

(c) proposed final surface contours;

(d) capping material;

(e) drainage system including final discharge points; and

(f) revegetation plan and vegetation rehabilitation strategies.

(2) If an application involves use or works in or within 1km to and is associated with an identified extractive resource area, resource separation area or haul route—

(a) information identifying the noise and dust emissions, hours of operation, proposed haul route and proposed activities; and

(b) mitigation measures to reduce the adverse impacts of the proposed activity.

1.11 Assessment involving infrastructure or operational works

The information requirements associated with development infrastructure and works are stated in the Development Works Planning Scheme Policy.

Division 3—Submitting the application

1.12 Requirements for plans, reports or studies

If submitted in connection with a development application, where relevant—

(1) A planning report detailing compliance of the proposal with the planning scheme—

(a) Where a departure from the planning scheme is proposed a justification for this departure must be made. A departure from the requirements of the scheme will only be considered where there is overwhelming evidence that the development will not compromise the intended outcome for the zone or use.

(2) A minimum of 5 sets of supporting information is to be submitted for code assessable applications and a minimum of 6 sets of supporting information is to be submitted for impact assessable applications.

(3) Plans submitted to Council are to—

(a) be numbered, dated and contain a north point and any revisions to the original plan be identified in a legend;

(b) be drawn to a metric scale of 1:10, 1:50, 1:100, 1:200, 1:500;

(c) be produced on a standard A0, A1, A2, A3 or A4 sheet of paper. At least one set of drawings are to be of A3 in size and to the correct scale;

(d) show the boundaries of the site to which the application relates with metes and bounds provided;

(e) show the name of the roads to which the site has frontage;

(f) show the size, location of all buildings and other structures both existing and proposed to be erected on site and the distance in metres of the outermost projection of such building or structure to the boundary of the site;

(g) show the details of the internal layout of all buildings and structures both existing and proposed to which the application relates and elevations of any new buildings or structures, indicating the position of all windows, doors, roofline and wall projections, balconies, verandahs, stairwells and outbuildings;

(h) show the position and layout of all existing and proposed vehicular accessways, driveways and parking areas and pedestrian or cyclist paths;

(i) show the services and other features such as street trees and the position of poles along the immediate frontage of the land;

(j) show the indicative location of all proposed landscaping and recreation areas;

(k) show the location of on site utility services such as areas for the provision of refuse disposal or clothes drying areas, etc;

(l) show contour information and spot levels;

(m) show the location of existing services within or adjacent to the site;

(n) show the location of all buildings on adjoining allotments; and

(o) show the landscaping in accordance with the requirements identified in the Planning Scheme Policy 2—Landscaping and Landscape Plans.

Division 4—Conditions

1.13 Demonstrating compliance with conditions

(1) The Development Works Planning Scheme Policy provides details on demonstrating compliance with conditions of operational works approvals.

(2) The following information is to be submitted when demonstrating compliance with the conditions of approval for reconfiguring a lot and material change of use applications—

(a) description of how the development complies with each of the conditions; and

(b) amended drawings or final plans required to meet the conditions of approval such as landscaping plans.

PSP 2: LOCAL GOVERNMENT MAY CONSULT

PLANNING SCHEME POLICY

2.1 Effective Date

This policy has effect on and from the day the IPA Planning Scheme for Burnett Shire Council commences.

2.2 When local government may consult on a development application

(3) Without limiting its discretion under IPA[4], the local government may seek advice or comment about an application in any circumstances the local government determines, including, in the local government's opinion, if—

(a) the development may conflict with a code;

(b) specialised technical advice is required to assess the development; or

(c) the development may affect premises being of special interest to a person.

2.3 Who may be consulted

(1) The local government may seek advice or comment about an application for development from any person, including any considered by the local government to have specialist knowledge or a special interest in an application.

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4 IPA, section 3.2.7 (Additional third party advice or comment)

(2) Without limiting subsection (1), the local government may seek advice or comment about an application for development if—

Mineral resources

(a) within 1 km of identified mineral resources or a gravel pit—from the Department of Natural Resources, Mines and Water;

Native Title

(b) on land adjacent to land over which Native Title has been established or a claim has been made—from the Native Title claimant or Native Title holder;

Indigenous cultural heritage

(c) on land identified as high probability indigenous cultural heritage land—from designated aboriginal representatives;

Good quality agricultural land

(d) on *Good Quality Agricultural Land*—from the Department of Natural Resources, Mines and Water;

Designated bushfire prone area

(e) on land in a designated bushfire prone area—from the Department of Emergency Services;

Bundaberg Ring Road

(f) on land that may be affected by the alignment of the Bundaberg Ring Road, as identified on the INFRA 1.1 to INFRA 1.16—from the Department of Main Roads;

Cane railways

(g) on land in proximity to a cane rail line — from the rail network operator (eg Bundaberg Sugar); and

A use identified as an 'inconsistent use'

(h) for a material change of use identified as an 'inconsistent use' in the applicable zone code—owners, occupiers of adjoining or nearby premises, or the public generally.

2.4 How consultation may be undertaken

(1) The local government may seek advice or comment in any way considered appropriate for the circumstances, including any one or more of the following—

(a) public notification in a newspaper;

(b) placing a notice on the premises;

(c) placing a notice at a public place;

(d) personal notification or contact;

(e) placing an advertisement in the electronic media;

(f) placing information on and seeking comment from a web site;

(g) public meetings;

(h) meeting with a person or organisation having a special interest, experience or expertise;

(i) correspondence.

PSP 3: SATISFYING ASSESSMENT CRITERIA RELATING TO MAXIMUM BUILDING HEIGHT, BULK AND DENSITY

PLANNING SCHEME POLICY

3.1 Effective Date

This policy has effect on and from the day the IPA Planning Scheme for Burnett Shire Council commences.

3.2 Application of the Policy

The policy applies to the Business Zone and the Urban Residential Zone of the Coastal Towns Planning Area.

3.3 Purpose

(1) This policy provides advice to applicants relating to satisfying assessment criteria in respect of the maximum height, bulk and density of buildings in certain circumstances.

(2) Codes in the planning scheme require buildings and structures to achieve a height, bulk and density that reflect the existing or intended future character of an area and make a positive contribution to the streetscape.

(3) The outcomes sought by these provisions are to—

(a) protect the—

(i) character of the location;

(ii) the amenity of occupants of adjoining premises and the neighbourhood, and

(b) contribute towards achieving attractive streetscapes.

(4) The codes provide a probable solution for meeting the assessment criteria by referring to compliance with Table 3.10, Table 3.19 and 3.20 of the Planning Scheme that states maximum heights of buildings, maximum site cover and maximum dwelling density permitted in various zones and planning areas.

3.4 Maximum acceptable building heights in locations other than the High-Density Residential Precinct and the Recreational Business Precinct

(1) The maximum building height acceptable for development in the Urban Residential Zone when the site is not within the High Density Residential Precinct is 6m.

(2) The maximum building height acceptable for development in the Business Zone when the site is not within the Bargara Recreational Business Precinct is 6.5m.

3.5 Circumstances where maximum building height, bulk and density may be varied

(1) Council acknowledges that there may be circumstances that allow the achievement of the specific outcomes without complying with the probable solutions prescribed in the scheme.

(2) An alternative solution may be approved by Council for—

(a) Higher Density Housing within the Urban Residential Zone (High Density Residential Precinct) to those identified in Table 3.19 and Table 3.20; and

(b) Higher Density Housing or Business Uses within the Business Zone (Bargara Recreational Business Precinct) to those identified in Table 3.10,

(3) Section 3.5(2) only applies in the following circumstances—

(a) the slope and physical characteristics of the site dictate special design features; and

(b) for Higher Density Housing, the development site has a minimum site area of 2000m^2 and a frontage of not less than 40m; and

(c) the proposal—

(i) complements, and does not exceed the height of other buildings or structures in the immediate vicinity;

(ii) includes articulated street elevations;

(iii) addresses the street/s;

(iv) provides landscaping which reduces any potential impacts as a result of the increased height;

(v) uses external finishes that do not create glare or nuisance to neighbours;

(vi) does not include ground level parking under the building;

(vii) is designed, located and constructed so that it causes no unreasonable adverse impact on adjoining or surrounding premises than a complying proposal in relation to—

A. overlooking;

B. overshadowing;

C. diminished access to natural breezes; and

D. diminished visual or acoustic privacy;

(viii) if located in the Bargara Recreational Business Precinct, Business Uses are located along street frontages to provide an active street frontage and provide high levels of pedestrian amenity; and

(ix) the maximum building height is 15 metres in the High Density Residential Precinct and the Bargara Recreational Business Precinct.

3.6 Information to Accompany an Application

(1) The provision of complete information promotes an accurate and timely assessment of applications by ensuring that Council is aware of all the circumstances that are applicable to any particular application.

(2) The following information indicates the matters that are considered relevant for assessing proposals that do not achieve compliance with the maximum building height in the planning scheme, and should be lodged with the application—

(a) dimensioned site plan including a north point and scale showing—

(i) existing and proposed finished levels of the site, including any proposed cut or fill;

(ii) the location of any existing buildings or structures on the site;

(iii) the proposed location of the building/s including proposed boundary setbacks;

(iv) the location of any existing vegetation to be retained and existing vegetation to be removed; and

(v) the location of all buildings on adjoining properties (including details of balconies, windows, openings and external living areas);

(b) dimensioned floor plan of the building/s at all levels including the location of windows;

(c) elevations/sections showing—

(i) reduced levels of the development at finished ground level and the finished ceiling and roof height;

(ii) all external materials including finishes;

(iii) any proposed privacy screening eg. shutters;

(iv) the height of each storey, part of a storey, basement or undercroft;

(d) scaled streetscape elevations showing any buildings on adjoining lots, through the use of a photomontage, sketch or plan;

(e) landscaping plans;

(f) plans and dimensions that indicate the effect of the proposed building on adjoining premises in relation to—

(i) the existing access of those premises to views;

(ii) the access of those premises to natural light and breeze;

(iii) visual privacy; and,

(iv) acoustic privacy; and

(g) plans and dimensions that indicate the effect of the proposed building on shadows on other sires or reserves.

PSP 4: LANDSCAPING AND LANDSCAPE PLANS

PLANNING SCHEME POLICY

Division 1—General

4.1 Effective Date

This policy has effect on and from the day the IPA Planning Scheme for Burnett Shire Council commences.

4.2 Application of the policy

(3) This planning scheme policy identifies the local government's requirements regarding—

(a) the circumstances in which information about landscaping may be required;

(b) the standards applying to landscape plans; and

(c) acceptable and unacceptable species of plants for inclusion in landscaping.

Division 2—Information requirements for plans

4.3 Circumstances in which plans may be required—

(1) if the application involves reconfiguring a lot resulting in additional lots; or

(2) if applicable code identifies that landscaping, buffering or screening in a *specific outcome* or a *probable solution*; or

(3) if the application proposes any of the following uses—

(a) "Caretaker's residence";

(b) "Detached dwelling";

(c) "Dual occupancy";

(d) "Educational establishment";

(e) "Emergency services";

(f) "Extractive industry";

(g) "General business";

(h) "General industry";

(i) "Higher density residential";

(j) "Home-based business";

(k) "Intensive animal use",

(l) "Light industry";

(m) "Low-scale business"

(n) "Park";

(o) "Public utility undertaking",

(p) "Rural industry";

(q) "Special use";

(r) "Tourist park";

(s) "Undefined use".

4.4 Standards of landscape plans and specific information required

(1) The local government's standards are—

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

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

A full landscape plan may be a condition of the development permit—see the following paragraph

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

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

Table 3.1: Landscape plans—standards

Specific information required	Type of landscape plan		
	Concept	Limited	Full
Landscape areas defined	✓	✓	✓
Existing vegetation identified		✓	✓
Growth form and purpose of vegetation identified	✓	✓	✓
Surface treatments, fencing and other hardscape elements identified		✓	✓
Locations and species to be planted — plotted to scale		✓	✓
Additional details shown in section 4.5 Additional information for Full Landscape Plans			✓

4.5 Additional information for Full Landscape Plans

(1) General information—

(a) date;

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

(c) north point;

(d) project description and location;

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

(f) designer's name, address and contact number.[5]

(2) General site and design information—

(a) extent of landscape areas;

[5] at least one set of the plans submitted should be of A3 size.

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

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

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

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

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

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

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

(3) Landscape area calculation—

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

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

(i) garden beds;

(ii) turfed or grassed areas;

(iii) paved pedestrian areas;

(iv) nature conservation areas;

(v) effluent land applicationareas; and,

(vi) water areas.

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

(4) Detail design information—

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

(b) edge treatments, particularly garden edges;

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

(d) location and species of proposed plants;

(e) planting bed preparation;

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

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

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

(i) surface and subsurface drainage and collection points;

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

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

(l) fence height, material and finish;

(m) irrigation systems;

(n) paving type if area includes public footpaths;

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

4.6 Acceptable plant species

4.6.1 Street trees[6]

(1) The following species are acceptable for street tree planting in the local government area—

Species	Common name	Notes
Barklya syringifolia	Barklya, Golden Shower tree	Slow growing, very showy, evergreen small tree with heart-shaped leaves. Bears masses of brilliant, yellow flowers in early summer.

[6] All these species would grow successfully in Burnett Shire and would be suitable as street trees. However, plant species for street tree plantings must be chosen very carefully and be site specific. Issues to be considered before any street tree planting occurs include soil type, proximity to curbing, channelling and powerlines, salt spray and wind if applicable.

Species	Common name	Notes
Buckinghamia celsissima	Ivory curl	Showy small tree bearing masses of grevillea-like white flowers. Excellent tree for avenue planting. Rarely exceeds 6m in amenity plantings.
Callistemon polandii	Red bottlebrush	A bushy small tree growing to 5m that is noted for its long lasting 9cm long, bright red, gold-tipped flowers.
Callistemon viminalis	Weeping bottlebrush	A large shrub or small tree 3-8m high with a graceful, weeping appearance that produces brilliant red flowers in spring and early summer.
Cupaniopsis anacardioides	Tuckeroo	Excellent shade tree with dark green foliage. Will stand planting in exposed situations on poor soils along the coastal strip.
Flindersia australis	Crows ash	Large shade tree reaching to about 18m in open plantings. Foliage is dark green in a dense rounded crown. An excellent shade and avenue tree native to Queensland.
Flindersia collina	Leopard ash	Queensland native tree with slender trunk and glossy green crown and white flowers. Trunk has leopard-like blotches. Ideal as a medium sized shade tree.
Harpullia pendula	Tulipwood	Shade tree with large, glossy leaves and clusters of yellow flowers followed by red or yellow seed cases containing two shiny black seeds. Widely used as a street tree on a variety of soils where it rarely exceeds 10m.

Species	Common name	Notes
Leptospermum petersonii	Lemon-scented tea-tree	Bushy shrub to 5m bearing masses of white flowers. Excellent for hedges and screens. Grows on most soil types.
Melaleuca leucadendra	Broad-leaved tea-tree	Weeping tree with a fairly straight trunk covered with layers of papery white bark. Bird attracting when in flower.
Pittosporum rhombifolium	White pittosporum	Usually grows to about 6m in cultivation. Has a dense crown of glossy, dark green, toothed leaves and small white flowers which produces clusters of orange berries in winter.
Syzygium luehmanii	Small-leaved lillypilly	Dense, rounded tree with dark green foliage and attractive pinkish new growth. Grows to <10m when open-grown. Susceptible to frost.
Syzygium oleosum	Scented satinash	Small, quick-growing tree which flowers at an early age. Fruit edible. Frost susceptible and used extensively as windbreak tree on the coast or in frost free areas.
Waterhousea floribunda	Weeping cherry	Excellent spreading tree with decorative yellow flowers and dense green foliage. Suited to moist soils. Fruit attractive to birds and bats.
Xanthostemon chrysanthus	Golden penda	Small tree that occurs in coastal north Qld. Flowers are bright yellow, very prominent and bird attracting. Excellent specimen tree where ample moisture is available.

4.6.2 Coastal trees

(1) The following species are acceptable for coastal tree planting in the local government area—

Species	Common name	Notes
Araucaria cunninghamii	Hoop pine	Very tall and erect pine-shaped tree with symmetrical branches. Frost tender.
Banksia integrifolia	Coast banksia	Shapely tree with large dull green leaves with white underneath. Strongly scented yellow flowers in thick dense spikes
Banksia serrata	Red honeysuckle	Small tree with hard, toothed leaves. Widely cultivated as a coastal ornamental. Bird attractant.
Callistemon viminalis	Weeping bottlebrush	A large shrub or small tree 3-8m high with a graceful, weeping appearance that produces brilliant red flowers in spring and early summer.
Callitris columellaris	Coast cypress pine	A tall dense, evergreen pine that can be cut back to form a dense hedge. Prefers deep sandy loams.
Casuarina equisetifolia	Coast she-oak	Small she-oak with sparse drooping needle-like foliage. Highly resistant to wind and salt spray and grows on raw sand.
Cupaniopsis anacardioides	Tuckeroo	Excellent shade tree with dark green foliage. Will stand planting in exposed situations on poor soils along the coastal strip.
Eucalyptus ptychocarpa	Swamp bloodwood	A small spreading ornamental tree bearing masses of spectacular crimson, pink or white flowers. Has large leathery leaves.

Species	Common name	Notes
Eucalyptus tereticornis	Blue gum	Eucalypt with smooth bluey-grey trunk with irregular blotches. An important hollow-producing tree. Flowers used by native birds and bats and leaves used by koalas.
Eucalyptus tessellaris	Moreton Bay Ash	A tall, slender, attractive eucalypt with smooth, white bark on the upper trunk and hard, chunky, tessellated bark around the base. White flowers attract parrots.
Eugenia reinwardtiana	Beach cherry	Shrub to 3m producing edible red fruits about 2cm in diameter.
Harpullia pendula	Tulipwood	Shade tree with large, glossy leaves and clusters of yellow flowers followed by red or yellow seed cases containing two shiny black seeds. Widely used as a street tree on a variety of soils where it rarely exceeds 10m.
Leptospermum petersonii	Lemon-scented tea-tree	Bushy shrub to 5m bearing masses of white flowers. Excellent for hedges and screens. Grows on most soil types.
Livistona decipiens	Weeping cabbage palm	Tall native palm with a dense head of fan-shaped leaves and slender trunk. Requires warm conditions for best growth and moist, shady conditions when young.
Melaleuca dealbata	Silver-leafed paperbark	Common tree on coastal creeks north of Maryborough. Greyish green leaves that fade to red with age. Bears white flowers attractive to birds and bees.

Species	Common name	Notes
Melaleuca leucadendra	Broad-leaved tea-tree	Weeping tree with a fairly straight trunk covered with layers of papery white bark. Bird attracting when in flower.

4.6.3 Open forests and woodlands

(1) The following species are acceptable for open forests and woodlands in the local government area—

Species	Common Name	Features
Acacia disparrima (syn aulacocarpa)	Hickory wattle	Small fast growing tree with a height range of 6-20m. Produces sweetly scented yellow flowers in autumn. Good pioneer species widely used by native wildlife.
Acacia maidenii	Maiden's wattle	Small, compact, fast growing wattle bearing yellow flowers.
Alphitonia excelsa	Soap tree or red ash	Tree with a layered, spreading canopy and leaves distinctly white on the underside. Fast growing and widely used by native fauna.
Casuarina littoralis	Forest oak	Small tree usually with a conical shape and branches characteristically curving upwards. Usually found on stony or sandy soils.
Corymbia citriodora	Lemon-scented gum	A clean, straight tree of graceful appearance with smooth pinkish grey trunk. Leaves have a strong lemon-scented smell when crushed. Food tree for greater gliders.
Corymbia intermedia	Pink bloodwood	A medium to tall tree covered with brownish-chunky bark. Flowers used by fruitbats and lorikeets.

Species	Common Name	Features
Eucalyptus tereticornis	Blue gum	Eucalypt with smooth bluey-grey trunk with irregular blotches. An important hollow-producing tree. Flowers used by native birds and bats and leaves used by koalas.
Eucalyptus tessellaris	Moreton Bay Ash	A tall, slender, attractive eucalypt with smooth, white bark on the upper trunk and hard, chunky, tessellated bark around the base. White flowers attract parrots.
Grevillea banksii	Red flowered silky oak	An attractive small shrub with heads of red or white blooms and fern-like foliage.
Lophostemon confertus	Brush box	Tree with a dense crown of dark green, shiny leaves often used for street and park planting as a shade tree.
Lophostemon suaveolens	Swamp mahogany	A medium sized tree with rough, flaky bark and attractive white flowers. Fast growing and suitable for wet soils.
Melia azedarach	White cedar	A deciduous tree with attractive compound leaves and blue flowers, and clusters of yellow berries. Berries are poisonous to some domestic animals but eaten by possums and native birds.

4.6.4 Shrubs and vine forests

(1) The following species are acceptable for shrubs and vine forests within the local government area—

Species	Common Name	Features
Alchornea ilicifolia	Holly bush	Shrub or small tree with sharply toothed, stiff leathery leaves.

Species	Common Name	Features
Alectryon connatus	Bird's eye alectryon	Small tree with young parts and flowers densely hairy. Pale blue-green colour under the leaves.
Aphananthe philippinensis	Rough-leaved elm	Small to medium-sized tree with rough-surfaced leaves and branchlets, and prickly-toothed leaves.
Bridelia leichhardtii	Small-leaved brush ironbark	Shrub or small tree with small leaves and red fruit 4-5mm across.
Canthium coprosmoides	Coast canthium	Tall shrub or small tree with orange-red 2-lobed fruit 8mm across.
Cassine melanocarpa	Black olive plum	Small tree with thick and leathery leaves with shiny black fruit 1 ½ -2 ½ cm across.
Cleistanthus cunninghamii	Cleistanthus	Small tree with branchlets having raised protuberances. Fruit a 3-lobed capsule.
Clerodendrum floribundum	Lolly bush	Small tree or shrub with branchlets often purplish. Attractive black fruit are seated in a bright red petal-like calyx.
Cupaniopsis anacardioides	Tuckeroo	Excellent shade tree with dark green foliage. Will stand planting in exposed situations on poor soils along the coastal strip.
Drypetes deplanchei	Yellow tulip	Medium sized tree with young leaves sharply toothed. Fruit a red/orange coloured drupe.
Ficus obliqua	Small-leaved Moreton Bay fig	Tall tree growing to 40m. Fruit a yellow to orange coloured fig. Fruit eaten by birds.

Species	Common Name	Features
Flindersia australis	Crows ash	Large shade tree reaching to about 18m in open plantings. Foliage is dark green in a dense rounded crown. An excellent shade and avenue tree native to Queensland.
Flindersia collina	Leopard ash	Queensland native tree with slender trunk and glossy green crown and white flowers. Trunk has leopard-like blotches. Ideal as a medium sized shade tree.
Harpullia pendula	Tulipwood	Shade tree with large, glossy leaves and clusters of yellow flowers followed by red or yellow seed cases containing two shiny black seeds. Widely used as a street tree on a variety of soils where it rarely exceeds 10m.
Jagera pseudorhus	Foambark	Small tree with capsules covered with rusty brown irritating hairs, splitting into 3 segments. Seeds eaten by ground-dwelling native fauna.
Melia azedarach	White cedar	A deciduous tree with attractive compound leaves and blue flowers, and clusters of yellow berries. Berries are poisonous to some domestic animals but eaten by possums and native birds.
Mischocarpus pyriformis	Yellow pear-fruit	Medium tree with yellow/orange, pear-shaped capsules. Slow growing.

Species	Common Name	Features
Pleiogynium timorense	Burdekin plum	Medium to large tree with a large, spreading crown that produces an edible reddish-purple plum.
Rapanea variabilis	Muttonwood	Small tree to about 5m. Produces mauve to blue small drupes about 5mm in diameter. Has attractive foliage and decorative fruit.

4.6.5 Banks of watercourses - saltwater

(1) The following species are acceptable for banks and watercourses in saltwater locations within the local government area—

Species	Common Name	Features
Acacia disparrima (syn aulacocarpa)	Hickory wattle	Small fast growing tree with a height range of 6-20m. Produces sweetly scented yellow flowers in autumn. Good pioneer species widely used by native wildlife.
Alphitonia excelsa	Soap tree or red ash	Tree with a layered, spreading canopy and leaves distinctly white on the underside. Fast growing and widely used by native fauna.
*Callitris columellaris**	Coast cypress pine	A tall dense, evergreen pine that can be cut back to form a dense hedge. Prefers deep sandy loams.
*Casuarina equisetifolia**	Coast she-oak	Small she-oak with sparse drooping needle-like foliage. Highly resistant to wind and salt spray and grows on raw sand.

Species	Common Name	Features
Casuarina glauca	Swamp oak	Fast growing sheoak native of saline and wet sites but used for windbreaks and shelter belts in heavy soils. Seeds eaten by pigeons.
Clerodendrum floribundum	Lolly bush	Small tree or shrub with branchlets often purplish. Attractive black fruit are seated in a bright red petal-like calyx.
Cupaniopsis anacardioides	Tuckeroo	Excellent shade tree with dark green foliage. Will stand planting in exposed situations on poor soils along the coastal strip.
Eucalyptus tereticornis	Blue gum	Eucalypt with smooth bluey-grey trunk with irregular blotches. An important hollow-producing tree. Flowers used by native birds and bats and leaves used by koalas.
Eucalyptus tessellaris	Moreton Bay Ash	A tall, slender, attractive eucalypt with smooth, white bark on the upper trunk and hard, chunky, tessellated bark around the base. White flowers attract parrots.
Ficus opposita	Sandpaper fig	Small tree with sandpapery rough leaves. Figs eaten by native birds.
Glochidion ferdinandi	Coast glochidion	Small densely growing tree to 10m. Green to red roundish, ribbed capsule.
Jagera pseudorhus	Foambark	Small tree with capsules covered with rusty brown irritating hairs, splitting into 3 segments. Seeds eaten by ground-dwelling native fauna.

Species	Common Name	Features
Livistona decipiens	Weeping cabbage palm	Tall native palm with a dense head of fan-shaped leaves and slender trunk. Requires warm conditions for best growth and moist, shady conditions when young.
Melia azedarach	White cedar	A deciduous tree with attractive compound leaves and blue flowers, and clusters of yellow berries. Berries are poisonous to some domestic animals but eaten by possums and native birds.
Pleiogynium timorense	Burdekin plum	Medium to large tree with a large, spreading crown that produces an edible reddish-purple plum.

(A) *Found mainly in coastal river areas rather than saltwater river areas.

4.6.6 Banks of watercourses - freshwater

(1) The following species are acceptable for banks and watercourses in freshwater locations within the local government area—

Species	Common Name	Features
Acacia disparrima (syn aulacocarpa)	Hickory wattle	Small fast growing tree with a height range of 6-20m. Produces sweetly scented yellow flowers in autumn. Good pioneer species widely used by native wildlife.
Alphitonia excelsa	Soap tree or red ash	Tree with a layered, spreading canopy and leaves distinctly white on the underside. Fast growing and widely used by native fauna.

Species	Common Name	Features
Clerodendrum floribundum	Lolly bush	Small tree or shrub with branchlets often purplish. Attractive black fruit are seated in a bright red petal-like calyx.
Cupaniopsis anacardioides	Tuckeroo	Excellent shade tree with dark green foliage. Will stand planting in exposed situations on poor soils along the coastal strip.
Eucalyptus tereticornis	Blue gum	Eucalypt with smooth bluey-grey trunk with irregular blotches. An important hollow-producing tree. Flowers used by native birds and bats and leaves used by koalas.
Ficus coronata	Creek sandpaper fig	Small fig growing along creek banks. Fruit edible, purplish and hairy.
Glochidion sumatranum	Cheese tree	Small to medium fast growing tree. Fruits are flattened and fluted similar to round cheese.
Jagera pseudorhus	Foambark	Small tree with capsules covered with rusty brown irritating hairs, splitting into 3 segments. Seeds eaten by ground-dwelling native fauna.
Leptospermum polygalifolium	Wild may	Slender, twiggy shrub with small, narrow scented leaves and white flowers.
Melaleuca quinquenervia	Paper bark	Medium sized-tree that likes wet and wallum-like areas. Birds, bats and ants feed on the nectar.

Species	Common Name	Features
Melia azedarach	White cedar	A deciduous tree with attractive compound leaves and blue flowers, and clusters of yellow berries. Berries are poisonous to some domestic animals but eaten by possums and native birds.
Pleiogynium timorense	Burdekin plum	Medium to large tree with a large, spreading crown that produces an edible reddish-purple plum.
Waterhousea floribunda	Weeping cherry	Excellent spreading tree with decorative yellow flowers and dense green foliage. Suited to moist soils. Fruit attractive to birds and bats.

4.6.7 Small trees and tall shrubs

(1) The following species are acceptable small trees and tall shrubs within the local government area—

Species	Common Name	Features
Barklya syringifolia	Barklya, Golden shower tree	Slow growing, very showy, evergreen small tree with heart-shaped leaves. Bears masses of brilliant, yellow flowers in early summer.
Buckinghamia celsissima	Ivory curl	Showy small tree bearing masses of grevillea-like white flowers. Excellent tree for avenue planting. Rarely exceeds 6m in amenity plantings.
Callistemon polandii	Red bottlebrush	A bushy small tree growing to 5m that is noted for its long lasting 9cm long, bright red, gold-tipped flowers.

Species	Common Name	Features
Callistemon viminalis	Weeping bottlebrush	A large shrub or small tree 3-8m high with a graceful, weeping appearance that produces brilliant red flowers in spring and early summer.
Cupaniopsis anacardioides	Tuckeroo	Excellent shade tree with dark green foliage. Will stand planting in exposed situations on poor soils along the coastal strip.
Eucalyptus ptychocarpa	Swamp bloodwood	A small spreading ornamental tree bearing masses of spectacular crimson, pink or white flowers. Has large leathery leaves.
Euodia muelleri	Little euodia	Small tree to about 5m. Colourful reddish-pink flowers grow from trunk.
Harpullia pendula	Tulipwood	Shade tree with large, glossy leaves and clusters of yellow flowers followed by red or yellow seed cases containing two shiny black seeds. Widely used as a street tree on a variety of soils where it rarely exceeds 10m.
Leptospermum petersonii	Lemon-scented tea-tree	Bushy shrub to 5m bearing masses of white flowers. Excellent for hedges and screens. Grows on most soil types.
Melaleuca leucadendra	Broad-leaved tea-tree	Weeping tree with a fairly straight trunk covered with layers of papery white bark. Bird attracting when in flower.

Species	Common Name	Features
Melaleuca viridiflora	Red-flowering tea-tree	Medium sized paperbark that has pale lemon to pink and occasionally red flowers.
Pittosporum rhombifolium	White pittosporum	Usually grows to about 6m in cultivation. Has a dense crown of glossy, dark green, toothed leaves and small white flowers which produces clusters of orange berries in winter.
Xanthostemon chrysanthus	Golden penda	Small tree that occurs in coastal north Qld. Flowers are bright yellow, very prominent and bird attracting. Excellent specimen tree where ample moisture is available.

4.7 Unacceptable plant species

(1) The following plant species are unacceptable for landscaping within the local government area—

Species	Common Name
Acacia farnesiana	Mimosa Bush
Acalypha sinensis	Chinese Acalypha
Acetosa sagittata	Rambling Dock
Agave americana	Century Plant
Agave sisalana	Sisal
Agave vivipara var. vivipara	Sisal
Ageratina adenophora	Crofton Weed
Ageratina riparia	Mistflower
Ageratum houstonianum	Blue Billygoat Weed
Alternanthera philoxeroides	Aligator Weed
Anredera cordifolia	Madeira Vine, Lamb's Tail, Potato Vine
Araujia horotum	White Moth Vine
Ardisia crispa/crenata	Coral Berry, Ardisia
Ardisia humilis	Spice Berry

Species	Common Name
Arecastrum (syn. Syagrus) romanzoffianum	Cocos Palm
Aristolochia elegans	Dutchman's Pipe or Calico Flower
Arunda donax	Giant Reed
Asclepias curassavica	Red Cotton Bush
Asparagus africans	Asparagus fern
Asparagus (Myrsiphullum) asparagoides	Bridal Creeper
Asparagus densiflora	Asparagus fern
Asparagus plumosus	Ferny Asparagus
Baccharis halimifolia	Groundsel Bush
Bidens pilosa	Cobbler's Pegs
Brachiaria decumbens	Signal Grass
Brachiaria multica	Para Grass
Bryophyllum delagoense (Syn. B.diagremontianum x tubiflorum)	Mother-of-Millions Hybrid
Bryophyllum pinnatum	Live Plant
Bryophyllum tubiflorum	Mother-of-Millions
Caesilpinia decapetala	Thorny Poinciana
Callisia fragrans	Purple Succulent
Canna species (indica and generalis)	Canna Lilly
Cardiospermum grandiflorum	Balloon Vine
Cascabela thevitia syn. Thevitia peruviana)	Yellow Oleander
Cassia coluteoides	Easter Cassia
Catharanthus roseus	Pink Periwinkle
Celtis sinensis	Chinese Elm, Chinese Celtis
Cenchrus caliculatis	
Cenchrus echinatus	Mossman River Grass
Cestrum parqui	Cestrum
Chloris gayana	Rhodes Grass
Chrysanthemoides monilifera subsp. rotunda	Bitou Bush
Cinnamomum camphora	Camphor Laurel
Commelina benghalensis	Hairy Wandering Jew
Conyza bonariensis	Flax-leaf Fleabane
Conyza canadensis	Canadian Fleabane
Conyza sumantrensis	Tall Fleabane
Corymbia torelliana	Cadaga or Cadaghi
Cynodon dactylon	Bahama Grass / Green Couch

Species	Common Name
Cyperus brevifolius	Mullumbimy Couch
Cyperus involucratus	African Sedge
Cyperus rotundus	Nut Grass
Desmodium intortum	Green-leaved Desmodium
Desmodium uncinatum	Silver-leaved Desmodium
Digitaria eriantha	Pangola Grass
Duranta erecta	Duranta, Blue Sky Flower
Eichornia crassipes	Water Hyacinth
Eleusine indica	Crowsfoot Grass
Eragrostis curvula	African Lovegrass
Erythrina crista-galli	Cockspur Coral Tree
Eugenia uniflora	Brazillian Cherry
Euphorbia cyathophora	Painted Spurge
Euphorbia heterophylla	Milk Weed
Furcrea foetida	Cuban Hemp
Furcrea selloa	Hemp
Gleditisia triacanthos (+ all ornamental varieties)	Honey Locust Tree
Gloriosa superba	Glory Lilly
Gomphocarpus physocarpus	Balloon Cotton Bush
Gymnocoronis spilanthoides	Senegal Tea
Hymenachne amplexicaulis	
Hypoestes phyllostachya	Polka-dot Plant
Impatiens walleriana	Balsam
Ipomoea cairica	Mile a Minute
Ipomoea indica	Morning Glory
Juncus articulatus	Jointed Rush
Koelreuteria elegans	Golden Rain Tree
Lantana camara var. camara	Lantana
Lantana montevidensis	Creeping Lantana
Leucaena leucocephala	Leucaena
Ligustrum lucidum	Privet Broad Leaf
Ligustrum sinense	Privet Small Leaf, Chinese Privet
Lilium formosanum	Taiwam Lily
Lonicera japonica	Japanese Honeysuckle
Ludwigia ochoualis	
Lycium ferocissimum	African Boxthorn
Macfadyena unuis-cati	Cats Claw Creeper
Macroptilium atropurpureum	Siratro
Macrotyloma axillare	Perrenia Horse Gram
Melinis minutiflora	Molasses Grass

Species	Common Name
Melinis repens	Red Natal Grass
Mimosa pudica	Common Sensitive Plant
Murraya paniculata cv. Exotica	Murraya, mock orange
Myriophyllum aqauticum	Parrot's Feather
Nasella neessiana	Chilean Needle Grass
Neonotonia wightii	Glycine
Nephrolepsis cordifolia	Fish bone fern
Nymphaea caerulea subsp. zanzibarensis	Blue Lotus
Ochna serrulata	Ochna, Mickey Mouse Bush
Oenthera drummondii subsp. drummondii	Beach evening Primrose
Olea africana	African Olive
Olea europea	Olive
Optuntia spp.	Drooping Pear Tree, prickly pears
Oxalis corniculata	Creeping Oxalis, Yellow Wood Sorrell
Panicum maxiumum	Green Panic / Guinea Grass
Parkinsonia aculeata	Jeruselum Thorn
Paspalum conjugatum	Paspalum
Paspalum dilatatum	Paspalum
Paspalum mandiocanum	
Paspalum notatum	Bahia Grass
Passiflora edulis	Passion Fruit
Passiflora foetida	Stinking Passion Vine
Passiflora suberosa	Corky Passion Vine
Passiflora subpeltata	White Passion Fruit
Parthenium hysterophorus	Parthenium Weed
Paulownia spp	Paulownia
Pennisetum alopecuroies	Swamp Foxtail
Pennisetum clandestinum	Kikuyu Grass
Pennisetum purpureum	Elephant Grass
Pennisetum setaceum	African Fountain Grass
Phyla canescens	Condamine Couch / Lippia
Phyllostachys aurea	Fishpole Bamboo
Phytolacca octandra	Inkweed
Pinus caribaea	Caribbean Slash Pine
Pinus elliottii	Slash Pine
Pistia stratiotes	Water Lettuce
Prosopis pallida	Algaroba
Prunus munsoniana	Wild Goose Plum

Species	Common Name
Psidium guajava	Guajava, Guava
Pueraria lobata	Kudzu
Pyrostegia venusta	Flame Vine
Rhaphiolepis indica	Indian Hawthorn
Ricinus communis	Castor Oil Plant
Rivina humilis	Spice Berry
Rorippa nasturtium-aquaticum (syn. Nasturtium officinale)	Watercress
Rubus bellobatus	Kittatinny Blackberry
Rubus discolor (R.fruticosa complex)	a Blackberry
Rubus ellipticus	Yellow Berry
Rubus fruticosus	Blackberry
Ruellia malacosperma	Ruellia
Ruppia maratima	Sea Tassel
Salvia coccinea	Red Salvia
Salvinia molesta	Salvinia
Sansevieria trifasciata	Mother in Laws Tongue
Scheffera actinophylla	Umbrella Tree
Schinus molle	Pepper Tree
Schinus terebinthifolia	Broad Leafed Pepperina Tree, Pepper Tree
Senecio madagascariensis	Fire Weed
Senecio tamoides	Canary Creeper
Senna pendulina	Easter cassia, Winter senna
Senna septentrionalis (syn. floribunda)	Arsenic Bush
Setaria sphacelata	South African Pigeon Grass
Sida rhombifolia	Paddy's Lucerna
Solanum erianthum	Tobacco Bush
Solanum hispidum	Giant Devil's Fig
Solanum mauritianum	Wild tobacco tree
Solanum seaforthianum	Brazilian nightshade
Solanum torvum	Devil's Fig
Solidago canadensis var. scabra	Canadian Goldenrod
Spathodea campanulata	African Tulip Tree
Sphagneticola (syn. Wedelia) trilobata	Singapore Daisy
Sporobolus africanus	Paramatta Grass
Sporobolus fertilis	Giant Paramatta Grass
Sporobolus jacquemontii	American rat's tail Grass

Species	Common Name
Sporobolus pyramidalis and S. natalensis	Giant Rat's Tail Grass
Stylosanthes scabra	Shrubby Stylo
Tagetes minuta	Stinking Roger
Stenolobium stans	Yellow Bells, Yellow Bell Flower
Themada quadrivalvis	Grader Grass, Thatch Grass
Thunbergia alata	Black-eyed Susan
Thunbergia grandiflora	Blue Thunbergia
Tithonia diversifolia	Mexican Sunflower
Tradescantia albiflora	Wandering jew
Tradescantia zebrina	Zebrina
Triumfetta rhomboidea	Chinese Burr
Verbesina enceloides	Crownbeard
Xanthium spinosum	Bathurst Burr

PSP 5: STORMWATER MANAGEMENT
PLANNING SCHEME POLICY

Division 1—Introduction

5.1 Effective Date

This policy has effect on and from the day the IPA Planning Scheme for Burnett Shire Council commences.

5.2 Application of the Policy

(1) The policy applies to development in all areas of the Shire.

(2) The policy applies to high risk and lower risk development and all Council capital works projects and other infrastructure construction and maintenance.

(3) **High risk development** is development or a development proposal in the following circumstances—

(a) assessable development on land identified in the Natural Features or Resources Overlay if one or more of the following applies—

(i) if within 100m of a dominant wetland ecosystem (inc. 50m buffer); a sub-dominant wetland ecosystem (inc. 50m buffer); or an area that may contain wetlands (inc. 50m buffer);

(ii) if within 100m of a watercourse;

(iii) locations that contain actual or potential acid sulfate soils;

(iv) if within or adjacent to an area or local, regional or State biodiversity significance or to State Habitat for EVR (Endangered Vulnerable and Rare) taxa areas;

(v) if within a flooding or storm tide risk area;

(vi) if within or adjacent to a national park or conservation park;

(vii) if within a landslide risk area; or

(viii) if within or adjacent to a declared fish habitat area (inc. 50m)

(b) where stormwater will be released to the Woongarra Marine Park whether directly or indirectly;

(c) if the land is contaminated;

(d) industrial development;

(e) areas within a coastal management district (or its equivalent);

(f) areas within erosion prone areas;

(g) reconfiguring a lot where new road/s are proposed;

(h) operational works except for placement of an advertising device; and

(i) development incorporating uncovered car parking areas with ten or more parking spaces.

(4) Lower risk developments include development other than "High Risk" development.

5.3 Purpose

(1) This policy provides solutions to specific outcomes contained in the Burnett Shire Planning Scheme relating to the quantity and quality of stormwater, as well as information requirements for erosion and sediment control.

(2) The purpose of this policy is to ensure that development, construction and design of works which are undertaken as part of new development, achieve a consistent standard which reflects best practice in engineering, environmental management and natural resource planning, while addressing flooding, safety, accessibility and aesthetically appropriate considerations.

(3) The overall outcomes sought by the Stormwater Management Planning Scheme Policy are that development incorporates stormwater quality and quantity management systems which are planned, designed, constructed, implemented and maintained so that—

(a) stormwater originating from development is of a quality that—

(i) the environmental values of Burnett Shire's waterways, wetlands, catchments, groundwaters and Woongarra Marine Park are protected or enhanced;

(ii) the natural water flow regime in waterways, wetlands and groundwaters is maintained to

minimise the impact on flooding, contamination, erosion and scouring;

(b) development contributes to the protection and enhancement of aquatic, riparian, estuarine and coastal biodiversity and its supporting ecological processes including upstream and downstream catchments;

(c) the design of channel works as part of development maximises the use of "natural channel design" principles to establish new channels or enhance existing waterways;

(d) achieve acceptable levels of stormwater run-off quality and quantity by applying water sensitive urban design principles to maintain and/or enhance the environmental values of the shire's waterways and catchments;

(e) water flow is managed to reduce demand on potable water which may include options for water harvesting and potential reuse; and

(f) provide an efficient and cost effective stormwater run-off management system which minimises flooding

5.4 Background

(1) Stormwater management should aim to maximise reuse, minimise the need for major gross pollutant traps, minimise impervious areas, and minimise maintenance, cleaning, and disposal costs. It should also attempt to minimise the impacts of high volumes and low quality stormwater flowing into and along our natural waterways.

(2) Tthe use of rainwater tanks (even though it may not be used for potable use) may decrease the amount of potable water consumption, improve security of supply, reduce the impacts of stormwater runoff, reduce stormwater and water supply infrastructure requirements, and/or reduce the potential for sewage overflows. Reducing stormwater flows will decrease environmental impacts on receiving waters.

(3) On a larger scale, purpose-designed regional detention ponds and wetlands will improve the quality of high volumes of stormwater prior to discharge. Regional solutions are generally more cost effective than individual localised solutions and should be pursued where possible.

(4) Using this approach, stormwater may be used to substitute the conventional water supply in order to increase water reuse, decrease the potable demand, and decrease the amount of stormwater, waste water, and contaminants discharged to the environment.

(5) Accordingly, in designing the development, the designer is to provide a holistic approach in implementing water sensitive urban design (WSUD) with a reliance on natural processes to respond to design requirements.

(6) Developments may consist of a mix of WSUD design and hard engineering design where it is practical to include only certain elements of WSUD.

(7) If hard-engineering design is proposed for an element of the development, then the applicant is required to clearly demonstrate that the corresponding WSUD principle cannot be achieved.

5.5 Definitions

(1) "Suitably qualified person" means a person who is a Registered Professional Engineer of Queensland (RPEQ).

(2) All other terms used in the planning scheme policy are taken to have the same meaning as those defined in Schedule 9 of the Burnett Shire Planning Scheme.

5.6 Standard References

(1) Standards/References referred to in this Policy or that can be used to provide further guidance on stormwater management are—

(a) Queensland Urban Drainage Manual 1992;

(b) Institution of Engineers Australia (Queensland Division) "Soil Erosion and Sediment Control, Engineering Guidelines for Queensland Construction Sites (1996)";

(c) Australian Rainfall and Run-off (ARR) Guideline (Volume 1 & 2 Revised Edition, 1987. The Institute of Engineers Australia;

(d) Draft Australian Runoff Quality (ARQ) 2003 Institution of Engineers Australia;

(e) Urban Stormwater Best Practice Environmental Management Guidelines 1999 Victorian Stormwater Committee ;

(f) WSUD Engineering procedures Stormwater 2005 Melbourne Water;

(g) Brisbane City Council Draft Water Sensitive Urban Design Guidelines Stormwater 2005;

(h) Brisbane City Council "Environmental Best Management Practice for Erosion and Sediment Control (1996)"; and

(i) Brisbane City Council "Stormwater Quality Improvement Device Design Guidelines".

(j) AUS-SPEC Part D5 – Stormwater Drainage Design

5.7 Standard Drawings

(1) The Local Government has adopted Standard Drawings as desired minimum standards for development works within the Shire, and as part of this Policy.

(2) The adopted Standard Drawings are listed in Appendix 6.

(3) Where the development approval includes conditions that are site specific, or where design solutions are not adequately addressed within the Local Government's adopted Standard Drawings, the Developer my provide engineering solutions and Standard Drawings within the Operational Works design other than the Local Government's adopted Standard Drawings.

(4) Any proposed departures from the Local Government Standard Drawings are to be in accordance with minimum requirements of applicable regulatory requirements and Australian Standards and Codes, and are to be approved by the Local Government prior to adoption.

Division 2—Information requirements

(1) This section identifies the information requirements for lodging a development application. It will be beneficial to lodge this information with an application to avoid delays in deciding an application.

(2) This does not limit the assessment manager's ability to request further information as part of the information and referral stage.

5.8 Information Requirement for all Development

The following information is to be provided with development applications for both high risk and lower risk development.

5.8.1 Erosion and Sediment Control Plan

(1) An erosion and sediment control plan is to be prepared by a suitably qualified person.

(2) The Erosion and Sediment Control Plan is to be at a scale of either 1:200 or 1:500 and contain the following general information—

(a) Overall site plan with existing contours at sufficient intervals to adequately define general drainage paths and estimated Q100 flood contours;

(b) A site plan indicating the location and size of any proposed land disturbance works and the proposed direction and quantity of overland flow from these areas;

(c) The location of proposed soil erosion and sediment control(s) for the site, both during construction and for the maintenance period of the development;

(d) Areas of existing vegetation, highlighting protection of vegetation, limits of clearing, re-establishment of stabilising vegetation and proposed timings;

(e) Location of site storage and stockpile areas, site access points, areas of potential mass movement; and

(f) Details of protection works to Council's infrastructure e.g. stormwater pits.

(3) The Erosion and Sediment Control Plan is also to include the following specific and supporting information—

(a) Erosion Controls—

(i) location, including dimensions, volumes and the like, of mulching, turfing, or revegetation required;

(ii) areas to be covered by erosion control mats; and

(iii) areas steeper than 10% and the length of critical slope.

(b) Sediment Controls—

(i) design details of sediment basins, ponds and the like, including maintenance requirements and frequency;

(ii) location and requirements of all other structural control devices;

(iii) location of all vegetative sediment control devices; and

(iv) information on protection of existing (including current development works) drainage facilities from damage.

(c) Supporting Information—

(i) overall description of existing site conditions including soil, climatic and vegetation information;

(ii) description of neighbouring areas, including the location of the nearest downstream natural waterway, and other environmentally relevant areas;

(iii) description of on-site dust control measures;

(iv) description of the proposed construction program (including staging) and the revegetation or stabilisation of exposed land; and

(v) proposed maintenance program and disposal method(s) of sediments and other pollutants.

(d) Additional Supporting Information—

(i) The following information may also be required depending on the complexity of the application;

(A) hydrology/hydraulics and geotechnical reports;

(B) specifications and construction details for drainage, erosion and sediment control techniques where applicable; and

(C) details of any on or off-site monitoring requirements.

(4) The erosion and sediment control measures to be implemented on site are required to —

(a) Minimise Disturbance by—

(i) minimising the area of site exposed or stripped;

(ii) haul roads and access tracks are to be confined to proposed permanent road locations;

(iii) effective control of the generation of dust, litter and debris within the site through the use of storage facilities, rubbish bins, hoppers, and the like; and

(iv) limitation of site access to nominated and controlled areas.

(b) Provide Drainage Control that ensures—

(i) stormwater runoff from potentially polluted surfaces shall be discharged on or into a suitable treatment system prior to entering the stormwater drainage system. The use of sedimentation traps and oil/water separators are required for industrial and commercial developments. Sedimentation traps are to be designed to hold the first 20mm of run-off from the paved areas (not including roofs) of the site;

(ii) washwater from washdown areas must not be discharged into the stormwater drainage systems, and must be lawfully discharged to sewer. On commercial and industrial developments, it will generally be required that washdown areas be directed to a pre-treatment system and then to sewer. On residential type developments, washdown waters are to be directed to sewer via an appropriately installed bucket filter trap. Alternative means of treating washdown waters are to be approved by Council;

(iii) cut-off and/or diversion drains are to be installed prior to significant land disturbance and around stockpile sites to divert run-off from undisturbed areas into stable drainage lines at non-erosive velocities;

(iv) the amount of stormwater leaving the site is to be minimised through on-site storage and reuse such as through dust suppression and revegetation;

(v) excess water is not to be discharged into stormwater drains, local drainage lines or streams until discharges meet the stated water quality objectives. Temporary structures or retention basins are to be designed on site to

cater for the physical treatment of excess or contaminated waters; and

(vi) all borrow pit areas on site are to be constructed with cutoff drains.

(c) Control Erosion by ensuring that—

(i) all non-permanent erosion and sediment control devices are to be designed to ensure non-erosive channel or sheet flow for the 2-year ARI event and for the hydraulic capacity of channels or other control structures 10-year ARI, time of concentration event;

(ii) erosion and sediment controls are to be installed and approved by Council prior to any site disturbance, vegetation clearance or services installation. Areas of high erosivity are to be managed according to best practice methods to reduce or prevent erosion and/or loss of sediments offsite;

(iii) erosion control measures such as chemical surface stabilisation, mulching, soil, cement treatment, control mats and surface roughening are to be applied on exposed areas;

(iv) erosive potential of runoff on disturbed areas is to be reduced through use of check dams, bunds and/or cutoff drains across the contour. This will reduce the distance of overland flow and convey water to stable drainage lines at a non-erosive velocity;

(v) progressive stripping of topsoil is to be undertaken prior to drainage works where possible; and

(vi) continual maintenance of erosion control and sediment collection devices.

(d) Control Sediment by ensuring that—

(i) all construction fill and stored materials are to be situated in approved storage areas. These areas are to have cutoff and diversion drains to divert runoff and are to be located on flat land, bunded and away from drainage lines and flood plains. When not in use, stockpiles are to be protected from wind and rain;

(ii) chutes and flumes are to be progressively lengthened as fill batters are constructed. Water flowing from these is to be dissipated and directed to stable areas for sediment treatment;

(iii) uncontaminated sediment removed from all sediment control devices is to be incorporated in landscaping, fill batters, or mounds or as otherwise approved by Council. Contaminated sediment is to be disposed of to an approved spoil or stockpile area or to landfill.

(e) Include Site Rehabilitation, Maintenance and Monitoring by—

(i) developing a rehabilitation plan that allows progressive revegetation so that each area is given a protective ground cover as soon as work is completed for that area. The rehabilitation plan is to describe how maintenance and monitoring of disturbed and rehabilitation sites is to be undertaken to achieve a minimum vegetative coverage of 80%.

(f) Address Staging of Works by—

(i) minimising the exposure of land, to assist in erosion control for each stage.

5.8.2 Maintenance Schedule

(1) A maintenance schedule is to be developed for all proposed stormwater management devices, structures or Water Sensitive Urban Design elements, to define maintenance and replacement requirements for the individual components.

5.9 Information Requirements for High Risk Development

5.9.1 Site Based Stormwater Management Plan (SBSMP)

(1) A SBSMP prepared by a suitably qualified person is to be submitted with any application for high risk development detailing the overall planning, layout and design for stormwater management infrastructure.

(2) The SBSMP is to detail the infrastructure and management measures to be incorporated into the finished development to manage stormwater.

(3) The SBSMP should be prepared in two stages:

(a) Conceptual Design Stage: At this stage the SBSMP is to explain how the layout of the development and stormwater management measures will address the requirements of the Planning Scheme and Stormwater Management Planning Scheme Policy and related technical guidelines. It is to identify enough land for necessary stormwater quality best management practices. The plan will include calculations (or model outputs) that demonstrate that the water quality objectives identified can be met. This should be provided with the application for Material Change of Use, Reconfiguring a lot or for preliminary approval for operational works.

(b) Detailed Design Stage: At this stage, the SBSMP will include all of the necessary detail in terms of the design of stormwater quality best management practices. The detailed design should be provided with an application for a development permit for operational works. High risk

developments will be required to have the SBSMP approved by Council before works commence on site.

(4) A SBSMP is to provide the following information for the development—

(a) a summary of stormwater quality, quantity and waterway corridor management objectives;

(b) a description of those Stormwater Quality Best Management Practices (SQBMPs), stormwater quantity management measures, and waterway corridor protection measures that have been selected for the site for the operational phase (The methodology for this process is outlined in Section 1.9.2) ;

(c) SQBMPs that have been selected for the site during the construction phase (focusing on erosion and sediment controls and including an Erosion and Sediment Control Program);

(d) site plans showing key features (eg drainage pathways) as well as the location of the items identified for the development in b) and c);

(e) identifies proposed lawful points of discharge, easements and any land dedications for drainage reserves;

(f) a program indicating the timing and sequence of installation of the items identified in c);

(g) responsibilities for installation, inspection, maintenance and decommissioning of the items identified in c) and c);

(h) an inspection and maintenance program for the above-mentioned measures;

(i) Maintenance Plans for large structural Stormwater Quality Improvement Devices whether on private or Council land;

(j) a simple audit program to check the installation and maintenance of SQBMPs that have been selected for the site during the construction phase ;

(k) a description of how records are to be kept on site performance (including incidents, complaints, etc);

(l) emergency procedures to protect stormwater quality (eg how to manage the collapse of a sediment basin or burst hydraulic hose);and

(m) training requirements for construction and maintenance personnel (including an onsite induction program).

5.9.2 Methodology and Models for SBSMP

(1) The following method is to be followed in preparing the SBSMP.

(2) Site Assessment — A Site assessment is required for the design of stormwater management practices during the operational and construction phases. In all cases, an understanding should be obtained of—

(a) key water quality, flooding and waterway corridor issues within the catchment (refer to relevant Council Flood Studies, Stormwater Management Plans, Waterway Management Plans, Catchment Management Plans and Local Stormwater Management Plans where available).

(b) the existence of regional stormwater management facilities (refer to relevant Council Stormwater Management Plans).

(c) water quality, drainage and waterway corridor issues within and immediately downstream of the development.

(d) the proportion of the site's surface is to be impervious.

(e) soil condition, type and erosion potential.

(f) the activities are planned for the site.

(g) the nature of stormwater pollutants likely to be generated during the construction and operational phases.

(h) physically inspect the site — the site inspection should be undertaken by a suitably qualified person. It should be documented in the SBSMP with field notes and photographs and identify—

(i) the presence of watercourses, water bodies and overland flow paths;

(ii) water quality and stream health (based on visual evidence) within or immediately downstream of the development;

(iii) evidence of water logging;

(iv) evidence of previous flooding and the state of waterway corridors;

(v) evidence of erosion on land and along waterway bed and banks;

(vi) soil types (refer to Section 1.9.2 (2)i)));

(vii) the nature of existing environmental assets (eg wetlands, waterway vegetation and natural detention basins);

(viii) existing stormwater infrastructure; and

(ix) the receiving environment and localised impact of any piped stormwater drainage (eg evidence of scouring, sedimentation or litter).

(i) Identify Soil Types —

(i) soil types are to be identified and assessed to evaluate erosion risk; to determine whether acid sulfate soils are likely to be an issue that requires early management; and to guide

decisions on the selection of Stormwater Quality Best Management Practices.

(ii) the type of soil present on a site can exert a strong influence on the effectiveness of water quality controls during the construction and operational phases. For example, sediment basin sizing is dependent upon soil type.

(j) Define Key Points of Interest — locations where flows are to be determined should be established at all points of discharge from the site, and for any key points of interest located within the development site (eg at a major road crossing).

(k) Assess Potential for Flooding — the assessment of whether the site is prone to flooding is to be undertaken in accordance with Australian Rainfall and Runoff (ARR) and the Queensland Urban Drainage Manual - QUDM. The assessment must be undertaken by a suitably qualified person in hydrology and hydraulics.

(3) Identify Constraints and Opportunities—

(a) Constraints and opportunities for development are to be determined in terms of the physical environment. The location of stormwater quality measures are to be commensurate with the existing and proposed features of the development site as explained below.

(b) The selection and location of both water quantity controls (eg detention basins) and water quality controls (eg swales or wetlands) is dependent on existing infrastructure, topography, soils and vegetation. It is necessary to identify—

(i) which existing features need to be retained for the location of controls (eg on a predominantly steep site, an area of flatter land may be required for a detention basin);

(ii) where constraints may prevent the selection of measures (eg infiltration devices cannot be easily applied where rock, high groundwater levels or low permeability soils will prevent the device from operating effectively and where large water storage cannot be provided to accommodate these site limitations);

(iii) ecological values to be protected in the affected waterway corridor (eg large ponds in a narrow waterway corridor may inhibit the movement of some fauna along the corridor).

(c) Water Sensitive Urban Design —the potential for Water Sensitive Urban Design (WSUD) principles to be adopted at the site are also to be assessed. Given that many of the principles of WSUD require consideration at the planning phase of a development, it is imperative that if any

measures are adopted, they must be considered prior to the finalisation of lot layouts. Issues that should be addressed by the designer/s may include:

(i) setting lot levels such that drainage to infiltration devices can occur;

(ii) the use of swales in some areas, rather than kerb and channel;

(iii) linkage of the open space network to infiltration zones;

(iv) disconnecting impervious surfaces; and

(v) incorporation of stormwater reuse infrastructure (eg ponds, underground tanks for roof water reuse).

(4) Assess Impacts of Development

(a) The assessment of the impacts of high risk development in terms of water quality degradation and flooding will typically be addressed through modelling or numerical calculations. In this section, discussion is provided in relation to:

(i) Water Quality Assessment:

(A) identifying pollutant export loads;

(B) modelling water quality; and

(C) Flooding Assessment.

(b) Identify Contaminant Types and Loads:

(i) Water quality objectives set for the site will define which pollutants will need to be managed, and hence considered in the SBSMP. In most cases, pollutant export modelling will be required to estimate the concentration and load of pollutants washed from the site under:

(A) the existing land use condition; and

(B) the proposed final developed land use condition.

(ii) The concentration of pollutants estimated by the pollutant export modelling can be compared to the identified Water Quality Objectives to assess the suitability of alternative stormwater treatment options. These will be used by Council to assess the proposal.

(iii) It will be necessary to identify all significant risks to water quality and demonstrate how these risks will be mitigated during both the construction and operational phases. For example, accidental spillage of hydrocarbons or the release of asphalt prime to stormwater during the construction phase are issues that the SBSMP must identify measures to manage.

(iv) Flooding Assessment — Assessment of the impact of development on peak discharges and

flood levels must be undertaken by a suitably qualified person in hydrology and hydraulics. This is to be in accordance with the requirements of Australian Rainfall and Runoff (ARR) and the Queensland Urban Drainage Manual. In most cases, an increase in flood level or peak discharge will not be allowed to occur beyond the boundary of the development site, with no adverse impacts allowed to affect adjacent properties.

(5) Water Quality Objectives—

(a) Following project inception, a site assessment and the identification of whether the site is classified as high risk or low risk, the next major action in preparing a SBSMP is to identify the applicable Environmental Values (EVs) and Water Quality Objectives (WQOs) for affected waterways downstream from, or within, the development.

(6) Flooding Objectives—

(a) Flooding objectives should also be identified at this time. Issues to be considered (in conjunction with Flood Studies, Stormwater Management Plans) should include:

(i) known flooding problems (either upstream or downstream of the proposed development site);

(ii) whether any increase in discharge will be permissible (usually not);

(iii) whether any increase in flood volume will be allowed;

(iv) whether any increase in flood levels will be permitted;

(v) the extent of flood inundation areas; and

(vi) waterway corridor / habitat requirements.

(7) Evaluate Stormwater Quality Management Options—

(a) Stormwater quality management options must be evaluated in conjunction with quantity control analysis, and should be sympathetic to waterway corridor requirements. Measures must be evaluated for both the construction and operational phases.

(b) Evaluation of stormwater management options requires the following tasks to be completed—

(i) determine future land use and the proportion of the development's surface that will be impervious;

(ii) investigate the connectivity of impervious areas and watercourses or water bodies. Water sensitive management techniques minimise the direct connection of impervious areas to watercourses;

(iii) select options considered appropriate for the site based upon an understanding of target pollutants and the strengths of various management measures;

(iv) where data allows, model the various options to check for the ability of the selected;

(v) measures to meet the agreed WQOs at a reasonable cost;

(vi) use specific design guidelines (eg wetland design guidelines) where appropriate;

(vii) consider the life cycle costs of options; and

(viii) selection of Measures — The selection of measures considered appropriate for the development site must be linked to site constraints, target pollutants, stormwater flows, and the strengths/weaknesses of various options.

(c) Modelling—

(i) Mathematical modelling may be required to demonstrate to Council that the combination of stormwater quality management practices meet agreed WQOs. Such modelling can also be used to derive an optimal combination of stormwater quality management practices in terms of cost versus performance.

(ii) Modelling must only be undertaken by qualified specialists, with demonstrated experience in modelling water quality, or expertise in the processes upon which the model is based. All assumptions and parameters used in the modelling process must be clearly explained along with the results of the modelling exercise.

(iii) Council's preferred program for modeling is MUSIC (developed by the CRC for Catchment Hydrology). The modelling process should consider wet and dry years, and should involve simulation of at least a 10 year period. A six minute time-step is to be used when modelling.

(iv) Results should be presented in a tabular form detailing the concentrations and load output for the development unmitigated and development mitigated scenarios.

5.10 Information Requirements for Lower Risk Development

(1) Low risk developments are required to minimise the impacts of stormwater quality by identifying and adopting best practice techniques in accordance with Division 4—Design Standards.

(2) For low risk developments, it will generally be sufficient to identify stormwater best management practices, in keeping with the land use and size of the development rather than having to demonstrate

to Council how the stormwater management system will protect water quality objectives in receiving waters.

(3) Applications for lower risk development should—

(a) demonstrate that they have applied best practice management in the selection of treatment measures that will be implemented to achieve the WQOs for the proposed development; and

(b) utilise hand calculations to determine average annual pollutant loads.

(4) The procedure for undertaking hand calculations is described below:-

(a) PN = LN × A

(A) Where: "PN" is the Natural Catchment Pollutant Load (kg/yr), "LN" is the Natural Catchment Average Annual Pollutant Load Rate (kg/ha/yr) and "A" is the Catchment Area (ha)

(b) PU = LU × A

(A) Where: "PU" is the Urbanised Catchment Pollutant Load (kg/yr), "LU" is the Urbanised Catchment Average Annual Pollutant Load Rate (kg/ha/yr) and "A" is the Catchment Area (ha)

(c) PT = PU × (100% – T%)

(A) Where: "PU" is the Urbanised Catchment Pollutant Load (kg/yr), "PT" is the Treated Catchment Pollutant Load (kg/yr) and "T%" is the Overall Treatment Efficiency of the "Treatment Train"

(B) Where: T% = 100% - Πi=1…n(100% - ti)

(C) Where: "Π" is the product function, "n" is the number of SQID devices in series and "ti" is the individual treatment efficiency of a SQID expressed as a percentage.

5.11 Information Requirements for Constructed Waterways—

(1) A management plan is required for all constructed non-tidal waterways including a maintenance schedule.

Division 3—Stormwater quality standards

(1) All development is to meet the water quality objectives (WQO) detailed in Appendix 1.

(2) Once the receiving water quality objectives have been identified for the proposed development, use the receiving waterbody's water

quality objectives as discharge limits for the quality of the Stormwater leaving the site.

(3) Appendix 1 defines the Water Quality Objectives for receiving waters in Burnett Shire.

(4) The water quality objectives are the maximum allowable water quality limits to be discharged. Development proposals are encouraged to further enhance or minimise the quantity of contaminants entering the receiving waters to that provided in Appendix 1.

(5) Water quality objectives for constructed water bodies are to be based on their function in the development. The intended use(s) of the water body defines the Environmental Values (EVs) which will apply. These EVs must be established through a program of community consultation, and be clearly articulated and ratified by Council prior to the formal lodgement of a development application. Water Quality objectives can then be determined based on the Queensland Water Quality Guidelines. Generally, the protection of aquatic ecosystems in lower catchment waterways water quality objectives will apply to constructed water bodies in the Burnett Shire.

Division 4—Design Standards

(1) The following design standards provide options for achieving the Stormwater quality standards required in Division 3—Stormwater quality standards.

(2) Alternatives to these standards may be proposed where suitable justification is provided as to the effectiveness and appropriateness of the design in achieving the stormwater quality objectives.

(3) Further guidance on selection, location and combination of WSUD elements into a treatment train is provided in the following documents—

(a) Draft Australian Runoff Quality Guideline (ARQ) 2003 The Institute of Engineers Australia;

(b) Urban Stormwater Best Practice Environmental Management Guidelines 1999 Victorian Stormwater Committee; and

(c) Brisbane City Council "Water Quality Management Guidelines November 2000".

(4) Detailed design requirements for the various devices is provided in the following documents:

(a) AUS-SPEC Part D5 – Stormwater Drainage Design;

(b) Brisbane City Council "Stormwater Quality Improvement Device Design Guidelines";

(c) Brisbane City Council Draft Water Sensitive Urban Design Engineering Guidelines Stormwater 2005;

(d) WSUD Engineering Procedures Stormwater 2005 Melbourne Water;

(e) Australian Rainfall and Run-off (ARR) Volume 1 & 2 Revised Edition, 1987. The Institute of Engineers Australia; and

(f) Queensland Urban Drainage Manual Volume 1 & 2.

(5) Appendix 3 sets out the applicability of treatment devices in WSUD for various types of development.

5.12 Common Design Principles

(1) This section deals with design principles for stormwater management that are common to both Water Sensitive Urban Design (WSUD) and "conventional" engineering design (commonly referred to as "drainage"). It is unacceptable to design stormwater management systems that do not address all aspects of the Specific Outcomes in the various relevant codes.

(2) Accordingly, there are certain principles that are common for WSUD and "conventional" engineering design that are to be implemented in the design and construction of any development's stormwater management system.

5.13 Site Development Requirements General

(1) The various elements of total water cycle management are required to be incorporated into the design and layout of the development. The central principle is that sufficient space must be allocated within the development site for appropriate WSUD infrastructure, in addition to other essential services such as on-site sewerage facilities.

(2) Stormwater management infrastructure assets such as Stormwater Quality Improvement Devices (SQIDs), natural channels and overland flow paths are such elements of WSUD. Accordingly, they are to be appropriately sized and located within the site.

(3) Planning for Water Sensitive Urban Design is to be undertaken in conjunction with the initial planning phases for the development site. Consideration should be given to Water Sensitive Urban Design, Stormwater Quality Improvement Devices, stormwater reuse/harvesting, rainwater tanks, on-site detention and other water recycling opportunities outlined below—

(a) the level of stormwater treatment required;

(b) the area of land required to treat stormwater or for other Water Sensitive Urban Design infrastructure assets;

(c) site constraints and opportunities;

(d) required protection of drainage lines, overland flow paths, natural channels, waterway corridors and wetlands;

(e) the siting and location of stormwater treatment measures or other total water cycle management infrastructure assets; and

(f) the cost and timing of works.

(4) Preference will be given to innovative development solutions that incorporate Water Sensitive Urban Design principles and assets into the desired land use and development form.

(5) The design of stormwater drainage systems is to be in accordance with the "Queensland Urban Drainage Manual (QUDM)" and "Australian Rainfall and Runoff (ARR)", with this order defining the precedence of any one document over another.

(6) Stormwater drainage is to consider major and minor storm events, and any partial area effects.

(7) Calculations are to be submitted to quantify the flows and identify how and where they are to be conveyed to the Lawful point of discharge approved by the Local Government.

(8) The effect of stormwater flows on future properties within the development and within upstream and downstream properties is also to be considered.

(9) Where development is to connect to an existing Council asset, the connection is to—

(a) Not cause structural damage to or failure of the existing asset;

(b) Be appropriately sealed; and

(c) Not interfere with or reduce the intended purpose of the existing asset.

(10) For connecting pipes into enclosed drainage systems, connections are to be made only to gully pits, manholes and field inlets. The connection is to be core-drilled and sealed with a two-part epoxy sealant.

5.14 Inter-allotment Drainage

(1) In some instances the finished levels of a proposed allotment may be such that stormwater runoff from the allotment (or part of it) cannot satisfactorily drain to the street frontage.

(2) An underground drainage line may then be required to discharge runoff from the allotment into the main drainage system.

(3) Where inter allotment drainage forms part of the design, and is located on private land, the Developer is to arrange drainage easement(s) in favour of the Local Government.

(4) The easements are to have a minimum width of 3 metres or greater as determined by the Local Government.

(5) All easement agreements required in favour of the Local Government are to be approved and notated by the Local Government, and included on the Survey Plan, prior to the release of the Survey Plan.

(6) The Developer is to meet all costs associated with the provision of easements.

5.15 Site Development Requirements – Residential

(1) Preference will be given to innovative development solutions that incorporate Water Sensitive Urban Design principles and assets into the desired land use and development form.

(2) The design of urban stormwater drainage systems is to be in accordance with these Guidelines, "Queensland Urban Drainage Manual" and "Australian Rainfall and Runoff (ARR)" with this order defining the precedence of any one document over another.

5.16 Site Development Requirements – Rural and Hinterland Residential

(1) Rural and Hinterland Residential developments offer an opportunity to promote water sensitive urban design and all aspects of stormwater harvesting and reuse are to be considered.

5.17 Site Development Requirements – Parks and Other Open Space

(1) The natural drainage corridor should be retained in land designated for public open space.

(2) The planning for dual use (eg, drainage and park) must be integrated within the whole planning process to ensure that the final design provides for amenity, health and safety and stormwater management functions of the development.

(3) For public safety reasons, all public facilities such as play equipment and BBQ's are to be located clear of 100yr ARI flood levels and clear of 100yr ARI overland flow paths.

(4) Drainage standards to be applied to a dual use area must be considered in terms of the mix of functional uses such as:

(a) general open space areas with a low to high need for access by pedestrians and cyclists;

(b) passive areas with a low to high visitation;

(c) active areas in low to high tourist significant areas; and

(d) natural watercourses with low to high ecological significance.

(5) Appropriate drainage standards for particular areas will be required by Council having regard to the following:

(a) major flood capacity;

(b) convenience flood capacity – minor event in terms of interval event and the time to drain ponded sites;

(c) maintenance costs (eg. batter slopes between 1in 4 and 1 in 6);

(d) safety (eg. Maximum D x V of 0.4m^2/sec);

(e) stability factors such as resistance to scour, slip; and

(f) ecological considerations such as preserving valuable areas, appropriate planting in waterway areas, and minimum impact on existing riparian/aquatic ecosystems.

5.18 Stormwater Run off Quantity

(1) All stormwater quantity discharges are to be calculated in accordance with Section 5.18 of the Queensland Urban Drainage Manual (QUDM), unless approved otherwise.

(2) Drainage of roofwater and site surface stormwater runoff is to be piped drainage and must comply with AS 3500.3 and QUDM Section 5.18, levels III, IV & V.

(3) No out-of-catchment runoff is to be directed into the Council's stormwater drainage system.

(4) Stormwater runoff discharges in excess of 50 Litre/s for the Q20 storm event must be piped to a Council stormwater drainage system (i.e. gully (catchpit), access chamber, etc.) and not to the kerb and channel.

(5) Council will only consider the approval of the use of a pumped stormwater drainage system if it can be demonstrated that:

(a) no other practical option is available; and

(b) a letter/s of refusal are received from all property owners through which a gravity system could have been taken. These letters should acknowledge that significant overland flow may occur in heavy rainfall in the event of power failure or mechanical breakdown.

(6) Should any internally collected stormwater runoff be designed to bypass its pre-developed point of discharge into the Council's stormwater drainage system, the Council's gully which would receive this additional runoff, must be analysed to ensure its

functionality. This also includes the gully's connection to the trunk drainage system.

(7) Should an adjacent property (or properties), by virtue of topography and / or existing development, require current or future gravity fed stormwater discharge through the subject site, an easement in favour of that property(s) must be provided. This easement will extend from the road reserve to the RP boundary(s) adjoining these properties and be a minimum of 1.2 metres in width. A drain or connection (minimum of 225mm diameter) is to be constructed in this easement, so as to reduce future impacts to residents of the subject site.

(8) Existing overland flow paths are to be preserved, where, in residential developments, the difference in levels of the dwelling adjacent to the overland flowpath is minimal, calculations will have to be provided to demonstrate that habitable floor levels are 300mm above Q100 flood level.

5.19 Stormwater Runoff Quality

(1) Best Management Practice stormwater quality management facilities may include both structural and non-structural elements. Natural swales and other natural runoff conduits should be retained where practicable.

(2) Where stormwater quality management facilities are required to satisfy the minimum control requirements, the following measures may be used:

(a) stormwater detention structures (dry basins);

(b) stormwater retention structures (wet ponds);

(c) facilities designed to encourage overland flow, reduce flow velocities and direct flow through buffer zones; and

(d) infiltration practices.

(3) Where detention and retention structures are implemented, designs should consolidate these facilities into a limited number of large structures, rather than designs which utilise a large number of small structures.

(4) Stormwater management plans may be rejected, if they incorporate structures and facilities that will demand considerable maintenance, will be difficult to maintain, or utilise numerous small structures if other alternatives are physically possible.

(5) Ponds and basins may be incorporated into a development to reduce peak discharges downstream or to reduce flow velocities and pollutant removal. Care must be taken in the design of basins so that they perform their primary role. That is, if a basin is designed for flood control, it should be designed for this case. Any

water quality improvements must be considered an added benefit only.

(6) Unless locally specific information is available, the QUDM Table 9.1 should be used as a guide to concentrations of pollutants in urban stormwater runoff.

5.20 Public Safety

(1) The enclosed stormwater system (including manholes, GPTs, gully manholes and other enclosed structures) is to be designed in accordance with AS 2865: Safe Working in Confined Spaces and particular attention is required in regard to Section 7 of AS 2865.

(2) Wetlands constructed for the purpose of stormwater retention/detention and treatments are to be designed in accordance with relevant public safety standards.

(3) Ponded water bodies in public open space present a clear risk to public safety if steps are not taken during the design, commissioning and maintenance of the device to address safety issues. Key elements incorporating safety into design include providing suitable side slopes, plantings which discourage/restrict public access, and fencing where other options are unachievable.

(4) Detailed safety requirements for all ponded water bodies proposed for areas of Public Open Space are:

(a) Side slopes are to be no steeper than 1:6 (H:V), with recommended slopes of 1:8 (H:V);

(b) Water's edge are to be offset at least 15m from allotment boundaries or roadways except where safety fencing is provided;

(c) Interim fencing is required between the construction and establishment of vegetation within the water body (typically during the on-maintenance period) where any part of the water body is deeper than 350mm; and

(d) Areas are to be fenced and gated in any areas where the above safety requirements are not met (for example in maintenance access areas).

5.21 Construction Phase – erosion and sediment control

(1) Erosion and sediment control is to be undertaken in accordance with Institution of Engineers Australia (Queensland Division) "Soil Erosion and Sediment Control, Engineering Guidelines for Queensland Construction Sites (1996)"

5.22 Constructed Waterways

(1) Natural design concepts should be a primary consideration in constructed lakes.

(2) Design, construction and maintenance of constructed waterways should protect and improve ecosystem health and where possible, provide for recreational use.

(3) The hydraulic design of detention (dry) and retention (wet) basins is outlined in QUDM Section 6 and further information is provided in various publications.

(4) Basins are to be analysed for the entire range of design storms (Q1-Q100) Design procedures are provided in QUDM Section 6.03 and 6.04.

(5) The recommended maximum batter for grassed slopes is to be 1vertical (v) in 6horizontal (h), however the absolute maximum is to be 1v to 4h. This can be reduced to 1v in 2.5h for the portion of the embankment below water level in a wet basin. Landscaped batters which improve the overall aesthetics of the basin may be steeper, provided that safety, maintenance and outlet blockage issues are addressed.

(6) The maximum depth of water in a wet basin, lake or dam less than 0.5ha in area, is to be 1.2 metres during dry weather flows.

(7) Detention or Dry Basins—

- (a) The maximum depth of water in the basin is to be 1.2 metres at Q20 flows.
- (b) Subsoil drainage may be required, however, designs which assist the recharge of groundwater are encouraged, provided that the surface does not remain water-logged for more than a few days.
- (c) The relevant site soil conditions will determine if this is possible or necessary.
- (d) Low Flow provisions are to be catered for. This is to be a minimum of Q1 and should be piped between the inlet and outlet structure. The basin floor is to have a minimum grade of 1v in 150h.

(8) Inlet/Outlet—

- (a) Inlet and outlet weirs are to have depth velocity products in line with QUDM. In some cases, a number of smaller outlets may be required, instead of one large outlet. The use of multiple outlets will also reduce the likelihood of system blockage. Multiple outlets may also be necessary when limiting outflow to pre-developed rates.
- (b) Appropriate landscaping should be employed so as to improve the amenity of the area by screening of inlets

and outlet(s). Care must be taken to ensure trees or shrubs used do not affect the hydraulics of the structure or increase the risk of blocking by vegetative matter (i.e. small leafed type vegetation is preferred to broad leafed type).

5.23 Natural Waterways (including wetlands, Woongarra Marine Park and Tidal areas)

(1) Natural waterways are to be retained in as natural a state as possible.

(2) Factors to be considered in natural waterway assessment are design location, and options for erosion control such as soft or hard engineering methods.

(3) Where development activities are proposed in tidal areas, the provisions of the Coastal Protection Management Act apply.

(4) For sites fronting the Woongarra Marine Park (excluding sandy beaches), rocky foreshore, creek and river estuaries, stormwater discharge points are to distribute stormwater over several points; whereas as single point of discharge is required for sandy beaches.

(5) Bioretention of stormwater is the preferred option prior to discharge of stormwater to natural waterways to reduce the impacts of flushing, nutrients, sediment and velocity on the receiving environment.

Division 5—Total Water Cycle Management and Water Sensitive Urban Design

5.24 General

(1) The following sections outline a range of best practice design solutions to achieve water sensitive urban design. The solutions are not exhaustive and the applicant may propose other alternatives which meet the principles of Total Water Cycle Management and Water Sensitive Urban Design.

(2) A WSUD approach may be adopted as part of an integrated water quality management strategy at a development site to aim at economically achieving the required discharge water quality requirements from the site.

5.25 Water Sensitive Road Design

(1) Water sensitive road drainage systems aim to pass “every day” rainfall runoff events through slower flowing surface (and near surface) drainage systems such as swales and bio-retention

systems. It is more beneficial to allow these more frequent flows to be collected and conveyed within swales and bio-retention systems to allow for some attenuation of the flow and to facilitate the retention of contaminants prior to these flows discharging to receiving waterways.

(2) Grassed swales and bio-retention systems can also be included in "non-road" elements of the development design or within developments that do not include any road works.

(3) Where the natural topography has grades less than 4% (1 in 25) the majority of roads should be aligned perpendicular to the contours. This allows lots on either side of the road reserve to drain to the road drainage system thus avoiding "low-side" lots that require inter-allotment or roofwater drainage.

(4) Where the natural topography has grades between 4% (1 in 25) and 7% (1in 15) the majority of roads should be aligned at an angle across the contours to ensure the longitudinal grade of the roads does not exceed 4%. Natural topography steeper than 7% will generally not be suitable for implementing WSUD drainage systems within road reserves unless road grades are kept to less than 4% and retaining walls are provided along "high-side" lots.

(5) Conventional pipe drainage systems would normally be provided along roads with longitudinal grades steeper than 4% unless additional flow control features such as check dams are used to promote uniform flow conditions.

(6) Where practicable, dual carriageway roads should be provided along trunk drainage routes to allow use of centre medians for WSUD drainage systems.

(7) Single carriageway roads should be designed to provide for implementation of WSUD drainage systems such as swales and bio-retention systems within the "high-side" verge. Where the road is running perpendicular to the contours and there is no discernible "high-side" then either verge can be used for WSUD drainage systems.

5.26 Natural Channel Design

(1) The design, implementation and/or construction of any natural channel or natural channel rehabilitation works is to be in accordance with the Brisbane City Council (BCC) Natural Channel Design Guidelines.

(2) In addition to the requirements within the BCC Natural Channel Design Guidelines, Burnett's local topography, geology and geomorphology are to be considered in the design of natural channel works or natural channel rehabilitation works. A sensitivity analysis must be conducted using a Manning's 'n' of 0.15 to ensure that channel freeboard is not exceeded.

(3) An extended maintenance period may be required until the channel has sufficiently stabilised and vegetative cover is at least 80% of the site. The desired style of drainage channel can vary from a grass lined overland flow path for very small catchments, to a fully established river channel for large catchments. Desirable bed conditions in a reconstructed watercourse usually depend on the following factors:

(a) catchment areas;

(b) catchment soil type (infiltration capacity) and erodibility; and

(c) canopy cover.

(4) Any works within receiving waters, including natural channel design, shall not be included as a "treatment device" in any stormwater treatment train models.

5.27 Stormwater Quality Improvement Devices

(1) The installation of SQIDs as part of the development is generally required to mitigate the impact of the development to achieve the required Water Quality Objectives for the receiving waterbody.

(2) The design event for the component SQIDs that make up the "treatment train" is to be considered on a development case-by-case basis. Alternatively, the default design event for all SQIDs is the 2 year ARI event, and should not be confused with the minor stormwater system design.

(3) Draft Australian Runoff Quality Guideline (ARQ) 2003 The Institute of Engineers Australia and Urban Stormwater Best Practice Environmental Management Guidelines 1999 (Victorian Stormwater Committee) or Brisbane City Council SQID Design Guidelines should be referred to when proposing solutions involving SQIDs. These guidelines will assist in considering matters such as life cycle costing, operational maintenance, and maintenance plans.

(4) For most SQIDs, it is preferable that the flood events greater than the SQID design event bypass the SQID.

(5) The high flow bypass is to be designed:

(a) in accordance with the design principles for the form of the high flow bypass (i.e. an open channel is to be designed in accordance with the open channel section);

(b) to accommodate the 100 yr ARI flood event and the bypass flows greater than SQID design event;

(c) to accommodate overflow events in the circumstance when the SQID is fully blocked by debris, litter or pollutants; and

(d) to ensure that public safety is maintained and protected.

(6) In circumstances where a collapsible weir is proposed, the applicant is to clearly demonstrate that when the weir collapses it does not create a public hazard through (but not limited to):

(a) a flood wave (or surge);

(b) the action of collapsing; or

(c) increasing flood levels (in addition to the general requirements in regard to impacts on flood levels).

(7) In addition, collapsible weirs are required to be:

(a) accessible for maintenance operations;

(b) maintainable;

(c) consisting of parts or components that would be common for Council (i.e. no unusual parts or components); and

(d) structurally sound and able to withstand debris loads.

(8) Appendix 3 is the general range of efficiencies that would reasonably occur for certain types of SQIDs, if well maintained and designed for the SQID design event (generally 3 month ARI). These are intended only as a broad guide, and do not replace the requirement to design systems to achieve the required efficiency for a particular parameter.

(9) In applying these removal rates, consideration should be given to the practical constraints of the device selected such as head loss, space requirements, tailwater conditions (i.e. tidal) etc. The selected device must be 'fit-for-purpose' as well as meeting the requirements on paper.

(10) Source controls such as education, street sweeping and rubbish bins are not included. Education relates to engendering a social and cultural shift in the attitudes and practices of the community. It is important to note that these source controls are critical to improving stormwater quality, but they can not be simply related to "efficiency".

(11) Cleanout or maintenance will need to utilise plant and equipment currently in use by Council. The contributed assets are to be designed and constructed so that they can be maintained and operated without specialized equipment that is not currently available to Council's maintenance operations.

(12) SQIDs are to be designed so that maintenance can be achieved with no manual handling of trapped pollutants.

5.28 Swales

(1) Swales are a series of vegetated open channels designed specifically to treat and attenuate runoff for a specified water quality volume. They function by filtering stormwater through

vegetation in the channel, filtering through a subsoil matrix, and infiltration into underlying soil.

(2) Grassed swales are primarily linear systems and are often used adjacent to roads and in residential areas.

(3) Grassed swales are not to be used:

(a) as the sole treatment measure for large drainage areas; and

(b) stormwater "hot spots", areas with the potential to generate highly contaminated runoff, such as gas stations (where infiltration can be a threat to groundwater).

(4) Design:

(a) Grassed swales are required to achieve the following minimum design objectives:

(i) hydraulic residence time of nine minutes (and not less than five minutes) for the minor design event (as defined by QUDM);

(ii) ensure uniform flow distribution to maximise the potential for pollutant removal;

(iii) shaped to minimise the scour potential with no “sharp” corners (i.e. trapezoidal, parabolic – wide, flat or slightly “dished” channels – avoid “triangular” shaped channels);

(iv) design flow velocity of approximately 0.25m/s or less during minor event, but no greater than 0.5 m/s and maximum velocity of 1.0 m/sec for the 100 yr ARI event;

(v) maximum depth of flow during minor event equal to 1/3 of grass height in infrequently mowed swales and equal to ½ the grass height in regularly mowed swales (to maximum of 75mm);

(vi) ensure that the swale is effectively integrated into the landscape design and character of the development; and

(vii) selection and planting of vegetation is to maximise the effective vegetative filter area under design flows.

(b) The acceptable hydrological and hydraulic calculation methods are contained within QUDM.

(c) Further design considerations that should be addressed as part of the engineering design include:

(i) cross sectional shape should be trapezoidal to avoid concentration of flow and scouring in the base of the swale;

(ii) side slopes should be no steeper than 1V:6H to allow mowing by motorised equipment, or retained, unless site conditions determine other needs;

(iii) check dams should be installed if longitudinal slopes exceed 4% (depending on velocity calculations) and underdrain (subsoil drainage) installed if slopes are less than 2% ;

(iv) swale base widths exceeding 2.5m will require flow distribution devices at regular intervals in order to ensure uniform flow across the cross section;

(v) the recommended Manning's "n" value is 0.2 for flow conditions where the depth of flow is below the height of the vegetation and 0.03 for 100yr ARI event;

(vi) the selected vegetative lining of the swale is required to be able to cater for the expected flow velocities without erosion or scour.

(vii) In urban areas, when providing access across the footpath to a residential lot, the swale shall be shaped to suit a driveway for travel by a standard car with the necessary clearances. Pipe crossings will not be approved in the swale.

(d) Swales are to be designed to ensure that the depth-velocity limit of 0.4m2/s is not exceeded for all flows up to the major flow event (or in the case of inter-allotment drainage, the design event as defined above).

(e) Alongside roadway pavements, the swales must be sized so that the water level in the swale during the 2 year ARI event is below the base of the roadway pavement (typically in the order of 300mm below the roadway surface). Alternative systems (involving, say, impermeable membranes separating the swale from the pavement) may be considered if it can be demonstrated that these flows will be prevented from seeping into the pavement.

(f) Also, for roadside application, the swale shall be shaped to suit a driveway profile for travel by a standard car with clearances. Pipe crossings for driveways will not be permitted.

5.29 Bio-retention Swales

(1) The length of each filtration "cell" is generally defined by practical site constraints. As a minimum, the cell length is nominally defined by the spacing between driveway cross-overs. The segmentation of bio-retention systems into cells also allows points for maintenance access or water quality sampling. Accordingly, the cell partitions are also to be designed to allow future maintenance with:

(a) Access for a draincam or a root-cutter to be inserted into the slotted pipe (if large enough); and

(b) Cell partition so the “old” and clogged filtration media can be removed for disposal or treatment.

(c) The width of the filtration “cell” is to be determined to ensure the design flow to be infiltrated into the filtration media (typically the 2 year ARI peak discharge) can do so without prolonged surface ponding.

(d) The depth of the filtration “cell” is set by site conditions and construction practicalities with the greater the depth the better the water quality improvement. The minimum depth of 0.6m is recommended. A slotted (agricultural) pipe is typically located along the base of each filtration”cell” to facilitate recovery of the stormwater that has percolated through the filtration media. The size of the slotted pipe is to be determined with respect to the desired retention time of the particular cell, desired retention time of the entire bio-retention system and the proposed outlet design.

5.30 Buffer Strips

(1) Key issues involved with the implementation of grass buffers include:

(a) land must be graded accurately to ensure maintenance of sheet flow and avoid concentration that may cause erosion or scouring;

(b) delivery of stormwater runoff to the buffer area must be from area graded to ensure sheet flow;

(c) grass buffers are only to be included in a stormwater treatment train immediately downstream of an impervious source. Hence, this should be reflected in modelling and private property is not to be considered as a buffer strip in any circumstances; and

(d) grades are to be between 2% and 4% across the direction of fall.

(2) Maintenance requirements for grass buffers are:

(a) regular mowing to maintain grass (preferably higher than 75mm); and

(b) maintenance to retain continuity of grass sward (eg. reseeding).

5.31 Gross Pollutant Traps

(1) Gross Pollutant Traps (GPTs) are devices that are installed within or towards the outlet of enclosed stormwater drain systems. Generally, they function to trap gross pollutants (i.e. litter, general

garden waste etc.) and coarse sediments (approximately greater than 2mm diameter), within or at the outlet of the stormwater system.

(2) GPT's are used as part of the pre-treatment within the overall treatment system in areas where enclosed minor stormwater systems (i.e. piped drainage systems) are installed. GPTs can also be used in existing enclosed minor stormwater systems, where there is sufficient hydraulic capacity for the installation.

(3) Gross Pollutant Traps are not to be used for the removal of:

(a) pollutants/fine sediments that are less than 2 mm;

(b) colloidal material;

(c) dissolved chemical pollutants;

(d) nutrients; or

(e) hydrocarbons (including oil and grease).

(4) GPTs are not to be used in retrofit situations where the existing hydraulic capacity of the stormwater system is not to current standards, unless the developer upgrades the existing stormwater system to current standards, with sufficient hydraulic capacity for the inclusion of a GPT.

(5) Gross Pollutant Traps (GPTs) are to be designed and constructed so that:

(a) the GPT captures a minimum of 90 percent of solid type pollutants 2mm and larger at the SQID design event;

(b) the GPT captures a minimum of 75 percent of floatable pollutants having dimensions of 25mm in length, 10mm in width and 10mm in depth at the SQID design event;

(c) the GPT is located in an accessible location (and not in swampy areas, at the bottom of embankments or other inaccessible locations);

(d) the GPT is not located near electrical equipment or where a voltaic cell can occur;

(e) the GPT is to be fitted with a suitably designed lockable access cover approved by Council that prevents entry of unauthorised persons;

(f) re-suspension of captured pollutants during flows in excess of the SQID design event is prevented;

(g) a minimum of 90 percent of pollutants re-suspended by back flushing is recaptured;

(h) grill/mesh have a self cleansing mechanism to prevent blockage;

(i) the GPT does not increase the hydraulic gradeline in an existing stormwater drainage system at the first

pit/manhole upstream of the device by more than 150mm at a flow equal to the minor storm event for the minor stormwater system for that flow from the catchment;

(j) the GPT does not create surcharge at the pit/manhole immediate by upstream of the GPT, unless there is an acceptable overland flowpath or high flow bypass;

(k) the GPT is suitably located in public road, park or drainage reserve;

(l) the GPT can be hydraulically isolated during cleanout;

(m) when located in areas where tidal backflow is present, the downstream drain includes provision of a tide gate to prevent tidal inflow; and

(n) any proprietary products are to be designed and installed in accordance with the manufacturer's guidelines.

5.32 Gully Pit Gross Pollutant Traps

(1) Gully pit GPTs are used as part of the pre-treatment within the overall treatment system in areas where enclosed minor stormwater systems (that is, piped drainage systems) are installed. Gully pit GPTs can also be used in existing enclosed minor stormwater systems, where there is sufficient hydraulic capacity for the installation.

(2) The gully pit GPT should not be used in retrofit situations where the existing system's inlet capacity is insufficient for the major stormwater system to take the events greater than the minor enclosed stormwater system (i.e., if there is no overland flowpath from a trapped sag gully).

(3) Gully pit GPTs are to be designed and constructed so that:

(a) gross pollutants for the SQID design event are captured prior to entry to the minor stormwater system;

(b) sufficient overflow capacity is provided so that the minor storm event enters the minor stormwater system when the gully pit GPT is fully blocked. In certain circumstances, this will mean that additional gully pits will need to be installed;

(c) any proprietary products are designed and installed in accordance with the manufacturer's guidelines;

(d) the pollutant collection chamber is free draining to prevent anaerobic decomposition of collected matter. Anaerobic decomposition may be a source of odour and polluted leachate;

(e) the grates of the gully pit GPT are to be lockable such that a member of the public cannot access the pollutant

collection chamber, but so that Council maintenance crews can;

(f) it can be cleaned easily utilising a vacuum truck or a vacuum street cleaner; and

(g) for health and safety reasons, manual lifting or cleaning of gully pit GPTs is to be minimised through appropriate design and development.

5.33 Oil, Grease and Grit Separators

(1) Oil and grit separators are intended to remove the bulk of hydrocarbons and grit flushed from commercial areas, industrial areas, carparks and other land uses where oil spills occur or where hydrocarbons and sediment can accumulate.

(2) Key issues involved with the implementation of oil, grease and grit separators include:

(a) limited removal of fine sediments or soluble pollutants;

(b) potential re-suspension of sediments and/or entrainment of floating oil with turbulence;

(c) trapped debris is likely to have high concentrations of pollutants, possibly toxicants;

(d) potential safety hazard to maintenance personnel;

(e) require frequent maintenance to provide continued performance;

(f) potential release of nutrients and heavy metals from sediments;

(g) total suspended solids minimum 85% removal efficiency @ 150µm;

(h) oil removal based on specific gravity of 0.82 – 0.87: >95%;

(i) installation of units is to be performed in strict accordance with the manufacturer recommendations and specifications;

(j) the installation of the device must account for prevailing soil pressures and must be designed to prevent hydrostatic uplift when the water table is at or close to the ground surface; and

(k) the installation must be designed to prevent damage by vandals.

(3) A range of devices are commercially available for installation in appropriate situations a list of these devices can be supplied on request.

(4) Maintenance requirements for oil and grit separators are regular cleaning out and removal to appropriate disposal points.

(5) Council requires that discharges from these traps including overflows are diverted to wastewater treatment facilities under a trade waste permit or to a hold tank.

(6) Oil and grease separators are not suitable for the removal of dissolved or emulsified oils and pollutants such as coolants, soluble lubricants, glycols and alcohols. There is significant risk of re-suspension of accumulated sediments during heavy storm events. Accordingly, Council requires that oil and grease separator units be installed off line with a high flow by-pass.

(7) Oil and grease from urban catchments may be better treated by grass swales, bio-retentions systems and wetlands.

(8) Groundwater seepage into underground or basement car parks may not be discharged to sewer. Any discharge to stormwater may occur only after suitable treatment has reduced or removed the potential for acid sulfate soil and/or hydrocarbon contamination.

5.34 Trash Racks

(1) Council does not promote the use of trash racks in situations where gross pollutant traps or gully pit gross pollutant traps can be implemented. Trash racks are only to be proposed in situations in which gross pollutant traps cannot be effectively installed.

(2) Trash racks are not to be used when the system requires effective and efficient capture of coarse and fine sediments, oils and hydrocarbons, nutrients or dissolved pollutants.

(3) Trash racks are to be designed and constructed so that:

- (a) the trash rack captures litter and debris for the SQID design event;
- (b) bar spacing is to be capable of retaining a 375mL metal drink container (standard aluminium drink can), with a maximum clear spacing of 40mm between bars;
- (c) the materials will structurally withstand:
  - (i) the debris load of a fully blocked rack for the 100 year ARI event;
  - (ii) impact by a large floating object (i.e. log); and/or
  - (iii) when overtopped for the 100 year ARI event.
- (d) they are sized to operate effectively whilst passing the SQID design event flow without overtopping and with 50% blockage (i.e. the height of the trash rack is to be greater than the flood level of the SQID design event with 50% blockage of the rack);

(e) a concrete pad of 1.5m width upstream of the rack allows easy access for clearing the collected material from the rack;

(f) maintenance access is provided to the trash rack;

(g) the individual panels of the rack are sized so that a backhoe can easily lift the panel (i.e. weight to be less than 300kg), to suit commercially available materials (i.e. steel) and the structural provisions outlined above;

(h) the adverse impacts of a fully blocked trash rack are minimised by the incorporation of mechanisms or high flow bypass; and

(i) landscape screening and safety fencing are incorporated when necessary.

5.35 Other SQID Devices

(1) Council will consider alternative SQID devices. The applicant will be required to demonstrate that the alternative SQID does achieve the required treatment objectives and is a maintainable asset.

(2) The applicant is required to submit to Council sufficient information to assess:

(a) the performance, efficiency and suitability of the alternative SQID device; and

(b) the potential cost of maintenance of the alternative SQID device.

(3) Detailed calculations and test results (laboratory and field) are to be submitted to provide verification of the claims being made as to performance, efficiency, suitability and maintenance costs for the device proposed.

(4) Submissions to Council are required to include:

(a) Catchment plan together with hydrological and hydraulic calculations. Calculations should generally commence at the outlet of the drainage system to a waterway under the control of Council or other location nominated.

(b) Drawings of the proposed alternative SQID device.

(c) Facts detailing the performance of the alternative SQID device.

(d) Details of the verification procedure to be applied by Council to confirm that the alternative SQID device is performing as stated by the designers.

(e) Copies of reports on the performance of the device from laboratory and/or field trials.

(f) Details of locations where similar alternative SQID device have been constructed, including name of authority and contact telephone number of person who can provide verification as to the performance of the alternative SQID device in service.

(g) Details of cleanout/maintenance and anticipated costs of procedures to be adopted. Cleanout/ maintenance will need to utilise plant and equipment currently in use by Council. A requirement for use of specialised equipment not currently available to Council's maintenance operations may preclude the use of the alternative SQID device.

(h) Structural calculations showing the device, the roofs and access covers are designed for a W7 traffic load. Council prefers access covers to be of checker plate or similar construction. Access covers are to be large enough to enable vertical removal of components where required.

(i) Details of guarantees as to the long term performance of the device.

(5) Inspection/maintenance access lids are to be provided to alternative SQID devices. The lids are to be 900mm x 600mm in size and have recessed hinges and padlocks. Inspection access lids are required to all chambers and chamber areas where separated by dividing walls or weirs.

(6) Maintenance drop boards are required to isolate the alternative SQID device from upstream and downstream flows. The drop boards must stay with the device and be designed to be lowered in position within Workplace Health and Safety lifting requirements.

(7) No confined space entry is permitted for regular maintenance cleanouts.

5.36 Stormwater Harvesting

5.36.1 General

(1) The primary aim of stormwater harvesting is to assist in reducing demand on municipal potable water supplies.

(2) A secondary aim of stormwater harvesting is to reduce the impacts development and urbanisation has on the storm hydrograph. Urbanisation tends to reduce the time of concentration, which can result in higher peak flows during a storm event, and a reduction in natural attenuation effects. Accordingly, the loss of natural attenuation effects is compensated through the development of detention and/or retention areas within the developed catchment.

(3) As similar infrastructure or assets can achieve both the stormwater harvesting aim and detention/retention aims, these guidelines address both aims for the infrastructure or assets.

5.36.2 Underground Storage Tanks

(1) Discharge control pits:

(a) provide onsite detention thereby reducing peak flows; and

(b) provide potential for stormwater re-use for non-potable uses (such as irrigation, wash down water etc.).

(2) Underground storage tanks also provide a minor water quality improvement function by allowing sediment to settle.

(3) Key issues involved with the implementation of underground storage tanks include:

(a) sized to achieve predevelopment flows in stormwater discharge;

(b) if device has a stormwater reuse function then only roof water should be connected, otherwise, pavement and roofwater may be combined;

(c) pre-treatment required for removal of gross pollutants prior to entry if collecting from paved surfaces;

(d) pre-treatment for sediment removal is advisable for both roof and pavement collection sources;

(e) locate access points away from heavily trafficked areas so as to minimise disincentives to maintenance; and

(f) use light duty access covers to minimise disincentives to maintenance.

(4) A number of preconstructed pits and storage devices are available commercially. Details of such devices shall be provided to Council, together with supporting information to demonstrate its suitability to the proposed development.

(5) Maintenance requirements are:

(a) annual flushing out of tank; and

(b) regular maintenance of first flush device.

5.36.3 Rainwater Storage Tanks

(1) Storage tanks can:

(a) allow the reuse of collected rainwater as a substitute for mains water supply for non-potable purposes, either inside or outside the building (including toilet flushing, laundry use or garden watering); and

(b) when designed with additional capacity above the overflow volume, provide an onsite detention role, thereby reducing the peak flow of a storm event.

(2) Key issues involved with the implementation of rain water storage tanks include:

(a) must be installed by a licensed plumber;

(b) must be fitted with a "first flush" device to ensure pollutants and sediments are diverted before reaching the tank;

(c) must be sealed at the inlet to avoid insect ingress and mosquito breeding;

(d) rainwater that may be used inside the home should only be collected from roofs. Roofs coated with lead or bitumen based paints or asbestos cement roofs must not be used;

(e) should be sized to provide storage for a minimum of one week's use of the intended water application rate. Generally, capacities between 3kL and 10kL provide maximum water savings and stormwater management benefits;

(f) must be sited to the side or rear of the house and not be visible from the street;

(g) tanks must not be located within 1.5m of a boundary; and

(h) that a building permit may be required for tank-stands.

(3) There are to be no physical interconnections with the mains water system: a dual water pipe system for mains and tank water is required;

(4) There is to be a provision for switching over to mains water to enable continued use of any internal fixtures (i.e. during periods of low rainfall);

(5) The back-up supply of water to the rainwater tank is to be a mains trickle-feed water supply to the tank (separated from the maximum tank water level by an air-gap to prevent backflow). The air gap is required to comply with Australian Standards AS/NZ 3500.1.2 and 2845. Alternative solutions will be considered but are not to involve physical interconnections with the mains water system;

(6) Within declared water supply areas, at least one separate mains connection is required to be provided for outdoor uses; and

(7) Water quality in the mains water system is to be protected through the appropriate design and use of rainwater tank systems that ensure continued circulation of mains water within mains water systems.

(8) All rainwater tanks should be designed, fabricated, constructed and installed in accordance with the practical guidelines provided in the Guidance on Use of Rainwater Tanks (National Environmental Health Forum).

(9) A major consideration with implementing rainwater tanks is the effective maintenance of these assets by the responsible asset owner. Generally, rainwater tanks will be implemented at the allotment or site level. As the property owner, and not Council, is the asset owner of rainwater tanks it will be the responsibility of the owner to maintain and operate rainwater tanks according to Council requirements.

(10) Design of the roof water system will depend on a number of factors including:

(a) the proposed uses of the roof water (toilet flushing, hot water, laundry, outdoor use);

(b) the objective of the roof water system (stormwater management, mains water demand management or other objectives);

(c) whether the storage is above or below ground; and

(d) whether the roof water system will form part of a dual water supply scheme (mains water and roof water) or will the roof water system be independent of the mains water supply.

(11) Maintenance requirements for rainwater storage tanks are:

(a) annual flushing out of tank;

(b) regular inspection to ensure appropriate sealing;

(c) regular maintenance of first flush device; and

(d) pump maintenance (if non-gravity system e.g. below ground).

5.36.4 Regional Retention Requirements

(1) Developments that create large urban areas are required to determine the volume of retention or detention required to reduce the impact of urbanisation and to ensure that the required retention/detention volume is provided in the development design. The objective is to ameliorate the impact of urbanization as much as possible, and to replicate natural hydrological conditions as best as physically practical. The required retention volume for the development is to be calculated through the hydrological routing methods. Using such hydrological routing methods, the retention volume for a subcatchment can be determined across the development site thus allowing the developer to assign retention requirements between separate basins and/or on-site detention requirements.

(2) Retention/detention may be required to mitigate an existing downstream flooding problem or to allow a reduction of the size or form of downstream infrastructure (either natural or constructed). The volume of retention to have this mitigating effect is to be considered in addition to the volume of retention required to ameliorate the impact of urbanisation.

(3) For all retention/detention schemes, the impact on scouring of downstream waterways is also to be considered. There are three possible scour scenarios due to:

(a) an unmitigated peak flow for developed situations;

(b) prolonged discharge from retention/detention discharge storages; or

(c) increased frequency of the critical scour velocities.

(4) Accordingly, retention/detention storage requirements and the outlet design are to be considered in parallel to the natural channel design requirements and the natural hydrograph. Channel erosion can occur in natural streams, but in an urban environment this may be undesirable due to lot alignment, sediment load and receiving waterbody Environmental Values.

5.36.5 Regional Retention/Detention Basins

(1) In some cases, the provision of a regional detention/retention basin will be more cost effective and appropriate than the installation of on-site detention devices. The design and construction of a regional detention/retention device does not preclude the development of on-site detention facilities or rainwater tanks on the allotment scale of the development.

(2) The hydraulic design of detention (dry) and retention (wet) basins is outlined in QUDM Section 6 and further information is provided in various publications.

(3) Basins are to be analysed for the entire range of design storms (Q1-Q100) Design procedures are provided in QUDM Section 6.03 and 6.04.

(4) The recommended maximum batter for grassed slopes is to be 1v in 6h, however the absolute maximum is to be 1v to 4h. This can be reduced to 1v in 2.5h for the portion of the embankment below water level in a wet basin. Landscaped batters which improve the overall aesthetics of the basin may be steeper, provided that safety, maintenance and outlet blockage issues are addressed.

(5) The maximum depth of water in a wet basin, lake or dam less than 0.5ha in area, is to be 1.2 metres during dry weather flows.

(6) A retention basin is a constructed stormwater basin that retains a permanent pool of water allowing coarse to medium sized sediments to settle from the water column. A sediment forebay at

the main entry to the detention basin can serve to trap large sediments before the runoff enters the primary pool, effectively enhancing removal rates and minimising long term operation and maintenance problems. The forebay is typically constructed as a preliminary excavated settling basin or section separated by a low weir at the entrance to the main detention basin. Periodic sediment removal from a forebay is easier and less costly than removal from the primary wet pond pool, especially if the forebay is designed with a hard bottom and easy access for heavy machinery.

(7) The primary pollutant removal mechanism in a retention basin is sedimentation. Significant loads of suspended and dissolved pollutants can also be removed by natural chemical flocculation, physical adsorption to bottom sediments and suspended fine sediments, bacterial decomposition and uptake by plants and algae.

(8) Sediment particles entering the retention basin will be captured via sedimentation in the basin if the particle reaches the bottom of the basin before the water flowing with the particle exits the basin. Therefore, the pollutant removal capacity of the proposed wet detention basin will be maximised by making the travel distance from the inflow point to the outflow point as long as possible. Providing adequate water depth is maintained to prevent re-suspension by wind actions. The performance of the detention basin may therefore be enhanced by enlarging the surface area to increase volume, as opposed to deepening the pool.

(9) The batter slopes above and immediately below the water line of the basin should be designed with consideration of public safety and landscape integration. The cost, safety and maintenance desires of the Local Government will determine whether “hard” (e.g. vertical rock walls with safety hand rail) or “soft” (e.g. vegetated batter slope) edge treatments should be applied in the basin design. Soft edge treatments involve using gentle slopes to the waters edge (e.g. 1:8 to 1:10), extending below the water line for a distance (e.g. 2.4 m) before batter slopes steepen into deeper areas.

(10) De-silting is the maintenance procedure necessary to maintain adequate depth in the retention basin and provision of adequate storage for settled sediment to prevent the need for frequent de-silting needs to be incorporated in the detailed design. De-silting will be required when sediment accumulates to about half the basin depth. Inclusion of a sediment forebay as discussed previously will reduce the de-silting effort required in the main basin.

(11) The operation and maintenance design may include periodic addition of chemical flocculants (such as alum) to aid precipitation and flocculation of the fine (silt) sediment portion usually suspended in the water column.

(12) Intermittent benches around the perimeter of the detention basin are recommended for safety and to promote vegetation. A safety bench may be required to be located above the normal pool water surface level. A submerged bench may be maintained just below the normal water surface level to support emergent macrophytes. Deeper depths near the outlet may yield cooler bottom water discharges that may assist in mitigating downstream thermal effects during summer.

(13) The retention basin open space areas can be landscaped to create a focal point for passive recreation. Landscape design should generally focus on dense littoral vegetation planting to restrict access to the open water zone, and therefore increase public safety, but could also include pathways and information signs to promote community use of the area. Plant species selection and placement should be determined during detailed design, but should aim at creating a barrier to restrict public access to the open water zones and integrate with the surrounding landscape and community character, as well as providing or enhancing local habitat. Landscape design must also consider access to the detention basin for maintenance (e.g. excavator). Walking or jogging trails can be incorporated into the basin design, as well as simple turfed viewing areas or constructed decks with signage including sketches explaining the detention basin treatment process, and plant information all offer safe, low maintenance enhancements.

(14) Crime prevention through environmental design is an innovative approach to using good design practices to improve security and surveillance for public areas. Preventative measures that may be appropriate for the detention basin include:

(a) dense littoral planting around the basin will deter public access to the open water and create a barrier to improve public safety;

(b) careful selection of plant species (e.g. tall, dense or spikey species) can improve public safety as well as preventing damage to the vegetation by trampling; and

(c) temporary fencing around vegetation until vegetation establishes.

(15) The role of vegetation in the retention basin is to provide scour and erosion protection to the basin batters as well as restricting public access to the open water and reducing the potential safety risks posed by water bodies. Emergent macrophytes may also enhance sediment removal from the water column via filtration and adhesion onto submerged plant stems and leaves. Terrestrial planting may also be recommended to screen areas and provide a barrier to steeper batters.

(16) Planting of the shallow marsh zone (to an approximate depth of 0.2 m) and ephemeral marsh zone (approximately 0.2 m above water level) around the perimeter of the detention basin is recommended to bind the bank and reduce erosion at the waters edge. Only the waters edge and batters of the retention basin should be planted and care needs to be taken in species selection to ensure vegetative growth will not spread to cover the deeper water zones which will reduce the dissolved oxygen content and potentially cause the extinction of other organisms living in the detention basin. Similarly, floating or submerged macrophytes should be avoided.

(17) Excavator and other maintenance vehicle access needs to be incorporated in to the detention basin design. An excavator may be able to reach all parts of the basin from the edge of the road reserve or top of the detention basin batter without provision of a dedicated access track around the perimeter of the basin. If sediment collection requires earthmoving equipment to enter the basin, a stable ramp will be required into the base of the sedimentation basin (maximum slope 1:10).

(18) The retention basin should be constructed with a hard (i.e. rock) bottom to support maintenance machinery if access is required within the basin. This will also allow an excavator operator to detect when they have reached the base of the basin during de-silting operations.

(19) It may also be necessary to drain and isolate the basin area for maintenance periodically and means for this or alternatively a pumping arrangement need to be incorporated into the detailed design. An easily accessed pumping arrangement may also be beneficial for fire fighting and/or local irrigation.

(20) The outlet structure should be designed such that access to the outlet does not require a water vessel.

(21) It will be beneficial for the retention basin design to provide some preliminary protection against blockage by flood debris. This is generally a gross pollutant trap (GPT) included at the inlet, that may also provide some energy dissipation reducing flow velocity and scour. Examples of GPTs that may be appropriate for retention basins:

(a) grate entrance systems and gully pit traps further upstream in the catchment;

(b) direct screening devices such as litter collection baskets, release nets, trash racks, return flow litter baskets, and channel nets; and

(c) floating traps (especially in a sediment forebay situation) including flexible floating booms, floating debris traps, etc.

(22) Maintenance schedules are to be provided detailing the required frequency of maintenance and the treatment structures such as a GPT are sized accordingly. Inspections of the site after storm events to check correct functioning (e.g. no choking by debris, excessive erosion around inlet and outlet) should be scheduled. In addition, regular checks for sediment build up will be required. Typical maintenance of the detention basin may involve:

(a) routine inspection of sediment depth, damage to vegetation, scour and litter debris build up;

(b) routine inspection of inlet and outlet points for correct operation and erosion;

(c) removal of litter and debris;

(d) removal of weed species from within the detention basin area;

(e) periodic draining and de-silting;

(f) regular plant watering during establishment;

(g) replacement of dead plants.

5.36.6 Detention or Dry Basins

(1) The maximum depth of water in the basin is to be 1.2 metres at Q20 flows.

(a) Subsoil drainage may be required, however, designs which assist the recharge of groundwater are encouraged, provided that the surface does not remain water-logged for more than a few days.

(b) The relevant site soil conditions will determine if this is possible or necessary.

(c) Low Flow provisions are to be catered for. This is to be a minimum of Q1 and should be piped between the inlet and outlet structure. The basin floor is to have a minimum grade of 1v in 150h.

5.36.7 Inlet/Outlet

(1) Inlet and outlet weirs are to have depth velocity products in line with QUDM. In some cases, a number of smaller outlets may be required, instead of one large outlet. The use of multiple outlets will also reduce the likelihood of system blockage. Multiple outlets may also be necessary when limiting outflow to pre-developed rates.

(2) Appropriate landscaping should be employed so as to improve the amenity of the area by screening of inlets and outlet(s). Care must be taken to ensure trees or shrubs used do not effect the hydraulics of the structure or increase the risk of blocking by

vegetative matter (i.e. small leafed type vegetation is preferred to broad leafed type).

5.36.8 Safety

(1) Signs must be placed at relevant locations warning of the possible hazards such as water depth, piped inlet suction, major spillway effects.

(2) Downstream effects of spillway usage need to be considered during design.

5.37 Bio-retention

5.37.1 General

(1) Bio-retention systems involve the infiltration of stormwater into a permeable (draining) filtration medium. The biofilms (growing on the surfaces of the filtration medium) assist in the water quality improvement function by:

(2) Adsorption of fine particulates; and

(3) Biochemical processing of soluble contaminants.

(4) Bio-retention systems may drain to groundwater stores, drain to surface water or both.

(a) Bio-retention systems are used primarily for fine sediments and nutrients and also assist in the removal of hydrocarbons and heavy metals. To be effective, pre-treatment for gross pollutants and coarse sediments is required.

(b) Bio-retention systems can be incorporated into the landscape design of developments and roads. They can also be constructed within existing developments.

(c) Bio-retention systems can be prone to clogging by coarser sediments. Accordingly, a coarse sediment trap of some form is required upstream of the bio-retention system.

(d) Consideration of the in situ geology and locations of aquifers is required. If the bio-retention system is recharging the aquifer through infiltration, a careful assessment will need to be undertaken to consider if there is any water quality impact on the groundwater.

(e) Bio-retention systems are not to be used for the removal of:

(i) gross pollutants (i.e. litter, large green waste);

(ii) coarse pollutants or coarse sediments; or

(iii) highly hazardous or toxic pollutant loads.

5.37.2 Design

(1) The main cause of failure in bio-retention systems is clogging of the media by organic material or coarse sediment. Pre-treatment of stormwater inflows and effective siting of bio-retention systems is therefore essential. Buffer strips and/or grassed swales located upstream of the infiltration device are a pre-treatment option which can be effectively integrated with the infiltration system design.

(a) The length of each filtration "cell" is generally defined by practical site constraints. The segmentation of bio-retention systems into cells also allows points for maintenance access or water quality sampling. Accordingly, the cell partitions are also to be designed to allow future maintenance with:

(i) access for a draincam or a root-cutter to be inserted into the slotted pipe (if big enough);

(ii) cell partition so that “old” and clogged filtration media can be removed for disposal or treatment.

(b) The effectiveness of stormwater detention and retention systems for any particular runoff event is dependent on antecedent storage conditions. Continuous simulation of the hydrological behaviour of bio-retention systems and the proposed outlet design is therefore the preferred method of design, and developments proposing to incorporate these devices are required to size them in this way. Simulations of bio-retention systems are to be based upon:

(i) in-situ soil properties (i.e. infiltration rates) based on site-specific investigations (refer to AS/NZS 1547:2000 for methods for determining infiltration rates);

(ii) infiltration rates through the permeable filtration media;

(iii) dimensions (width, length and depth) of the bio-retention cells that make up the bio-retention system;

(iv) effective storage available within the bio-retention cells that make up the bio-retention system;

(v) sub-soil perforated pipe sizing and location; and

(vi) outlet design and hydraulic rating.

(c) In addition to the above sizing requirements, the following requirements are to be followed in regard to detailed design and construction of a bio-retention system:

(i) geotextile fabric should be provided at the base and sides of the bio-retention system to minimise migration of surrounding soils;

(ii) geotextile fabric can be extended to cover the surface of the bio-retention system if topsoil and vegetation are provided;

(iii) for bio-retention systems that are to facilitate infiltration, compaction of the base of the trench and surrounding soils is to be avoided;

(iv) during construction sediment runoff should be directed away from the bio-retention area;

(v) adequate overland flow paths are to be provided for events exceeding the capacity of the bio-retention area;

(vi) if the velocities of the storm events greater than the SQID design event to the major design event create scour conditions along the bio-retention system or could cause the re-entrainment of collected pollutants, a high-flow bypass is required;

(vii) adequate sub-surface drainage is required through a perforated pipe network (agri pipe) along the length of the device, discharging to the outlet or into the infiltration system.

(viii) methods used for design and sizing should be in accordance with ARQ.

5.37.3 Permeable Filtration Media Design

(1) The permeable filtration medium is a critical component of the design of bio-retention systems. At this stage there are no specific design guidelines for all bio-retention situations. The design of the permeable filtration media needs to consider:

(a) desired retention time;

(b) design infiltration rate;

(c) media sizing and grading;

(d) vertical layers of media types;

(e) cell sizing and locations;

(f) sizing and grading of aggregate material;

(g) mulch and top-soil requirements for the proposed vegetation:

(i) the applicant is required to detail the basis of the permeable filtration media design proposed for the bio-retention system.

5.37.4 Vegetation

(1) The design concept is that planting a bio-retention area with vegetation will assist by:

(a) breaking down pollutants;

(b) consuming some nutrients;

(c) providing micro-drainage paths along the live and dead roots; and

(d) take-up of some of the collected water. Native plants that are able to survive extensive wetting and drying as well as prolonged inundation are to be used. Species are to be selected in accordance with Appendix 6.11. The use of vegetation will also greatly improve the aesthetic appeal and public acceptance of a bio-retention system.

5.37.5 Outlet Design

(1) The outlet design for the bio-retention system is essential in the determination of retention time and water quality treatment efficiency. The following are examples of outlet designs to be considered:

(a) free flowing;

(b) dropboard weir within a manhole;

(c) set orifice;

(d) siphon;

(e) staged riser;

(f) set riser; or

(g) infiltration system to groundwater.

(2) Hydraulic design of the outlet (excluding infiltration outlet) should be undertaken in accordance with the methods specified by QUDM) in order to achieve the required detention time.

(3) The hydraulic design of the infiltration system will require comprehensive soil testing, permeability testing and aquifer investigations. The aquifer investigations are required to determine the location, depth and water quality of the aquifer, and if the system is phyletic or confined.

5.38 Sediment Basins

(1) Sediment basins (sometimes known as sediment traps) are primarily designed to trap coarse sediment. The basin can take the form of a formal 'tank' or less formal pond. Sedimentation is typically encouraged by enlarging the channel so that water velocities are reduced to the point where settling may occur.

(2) Sediment basins can be used in isolation in the stormwater system or as a pre-treatment upstream of other SQIDs. Sediment basins can also form an integral part of a construction site's erosion and sediment control strategy.

(a) Sediment basins are not to be used for the removal of:

(i) gross pollutants (i.e. litter, large green waste);

(ii) fine pollutants or fine sediments;

(iii) colloidal material;

(iv) dissolved chemical pollutants;

(v) nutrients; or

(vi) hydrocarbons (including oil and grease).

(b) A GPT or trash rack is to be located upstream of the sediment basin.

(c) Sediment basins are to be sized based on the sedimentation function using Stokes Law, based on the following requirements:

(i) the sediment basin should be sized to trap a target particle size of 125µm during the SQID design event;

(ii) the sediment basin is to have a minimum settling zone depth of 0.6m to prevent re-suspension/scour of trapped particles; and

(iii) adequate sediment storage depth should be provided below the settling zone depth to provide for five years' worth of sediment or 100% of the settling zone volume.

(d) Sediment basins (excluding construction phase sediment basins) are required to have a high-flow bypass.

(e) Sediment basins as part of the construction phase erosion and sediment control are to be designed in accordance with Brisbane City Council Sediment Basin Design Construction and Maintenance Guidelines (2001).

5.39 Constructed Wetlands

(1) Natural wetlands are not to be used to treat stormwater runoff from subdivisions or other types of development.

(2) Wetlands are dominated by macrophyte areas, are much shallower than ponds, and rely on enhanced sedimentation and biological uptake through contact with the vegetation to achieve pollutant removal. Fluctuating hydrological conditions (water levels) are an essential feature of extended detention wetlands and are necessary for maintaining a diverse vegetation community and for aeration of sediments (which progressively makes settled phosphorus less bio-available). A small volume of permanent water (relative to the ephemeral storage volume) is often provided to increase detention times while not compromising macrophyte diversity.

(3) Wetlands are used primarily for fine sediments and to some extent nutrients, heavy metals and organic matter. To be effective, pre-treatment for gross pollutants and coarse sediments is required. Accordingly, for constructed wetlands in Burnett, pre-treatment in the following forms are required as part of a wetland's design and construction:

(a) Gross Pollutant Trap (GPT) or trash rack for gross pollutants; and

(b) an inlet zone that acts as a coarse sediment trap.

(4) Wetlands as SQIDs should not be confused with ecological wetlands or with amenity wetlands. The SQID wetland will also have aesthetic and ecological features, but its main function and design is for the improvement of water quality.

(5) The three basic components of a constructed wetland are the inlet zone, the macrophyte zone and the outlet structure. Each zone is sized and designed to individual parameters and is discussed separately below. Other key components of a wetland system include:

(a) a GPT or trash rack upstream of the inlet zone;

(b) a sediment basin upstream of the inlet zone;

(c) a flow distribution device between the inlet zone and the macrophyte zone to ensure that even lateral distribution of flow occurs into the macrophyte zone; and

(d) a high flow bypass (secondary outlet) to protect the macrophyte zone during large runoff events.

(6) All ponded areas located within Public Open Space require pre-treatment for litter removal.

(7) Public safety is a paramount issue in the design of extended detention wetlands.

5.39.1 Sizing the Inlet Zone

(1) The inlet zone performs the function of flow attenuation and distribution to the macrophyte zone, acts as a sedimentation basin and can incorporate a secondary outlet discharging to the high-flow bypass channel. It is Council's preference that the high flow bypass be incorporated upstream of the GPT or trash rack.

(2) The inlet zone may be sized based on the sedimentation function using Stokes Law, based on the following requirements:

(a) the inlet zone should be sized to trap a target particle size of 125µm during the SQID design event;

(b) the inlet zone is required to have a minimum settling zone depth of 0.6m to prevent re-suspension/scour of trapped particles;

(c) adequate sediment storage depth should be provided below the settling zone depth to provide for five years worth of sediment or 100% of the settling zone volume; and

(d) provision be made for accessing inlet for the purposes of cleaning out accumulated sediments.

5.39.2 Sizing the Macrophyte Zone

(1) There are many methods used for sizing the macrophyte zone, however Council recommends the method described within the Draft Australian Runoff Quality Guideline.

(2) Sizing of macrophyte zone using this method is based on the use of hydrological effectiveness curves that relate the required storage volume to the mean annual runoff. The volume calculated can then be used to derive an appropriate surface area. It is recommended that sizing calculations are based upon an 80% hydrological effectiveness, with a minimum 72 hours detention period. When designing the macrophyte zone and outlet system, the velocities within the wetland is to be restricted to a maximum of 0.05m/sec, however a velocity of 0.02m/sec is desirable. Hydraulic efficiency involves the proper control of flow patterns within the wetland. Both uniform flow conditions and effective volume utilisation are necessary to promote good hydraulic efficiency. The hydraulic efficiency of a wetland should ideally be >0.7, however >0.6 is acceptable.

(3) Once sizing using the above method has been completed, it should be modelled using a continuous simulation pollutant export model (such as MUSIC) that takes account of the physical dimension of the wetland when estimating pollutant removal efficiency, and has a short enough time-step to adequately model ephemeral storages.

(4) It should be noted that sizing wetlands using the wetland module of AQUALM will not be accepted. This is due to the module basing pollutant removal on detention-time relationships, which tend to favour the design of deep ponded water bodies over ephemeral wetlands when used in conjunction with a daily model time-step.

5.39.3 Detailed Design

(1) Flow Regulation: As discussed above, a high flow bypass is required to protect the macrophyte zone during high-flow events. A flow distribution device (such as a rubble weir) is required between the inlet zone and the macrophyte zone to ensure even distribution of the attenuated flow across the cross-section of the macrophyte zone.

(2) Primary Outlet Design: The outlet design for a wetland system is also essential in the determination of retention time and water quality treatment efficiency. The following are examples of outlet designs to be considered:

(a) set orifice;

(b) siphon;

(c) staged riser;

(d) set riser; and

(e) dropboard weir within a manhole.

(3) In selecting the primary outlet structure preference is to be given to risers, due to the ability to achieve near-constant detention time over the full depth range. The holes located along the vertical axis of the riser should be positioned to achieve maximum detention for the minor runoff events as well as for larger events.

(a) Hydraulic design of the primary outlet should be undertaken in accordance with the methods specified by QUDM in order to achieve the required detention time and the depth-inundation characteristics of the macrophyte zone as described below.

(b) Configuration of Macrophyte Areas: The macrophyte zone should be configured to achieve the following outcomes:

(i) permanent pool of 10-15% of total storage (permanent plus ephemeral);

(ii) length: width ratio at least 3:1. Storms should be routed through the basin using a hydraulic modelling package in order to check these velocities and determine an appropriate L:W ratio in accordance with the methods specified by QUDM.

(c) Vegetation should be provided in bands of uniform cross-section perpendicular to the direction of flow. The bands are to be arranged in the order of ephemeral – shallow marsh – deep marsh – open water – deep marsh – shallow marsh – ephemeral so the wetland can drain down to a sustainable deep marsh area during periods of extended dry weather. The final band before the primary outlet is required to be open water. The relative areas required for each vegetation type and the elevation of each band relative to the invert of the outlet structure is provided in Appendix 4.

(d) Water balance modelling for an extended time period (10 years) is required to be undertaken in conjunction with the design of the primary outlet demonstrating that the above depth-inundation requirements for the macrophyte zone are achievable. The above depth-inundation profile may need to be adjusted depending on the selected extended storage depth (1m assumed in above table), though similar inundation periods for each planting zone should be achieved.

(i) adequate longitudinal slopes are required to be provided on planting shelves (at least 1:10 H:V) to prevent stagnation and isolation of small pockets of water which will provide mosquito breeding potential; and

(ii) drainage is required to be provided between planting shelves where the shelf is at a greater elevation than the invert of the primary outlet. This is to be by small diameter pipe or geotextile wrapped aggregate drain.

(e) Determine Planting Plan for Macrophyte Areas

(i) appendix 5 provides a species list of wetland plants suitable for south-east Queensland which may be utilised as a guide. Each species is identified as belonging to one or more of the vegetation banks identified above. The planting plan should identify proposed species, densities, locations, substrate (topsoil) provision and proposed methods of water level control in the wetland during the establishment phase of the vegetation.

(ii) at least 150mm of topsoil containing a minimum of 5% organic content is required to be provided throughout the macrophyte planting areas.

(iii) planting should be conducted at approximately eight stock per m².

(4) A wetland vegetation and weed management plan is required to be submitted in conjunction with the planting plan, detailing activities to be undertaken to maintain healthy and diverse vegetation communities prior to the wetland being accepted off-maintenance.

(5) Detailed Structural and Hydraulic Design of Wetland Components

(a) All detailed hydraulic modelling of primary and secondary outlet structures, specifications for embankments and freeboards should be as per the requirements of QUDM.

(6) Water Pollution Control Ponds

(a) Ponds are dominated by open water areas and rely primarily on free settling of particles and attached pollutants for achieving pollutant removal. Ponds generally have little variation in water levels and have low diversity of macrophytes. Maintaining aerobic conditions in the sediments is essential for preventing anoxic conditions adjacent to the bed and remobilisation of nutrients from the sediments to the water column. Open water areas are essential in these systems to maintain areas for wind mixing (aeration of sediments) and the pond must be sufficiently large to be able to cope with the BOD loadings from catchment runoff.

(b) Ponds are typically used for amenity and aesthetic purposes. They can be utilised as coarse sediment basins.

(c) In practice, ponds within the Burnett Shire generally suffer from aquatic weed growth throughout the surface area. In addition water quality and odour issues regularly

occur. The use of ponds will generally be discouraged in favour of extended detention wetlands.

(d) Ponds are not to be used for the removal of:

(i) gross pollutants (i.e. litter, large green waste);

(ii) fine pollutants or fine sediments;

(iii) colloidal material;

(iv) dissolved chemical pollutants;

(v) nutrients; or

(vi) hydrocarbons (including oil and grease).

(7) Design

(a) All ponded areas located within Public Open Space require pre-treatment for litter removal.

(b) Developments proposing to incorporate ponds will need to demonstrate that adequate water quality will be maintained within the pond, as demonstrated by the absence of algal blooms during long-term assessments (10 years). A process model is available for assessment of the pollutant removal performance and in-pond water quality of stormwater treatment ponds and is available from the CRC for Freshwater Ecology website. The model attempts to account for the key physical, chemical and biological processes occurring within stormwater treatment ponds, and conceptual design parameters (depth, area, L:W and % macrophyte cover) can be obtained as a result of the modelling and will be required to be reported in the submission of the design.

(c) Further issues which should be addressed in the detailed design of stormwater treatment ponds include:

(i) wetland planting is required to be provided around the perimeter of the pond to address safety issues and enhance water quality treatment. Species are to be selected in accordance with Appendix 5. A planting and vegetation management plan and detailed design of hydraulic components are required; and

(ii) proposed methods to maintain open water areas in the pond and any on-going associated costs are required to be documented.

5.40 Porous Pavement

(1) Porous pavements may be located above a deep gravel layer or reservoir, which in turn, is bedded on a sand filter layer. Runoff percolates through the porous pavement into the gravel reservoir and into the sand layer below.

(2) Porous Pavements:

(a) provide for a reduction of dissolved pollutants including hydrocarbons;

(b) provide for onsite retention of stormwater runoff, therefore reducing peak flows;

(c) reduce the overall volume of stormwater runoff from a site;

(d) minimise the export of sediments and pollutants off the site; and

(e) can be designed to become temporary storage areas for higher rainfall events.

(3) Key issues involved with the implementation of porous pavements include:

(a) generally the pavement area to be set at a maximum grade of 1% or less, and none constructed on grades greater than 5%;

(b) runoff directed to porous pavements should, where possible, be pre-treated to remove sediment;

(c) porous pavement areas to be fully protected from sediment contamination during construction;

(d) should be graded such that the area can drain to another source control device or the street drainage system in an overflow event;

(e) suitable for areas that have relatively low vehicle use, carparks and paving in residential and appropriate commercial developments;

(f) if used as storage for on-site retention, should be designed to criteria appropriate for Sediment Basins – Detention/Retention.

(g) appropriate products include:

(i) modular concrete blocks;

(ii) no-fines concrete;

(iii) open graded asphalt; and

(iv) “reinforced grass” products.

(4) Other key issues include:

(a) moderate soil infiltration rates are required (low rates will result in long exfiltration periods, while high rates may cause groundwater contamination);

(b) pavement surface clogging may reduce effectiveness;

(c) must be capable of supporting the traffic loading and volume (possible pavement deflection);

(d) generally can not be located on steep slopes, loose or unstable areas; and

(e) have the potential for metal accumulation in the fill.

(5) Maintenance Requirements for porous pavements are:

(a) wash down with high pressure hose annually;

(b) vacuum sweeping three monthly in higher sediment environments; and

(c) asphalt porous paving (like other asphalt pavements) require occasional resurfacing.

APPENDIX 1

5.41 Water Quality Guidelines for Receiving Waters in Burnett Shire.

Indicator	Estuary/Marine			Freshwater	ANZECC
	Open Coastal/ Marine	Enclosed Coastal	Estuary	Lower Catchment	Protection of Aquatic Systems
DO (% saturation)	95-105	90-105	80-100	85-110	80
pH	8-8.4	8-8.4	7-8.4	6.5-8	6.5-9
Turbidity (NTU)	2 (1.0)	5 (6)	10 (8)	6-50	
Secchi Depth (m)	5	1.6 (1.5)	1		
Suspended Solids (mg/L)	(10.0)	(15.0)	(20.0)		<10%seasonal change
Total N (ug/L)	150 (140)	200	300	500	100-750
Oxidised N	5 (3)	5 (3)	15 (10)	60	10-100
NH3-N	10 (6)	15 (8)	15 (10)	20	
Total P	25 (20)	25 (20)	30 (25)	50	10-100
Free Reactive Phosphorus	10 (6)	10 (6)	10 (6)	20	5-15
Chlorophyll – a (ug/L)	1	2	5	5	1-10
Bacteria (count/100mL)	FC-<150, EC-<35	FC-<150, EC-<35	FC-<150, EC-<35	FC-<150, EC-<35	150
Litter	100% capture of all gross pollutants >5mm	100% capture of all gross pollutants >5mm	100% capture of all gross pollutants >5mm	100% capture of all gross pollutants >5mm	100% capture of all gross pollutants >5mm
Hydrocarbons	No visible films	No visible films	No visible films	No visible films	No visible films

Table 4.1 Receiving water category

Receiving Water	Category
Moore Park Lagoons	Lower Catchment Freshwater
Burnett River	ANZECC Guidelines – protection of aquatic system
Burnett Heads Creek	Enclosed Coastal Estuary
Woongarra Marine Park	Open Coastal/Marine
Bargara Pasturage Reserve	Lower Catchment Freshwater – Enclosed Coastal Estuary
Moneys Creek	Lower Catchment Freshwater – Enclosed Coastal Estuary
Kellys Creek	Lower Catchment Freshwater – Enclosed Coastal Estuary
Bargara Lakes	Lower Catchment Freshwater
Rifle Range Creek	Enclosed Coastal Estuary
Palmers Creek	Estuary
Elliott River	Estuary
Kolan River	ANZECC Guidelines – protection of aquatic system
Littabella Creek	Estuary
Baffle Creek	Estuary
Mullet Creek	Lower Catchment Freshwater
All other receiving waters	ANZECC Guidelines – protection of aquatic system

APPENDIX 2 — APPLICABILITY OF WSUD MEASURES

Situation/Location	Applicability of Measures												
	GPT	Oil/grit separator	Grassed Swale	Vegetated swale	Filtration trench	Filtration & conveyance trench	Rainwater storage tank	Porous Pavement	Pond	Underground Storage area	Pervious Storage area	Grass Buffer	Wetland
New streets in large or small developments – on slopes less than 4%	■		■	■	■	■		□			□	■	
New streets in large or small developments – on slopes greater than 4%	■		□	■	■	■		□			□	■	
Existing streets and roadways where drainage or pavements to be substantially upgraded or duplicated – on slopes less than 4%	■		■		■	■					□	□	
Existing streets and roadways where drainage or pavements to be substantially upgraded or duplicated – on slopes greater than 4%	■		□	■	■	■					□	□	
Publicly owned land (where land area and land use allow facilities to be incorporated)	■		■	■	■	■		□	■	□	■	■	■
New residential development					□	□	■	■	□	■	■	■	
New medium or high density housing			■	□	■	■	■	■	□	■		□	□
Existing residential development			□	□	■	■	■	■	□	■	□	□	
Commercial Development	■	■	□	■	■	■	■	■	□	■	□	□	□
New Car park construction or modification	■	■	□	■	■	■	■	■	□	■	□	□	□

Legend

■ Highly applicable

□ Moderately applicable depending on detailed design (Additional site assessment may be required)

APPENDIX 3 — EFFICIENCIES FOR VARIOUS SQIDS

Stormwater Quality Improvement Device		Gross Pollutants (Litter)	Coarse Sediment	Fine Sediment (Suspended Solid)	Nutrients (NandP)[1]	Oxygen Demanding Substances	Hydro-carbons[2]	Pathogens	Heavy Metals[3]
Gully Pit GPTs	Litter Baskets	L-M	-	-	-	L	-	-	-
	Proprietary Traps	L-M	L	-	-	L	-	-	-
Oil and Grease Separator		L	L-M	L	-	L	L-M	L	L
Trash Rack	Nets	H	-	-	-	-	-	-	-
	Trash Racks	M	L	-	-	L	-	-	-
	Downwardly Inclined Screens	H	-	-	-	-	-	-	-
	Floating Litter Booms	L	-	-	-	-	-	-	-
	Hydraulically Operated Trash Racks	H	L-M	-	-	-	-	-	-
Gross Pollutant Traps	In-Ground GPTs	H-VH	H	L	L	L-M	L	-	L
	In-Ground Separators	M	L-M	-	-	-	-	-	-
	Open GPTs	M-H	H	L	L	L	L	L	L
Sediment Basins	Extended Detention Basins	-	M-H	L-M	L	L	L	M	L
	Sediment Basins	L	H	L	L	L	L	L	L
Swales	Filter Strips	M	H	M	L-M	L	L(S)	M(S)	L
	Swales	L-M	M-H	M	L-M	L	L	M(S)	M
Extended Detention Wetlands		M-VH	H	M	M	L	M	M(S)	H
Water Quality Ponds		M-VH	H	L-M	L-M	L	L	L	L-M
Bio-Retention Systems	Sand Filters (apply also to Bio-Retention Swales)	-	M-H	M-H	M	M	M	M	M
	Infiltration Trench/Basins (apply also to Bio-Retention Systems)	-	M-H	M	M	M	M	M	M-H
Other	Grates and Entrance Screens	L	-	-	-	-	-	-	-
	Baffle Pits	L	L-M	L	-	L	-	-	L
	Catch Pits	L	L-M	L	-	L	-	-	L
	Porous Pavements	-	H	M-H	M	M	M	H	M-H

Legend

Symbol	-	L	M	H	VH	S
Meaning	Negligible Benefit	**Low** 10-30% Pollutant Reduction Efficiency	**Medium** 30-50% Pollutant Reduction Efficiency	**High** 50-75% Pollutant Reduction Efficiency	**Very High** 75-100% Pollutant Reduction Efficiency	Secondary Benefits

APPENDIX 4 — Relative areas and evaluation of vegetation bands

Vegetation Band	Percentage of Total Macrophyte Zone Area	Elevation of Planting Zones (above the invert of the primary outlet)	Percentage of Time Planting Zone Inundated (long term)
Ephemeral marsh	10%	0.6 to 1.0m	15%
Shallow marsh	35%	0.2 to 0.6m	28%
Deep marsh	30%	-0.2 to 0.2m	57%
Open water	25%	-1.2 to 0.0m	100%

Appendix 5—Species List

(Note this is a guide only and each case will require site-specific assessment to determine suitable species type and quantity)

Scientific Name	Common Name	Salt tolerance	Zone
Trees			
Callistemon viminalis	Weeping bottlebrush	Unknown	Terrestrial
Casuarina glauca	Swamp oak	Moderate	Terrestrial
Eucalyptus robusta	Swamp mahogany	Unknown	Terrestrial
Glochidion ferdinandii	Cheese tree	Unknown	Terrestrial
Hibiscus diversifolius	Swamp hibiscus	Unknown	Terrestrial
Hibiscus tiliaceus	Cotton tree	Moderate	Terrestrial
Lophostemon suaveolens	Swamp box	Unknown	Terrestrial
Melaleuca bracteata	River tea-tree	Unknown	Terrestrial
Melaleuca linariifolia	Flaxleaf paperbark	Unknown	Terrestrial/ Ephemeral marsh
Melaleuca nodosa	Prickly-leaved paperbark	Unknown	Terrestrial
Melaleuca quinquenervia	Broad-leaved paperbark	Moderate	Terrestrial/ Ephemeral marsh
Shrubs			
Austromyrtus dulcis	Midyim	Unknown	Terrestrial
Babingtonia similis	Baeckea	Unknown	Terrestrial
Baeckea frutescens	Weeping baeckea	Unknown	Terrestrial
Banksia aemula	Wallum banksia	Unknown	Terrestrial
Banksia integrifolia	Coastal banksia	Unknown	Terrestrial
Banksia oblongifolia	Dwarf wallum banksia	Unknown	Terrestrial
Banksia robur	Broad-leaved banksia	Unknown	Terrestrial
Boronia falcifolia	Wallum boronia	Unknown	Terrestrial
Boronia parviflora	Swamp boronia	Unknown	Terrestrial
Callistemon pachyphyllus	Wallum bottlebrush	Unknown	Terrestrial
Leptospermum juniperinum	A tea-tree	Unknown	Terrestrial
Leptospermum liversidgei	A tea-tree	Unknown	Terrestrial
Leptospermum polygalifolium	A tea-tree	Unknown	Terrestrial
Leptospermum semibaccatum	A tea-tree	Unknown	Terrestrial
Leptospermum trinervium	A tea-tree	Unknown	Terrestrial

Scientific Name	Common Name	Salt tolerance	Zone
Leptospermum neglectum	A tea-tree	Unknown	Terrestrial
Melaleuca thymifolia	Thyme-leaved paperbark	Unknown	Terrestrial
Melastoma affine	Blue tongue	Unknown	Terrestrial
Ferns			
Acrostichum speciosum	Mangrove fern	Moderate	Terrestrial/ Ephemeral marsh
Blechnum indicum	Swamp water fern	Unknown	Terrestrial/ Ephemeral marsh
Sedges, Rushes, Grasses, Herbs and Lilies			
Bacopa monnieri	Bacopa	Unknown	Terrestrial
Crinum pedunculatum	Swamp lily	Moderate	Terrestrial/ Ephemeral marsh
Cyperus exaltatus	Tall flat sedge	Moderate	Terrestrial/ Ephemeral
Cyperus haspan		Unknown	Terrestrial/ Ephemeral marsh
Cyperus lucidus		Unknown	Terrestrial/ Ephemeral marsh
Cyperus pilosus		Unknown	Terrestrial/ Ephemeral marsh
Cyperus procerus		Unknown	Terrestrial/ Ephemeral marsh
Cyperus trinervis		Unknown	Terrestrial/ Ephemeral marsh
Diplachne fusca	Brown beetle grass	Moderate	Terrestrial/ Ephemeral marsh
Echinochloa inundata	Marsh millet	Unknown	Terrestrial/ Ephemeral marsh
Eleocharis cylindrostachys		Unknown	Terrestrial/ Ephemeral marsh/ Shallow marsh
Eriocaulon scariosum		Unknown	Terrestrial/ Ephemeral marsh
Gahnia sieberiana	Red-fruited sawsedge	Moderate	Terrestrial/ Ephemeral marsh
Juncus continuus		Unknown	Terrestrial/ Ephemeral marsh
Juncus polyanthemus		Low	Terrestrial/ Ephemeral marsh
Juncus prismatocarpus	Branching rush	Unknown	Terrestrial/ Ephemeral marsh
Juncus usitatus	Common rush	Low	Terrestrial/ Ephemeral marsh
Lepidosperma longitudinale	Pithy sword sedge	Low	Terrestrial/ Ephemeral marsh
Ludwigia octovalvis	Willow primrose	Unknown	Terrestrial
Lomandra hystrix	Stream matrush	Unknown	Terrestrial
Lomandra longifolia	Long-leaved matrush	Unknown	Terrestrial
Sporobolus virginicus	Salt couch	High	Terrestrial/ Ephemeral marsh

Scientific Name	Common Name	Salt tolerance	Zone
Emergents, submerged and floating aquatics			
Baumea articulata	Jointed twigrush	Low	Shallow marsh/ Deep marsh
Baumea rubiginosa			
Soft twigrush		Moderate	Ephemeral marsh
Baumea teretifolia		Unknown	Ephemeral marsh/ Shallow marsh
Bolboschoenus fluviatilis	March clubrush	Moderate	Shallow marsh/ Deep marsh
Carex fascicularis	Tassel sedge	Low	Ephemeral marsh
Cyperus difformis	Rice sedge	Unknown	Ephemeral marsh/ Shallow marsh
Cyperus platystylis		Unknown	Ephemeral marsh
Cyperus polystachyos	Bunchy sedge	Unknown	Ephemeral marsh
Cyperus unioloides		Unknown	Shallow marsh
Eleocharis dulcis	Chinese water chestnut	Low	Shallow marsh
Eleocharis equisetina		Low	Shallow marsh
Eleocharis sphacelata	Tall spikerush	Low	Shallow marsh/ Deep marsh
Eleocharis plana	Ribbed spikerush	Unknown	Ephemeral marsh/ Shallow marsh
Fimbristylis dichotoma	Common fringerush	Unknown	Ephemeral marsh
Isolepis inundata	Swamp club rush	Unknown	Ephemeral marsh
Juncus kraussii	Sea rush	High	Terrestrial/ Ephemeral marsh
Leersia hexandra	Swamp ricegrass	Unknown	Ephemeral marsh/ Shallow marsh/Deep marsh
Lepironia articulata	Grey reed	Low	Shallow marsh/ Deep marsh
Ludwigia peploides subsp. montevidensis	Water primrose	Low	Ephemeral marsh/ Shallow marsh
Marsilea mutica	Nardoo	Low	Ephemeral marsh/ Shallow marsh
Monochoria cyanea	Monochoria	Unknown	Shallow marsh
Nymphaea gigantea	Giant waterlily	Unknown	Shallow marsh/ Deep marsh
Nymphoides crenata	Wavy marshwort	Unknown	Shallow marsh/ Deep marsh
Nymphoides indica	Water snowflake	Unknown	Shallow marsh/ Deep marsh
Ottelia ovalifolia	Swamp lily	Unknown	Shallow marsh
Persicaria attenuata	a smart weed	Unknown	Shallow marsh
Persicaria decipiens	Slender knotweed	High	Shallow marsh
Persicaria hydropiper	Water pepper	Unknown	Shallow marsh
Persicaria prostrata	Creeping knotweed	Unknown	Shallow marsh

Scientific Name	Common Name	Salt tolerance	Zone
Philydrum lanuginosum	Frogsmouth	Unknown	Ephemeral marsh/ Shallow marsh
Ranunculus inundatus	River buttercup	Unknown	Ephemeral marsh
Schoenoplectus litoralis		Moderate	Ephemeral marsh/ Shallow marsh/Deep marsh
Schoenoplectus mucronatus		Low	Ephemeral marsh/ Shallow marsh/Deep marsh
Schoenoplectus validus	River club rush	Moderate	Ephemeral marsh/ Shallow marsh/Deep marsh
Villarsia exaltata		Unknown	Shallow marsh/ Deep marsh

Appendix 6 Standard Drawings

DRAINAGE

	Bedding And Backfilling
Number	Title /Topic
D201-1	Excavation, Bedding and Backfilling of Concrete Pipes - Sheet 1 of 2.
D201-2	Excavation, Bedding and Backfilling of Concrete Pipes - Sheet 2 of 2.
D202	Excavation, Bedding and Backfilling of Precast Box Culverts.
	Catchpit
D211-1	Bro-Pit Set out and Treatment to Kerb Type KC1.
D211-2	Bro-Pit Set out and Treatment to Kerb Types KC1 And KC2.
D211-3	Bro-Pit Set out and Treatment to Kerb Types KC1, KC2 And KC3 on Curves.
	Field Inlet
D221	Field Inlet / Grated Gully Pit Profiles and Dimensions

ROADS

Number	Title /Topic
	Type Cross Sections
R101	Residential, Rural Residential and Split Level Roads.
R102	Rural Roads.
R103	Verge Profiles.
R104	Industrial Access Road and Commercial Laneway.
	Driveways
R111	Residential Slabs and Tracks.
R112	Commercial Slab - Two Way Access.
R113-1	Rural and Urban Accesses Requiring Culverts.
R113-2	Rural and Urban Accesses.
R114	Standard Details Invert Crossing.
	Footpaths
R116	Concrete Strip Footpaths for Unstable Site (H) or Greater.
R116-1	Concrete Strip Footpaths Stable Site.

	Kerb and Channel
R121	Kerbs, Channels and Inverts - Profiles and Dimensions.
R122	Invert Crossing Layout Details For Kerb Types KC1 And KC2.
R124	Kerb Ramp.
	Public Utilities
R131	Typical Service Conduit Sections.
	Signs
R117	Location Plan of Rural Addressing Number Post
R141	Street Name Sign And Post.
R142	Sign Footings And Locations.
R143	Arrangement Of Warning Signs At Detours.
R144	Bus Stop Sign Details.
R145	Arrangement Of Warning Signs At Side Tracks.
R146	Arrangement Of Warning Signs At Traffic Through Work Site.
R147	Arrangement Of Warning Signs Where Roadworks Are In Centre Of Carriageway.
R148	Arrangement Of Warning Signs Where Roadwork Is On Road Shoulder.
R149	Arrangement Of Speed Limit Signs At Roadworks.
	Subsurface Drainage
R151	Side Drains, Mitre Drains And Seepage Drains Under Road Pavement.

PSP 6: WASTE MANAGEMENT
PLANNING SCHEME POLICY

Division 1—Preliminary

6.1 Effective Date

This policy has effect on and from the day the IPA Planning Scheme for Burnett Shire Council commences.

6.2 Application of the Policy

(1) The policy applies to all areas of Burnett Shire.

(2) The policy applies to all material change of use applications for—

(a) Higher-density Housing;

(b) Tourist parks; and

(c) Business uses.

6.3 Introduction

(1) Waste and recycling facilities are one of those essential aspects of a building that are often overlooked or undervalued. This policy outlines the essential points to be considered when designing a waste management system. With planning, the developers can make the collection and disposal of waste and recyclables convenient to the building residents and to the commercial contractors that provide the collection services.

(2) The policy supports the Burnett Shire Planning Scheme by providing details of the information to be submitted with an application about waste management and solutions to achieving the outcomes of the Planning Scheme.

(3) This policy is an adjunct to existing waste management legislation such as the Environmental Protection (Waste Management) Regulation 2000 and Environmental Protection (Interim Waste) Regulation 1996).

(4) This policy also relates to the Waste Service Policy previously adopted by Council on 13 June 1997 - which regulates the provision of Council's Collection Service and identifies relevant legislation, service availability, waste areas, service exclusion, service provision and levying charges

6.4 Purpose of Policy

(1) The outcomes that the policy seeks to achieve are—

(a) waste storage and collection systems are designed to respect character and protect the amenity and aesthetics of the area,

(b) clean and sanitary waste storage;

(c) adequate, convenient space for waste storage;

(d) simple design for ease of use;

(e) access to recycling provisions; and

(f) safe and efficient means of accessing waste bins for collection.

Division 2—Information Requirements

6.5 Information to be submitted with an application

(1) A waste management plan incorporating the following information is to be submitted with an application—

(a) Details of the types of waste generated to determine the type of container and frequency of the service, specifically volumes, of the following types of waste—

(i) whether the waste is likely to be putrescible or dry waste; and

(ii) whether there is likely to be any recyclable waste or significant garden waste;

(b) Waste generation rates—

(i) a guide for assessment of waste generation rates is included in Appendix 1. Use this guide to ascertain the potential volume of waste that will be generated.

(c) Minimum service levels required—

(i) the minimum service level relates to potential waste generation and also type of waste. Putrescible waste from food premises is to be collected twice weekly if the service is available in that area – to control odour and vermin problems. Three times a week waste collection is available in some built up areas.

(d) The types of waste containers—

(i) a variety of specialised waste bins are available from Council. For more details contact Council's Environmental Health Section. Appendix 2 contains details of some of these bins.

(e) Location of waste storage areas—

(i) the location is to have regard to noise, odour and convenient and safe access for occupants' and contractors' vehicles. Consider the distance waste is removed to storage or collection areas.

(f) Design of the waste storage area—

(i) details of the proposed surface, bunding and screening;

(ii) the location of washdown areas and methods of drainage; and

(iii) if collection is to be undertaken on site, demonstration that the collection vehicles can access and exit the site and that there is adequate area for servicing the bins.

(g) Management issues—

(i) consider the presence or absence of service staff or onsite management. Who will be responsible for cleaning the bins and moving the bins for storage and collection?

(h) Recycling—

(i) a variety of different approaches can be used for recycling. Each unit may use a 240L Mobile Garbage Bin (MGB) collected on a fortnightly basis or there may be a communal location for the collection of recyclables. This communal area could provide one bin for all material types or alternatively separate containers for the different recycling materials. For example sacks may be available for storage of cardboard for a special collection service. Recycling chutes may also be used in buildings greater than 2 storeys. The opportunity for bulk bin recycling is currently limited – however this may be an option in the future.

Division 3—General requirements

6.6 General requirements for all waste management facilities

(2) The following requirements apply generally to all types of development.

(3) Design of storage and wash down areas—

(a) waste storage areas are to be on hard, flat and level surfaces;

(b) the waste storage area is to be aesthetically screened with suitable fencing;

(c) the number of units determines the waste storage area and size of the containers needed. General waste areas may contain bunded and non-bunded areas. They are to be of a sufficient overall size to store all waste and recycling containers including general bins, recycling bins, cardboard bales and drums of cooking oil;

(d) the bunded area is to contain washwater from bin washing while preventing the ingress of surface stormwater into the sewer. The bunded area is to be graded to a waste outlet connected to the sewer. This outlet is to contain a stainless steel wastebasket and grate which is to be removable for easy cleaning; and

(e) a hose cock fitted with a suitable backflow prevention device is required to be connected in the vicinity. To prevent stormwater entering the sewer a roof or cover is required over the bunded area.

(4) Safe vehicular access to bins—

(a) generally wheelie bins will be collected from Council's road reserve kerbside and bulk bins are collected on the subject property;

(b) industrial strength road surfaces are needed in any location where the collection vehicle may travel. At no time is a vehicle to be expected to do more than a 3 point turn; and

(c) refer to Appendix 3 for clearances and access requirements for the collection vehicles. It may be necessary to provide the Council contractor with a written authority granting permission to enter a property and

absolving any responsibility in relation to damage, which may be caused to the internal roadway.

6.6.1 Selection of bin type

(1) The following table provides a summary of the acceptable bin type for different uses.

(2) Division 4—Specific considerations provides additional requirements for bin selection and location.

Bin type for development

Type of development	Bin type	Storage	Collection point
Higher-density Housing			
Multiple dwellings between 3 and 9 units with an individual courtyard at ground level	Wheelie bin for each unit	Individual storage associated with each unit	Generally kerbside
Multiple dwelling up to 10 units without individual courtyards at ground level	Wheelie bin for each unit	Communal storage area incorporating washdown facilities	Generally kerbside
Multiple dwellings with more than 10 units	Bulk Bin	Enclosure on site incorporating washdown facilities	Generally on-site
Tourist Parks and Relocatable Home Parks	Bulk bin or wheelie bins	Communal storage area incorporating washdown facilities	Generally on-site
Business Uses	Dependent on waste generation rates	Communal storage area incorporating washdown facilities	Generally on-site depending on locality and accessibility

Division 4— Specific considerations

6.7 Higher-density Housing — 1 to 2 storeys

(3) Bin storage is usually provided at each individual dwelling

(4) This section applies to multiple dwellings where there are between 3 and 9 dwelling units on the same parcel of land and all dwelling units are on ground level and have an individual courtyard for each dwelling unit.

(5) Development provides—

(a) adequate areas for storage of waste and recycle bins;

(b) suitably positioned;

(c) convenient to use,;

(d) acceptable bin carting distances, convenient for mechanical collection; and

(e) maintained in a clean and sanitary condition.

(6) Waste management is to comply with the following—

(a) each dwelling has a level area provided for the permanent storage of waste bins;

(b) bins are to be easily accessible and convenient to use;

(c) unobstructed path for movement of bins to collection point;

(d) bins are to be stored in a cool area – carport, garage or backyard;

(e) maximum carting distance is not to exceed 75m or 50m for aged and/or persons with disabilities and gradient is not exceed 10%;

(f) bins are to be placed along straight sections of the road for ease of mechanical collection. They are to be clearly separated from car parking bays and loading bays; clear of overhanging branches and awnings; clear of footpaths and pedestrian access; not in front of shop or residential entrances; not blocking vision of vehicles using the roadway; capable of being collected without the collection vehicle disrupting traffic flow;

(g) if the collection vehicle is required to enter an estate the driveway entry is to be—

(A) an adequate length and width;

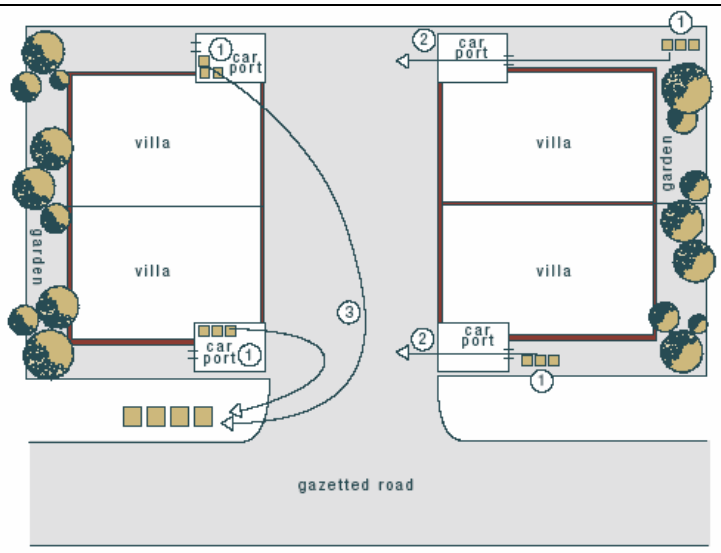
(B) constructed to carry weight;

(C) minimise need for reversing (max 60m);

(D) provided with a hardstand for bins along internal road;

(h) if the collection vehicle is required to enter an estate, the contractor is to be indemnified against potential injury to the public and damage to internal road, underground services or driveway entry; and

(i) provision of a waste wash down area for cleaning of waste bins which is not located near eating or living areas; and drained to prevent entry to storm water.



1. space allocated for bin storage in carport or yard
2. bins taken to kerb through car port
3. residents responsible for taking bins to kerb on collection day
4. maximum carting distance for bins is not to exceed 75m or 50 m for aged and/or persons with disabilities

Figure 1 – Example of bin storage locations and collection points

6.8 Higher-density Housing — up to and including 10 dwelling units

(1) There is usually a communal storage area for bins.

(2) Development provides—

(a) sufficient space within each unit for temporary storage of recyclables and garbage;

(b) adequate areas for storage of waste and recycle items bins;

(c) suitable positioning;

(d) convenient use;

(e) acceptable bin carting distances, convenient for mechanical collection;

(f) maintenance to ensure clean and sanitary condition, and

(g) waste storage and collection areas that respect character and protect the amenity and aesthetics of the area.

(3) Waste management is to comply with the following—

(a) each unit has sufficient space within kitchen, or other convenient location, to store 2 days worth of garbage and recycling material;

(b) communal storage area for bins is to be in a high pedestrian–traffic area for ease of access and to encourage good housekeeping;

(c) communal storage area of a sufficient size to accommodate all bins;

(d) communal storage area is to provide ease of access to residents but not non-residents to reduce the likelihood of vandalism. Storage areas are to be sufficiently open and well lit to allow use after dark;

(e) bins are to be placed along straight sections of the road for ease of mechanical collection. They are to be clearly separated from car parking bays and loading bays; clear of overhanging branches and awnings; clear of footpaths and pedestrian access; not in front of shop or residential entrances; not blocking vision of vehicles using the roadway; capable of being collected without the collection vehicle disrupting traffic flow;

(f) If the collection vehicle is required to enter an estate and leave the dedicated road reserve, the driveway entry is to be—

(i) an adequate length and width;

(ii) constructed to carry weight;

(iii) designed to minimise need for reversing (max 60m); and

(iv) provided with a hardstand for bins along internal road; and

(g) if the collection vehicle is required to enter the estate and leave the dedicated road reserve the contractor is to be indemnified against potential injury to the public and damage to internal road, underground services or driveway entry;

(h) provision of a waste wash down area for cleaning of waste containers which is not located near eating or living areas; drained to prevent entry to storm water; provision of water supply near bin storage area; and

(i) bin storage is located and/or screened so as to be not visible from the street or from another public space.

6.8.1 Ongoing management

(1) For communal waste areas, it is important to establish and delegate responsibility for the tasks involved in the ongoing management of the bin bay such as—

(a) moving bins to and from kerbside on collection day;

(b) washing bins and bin bay;

(c) arranging for the prompt removal of dumped rubbish; and

(d) ensuring all residents are informed of the waste and recycling arrangements.

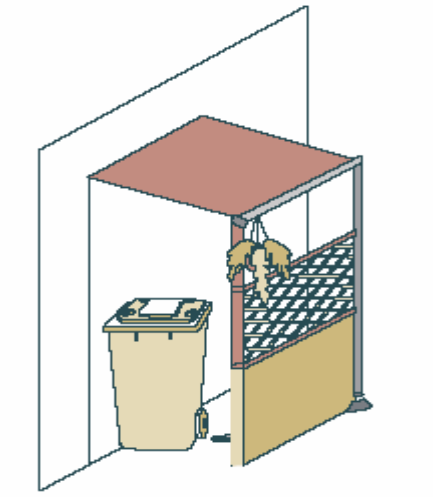
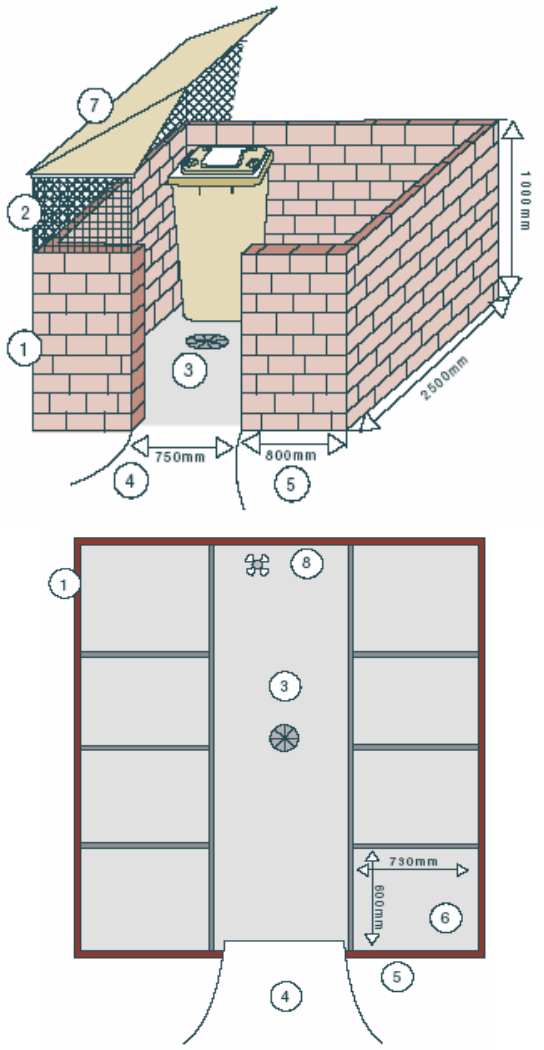


Figure 2 Example of bin storage area for 4 to 6 units



1. face brickwork to match building
2. lattice upper as visual screen
3. concrete floor graded and drained to sewer
4. ramp or path – no steps
5. front brick work optional – could have completely open front
6. space allocated for MGB
7. roof over bin bay
8. anti-vandal tap with hose fitting

Figure 3 — Communal storage area for up to 10 units

6.9 Higher-density Housing — with more than 10 dwelling units

(1) The outcome for Higher-density Housing comprising more than 10 dwellings is that waste management provides—

(a) sufficient space within each unit for temporary storage of recyclables and garbage;

(b) best practice communal facilities taking into account future needs;

(c) suitable positioning,

(d) safe and convenient use;

(e) convenience for mechanical collection;

(f) maintenance to ensure clean and sanitary condition; and

(g) waste storage and collection areas that respect character and protect the amenity and aesthetics of the area.

(2) Waste management is to comply with the following—

(a) the method of service for this scale of development is the use of a bulk bin;

(b) bins are to be collected on site;

(c) each unit has sufficient space within kitchen, or other convenient location, to store 2 days worth of garbage and recycling material;

(d) provide an enclosure for bulk waste bins and a dedicated space for recyclables – enclosure size is to be sufficient for bin/s;

(e) where possible there is not to be a need to manually handle bins; if manual handling is required collectors are to be able to move bins to collection point quickly and with minimum amount of manual handling NB. Bins over 1.5m^3 are not to be moved manually due to occupational safety risks;

(f) bin bays and collection points are to be located away from residents to reduce the impact of noise during bin use and collection. Keep vehicle reversing to a minimum and adequately insulate chutes to reduce noise;

(g) bin service area is to have—

(i) an industrial strength surface; and

(ii) adequate length, width and height for collection vehicles' maneuverability and to minimise need for reversing (max 60m);

(h) the contractor is to be indemnified against potential injury to the public and damage to internal road, underground services or driveway entry;

(i) provision of a waste wash down area for cleaning of waste containers which is not located near eating or living areas; drained to prevent entry to storm water; and

(j) bin storage is located and/or screened so as to be not visible from the street or from another public space.

(3) If individual garbage bins are used the following applies—

(a) single collection point for all bins;

(b) collection point is to be within property boundary;

(c) caretaker/employee responsible for transporting bins to and from collection point;

(d) collection point road surface are to be designed to carry collection vehicle;

(e) collection vehicle is to be able to enter and exit the collection point in a forward motion; and

(f) waste management plan developed providing details of the above requirements.

6.9.1 Ongoing management

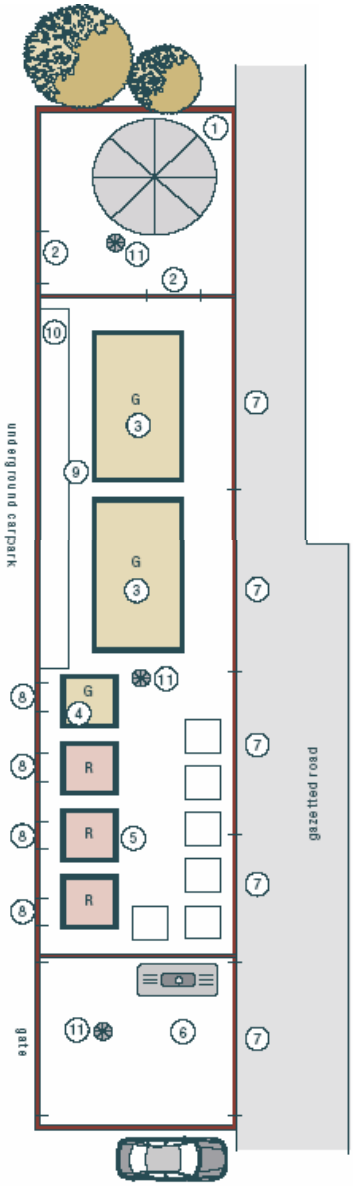
(1) For communal waste areas, it is important to establish and delegate responsibility for the tasks involved in the ongoing management of the bin bay such as—

(a) moving bins to and from kerbside, or onsite collection point on collection day;

(b) washing bins and bin bay;

(c) arranging for the prompt removal of dumped rubbish; and

(d) ensuring all residents are informed of the waste and recycling arrangements.



1. carousel compactor at the base of garbage chute.
2. access for caretaker only
3. bulk bins for garbage – caretaker access only
4. MGB for garbage
5. MGBs for recycling
6. caged area for discarded bulky items
7. roller shutter doors – council /contractor access
8. slot access to recycling and garbage MGBs for residents
9. bump rail
10. tap
11. drainage to sewer

Figure 4 — Example of storage and collection areas for multi-storey development

6.10 Waste Chutes

(1) The following provides a guide for planning and construction of waste chutes in buildings greater than 2 storeys in height.

(2) Premises are to provide adequate methods for—

(a) the collection/disposal of waste which are hygienic;

(b) suitably located for use;

(c) easily serviced;

(d) work effectively; and

(e) minimise impacts on the amenity of users, occupiers and neighbours of the premises.

(3) Waste Chutes—

(a) Waste chutes and associates accessories are provided for the transport of waste from each residential floor level to the waste storage area.

(b) Waste chutes are to meet the following—

(i) constructed of materials which are non combustible and non-corrosive or coated/treated with a non-corrosive compound and materials used are to provide a smooth internal bore and be of adequate strength for their purpose;

(ii) interior of chute, chute branches and joints have a smooth, impervious, non-corrosive surface and provide uninterrupted flow to the passage of waste;

(iii) constructed to be insect and vermin proof and the outlet of the ventilation pipe is to be protected against the weather and birds;

(iv) the entire waste disposal system is constructed and installed so that the use and operation of the system does not transmit vibration to premises structure;

(v) to avoid excessive odour a system of mechanical exhaust ventilation to the waste chute may be required at the vent outlet to ensure a slightly low pressure is maintained within the chute so as to contain and convey obnoxious fumes and odours to outside air. Chutes are to be ventilated in a manner that ensures—

(A) air does not flow from the chute through the service opening;

(B) flow of air in chute does not impede the downward movement of waste;

(C) chute ventilation system is to operate at a negative pressure. The air velocity through the chute is not to exceed 0.6m/s; and

(D) where the chute is not continued to the full height of the building a vent formed of non- combustible material having a minimum diameter if 150mm is to be provided. For odour control purposes, such a vent is to be carried to a point above the eaves of the building. Consideration will also be given to impacts on adjoining buildings;

(vi) to avoid noise nuisances chutes are not to be located adjacent to habitable rooms;

(vii) chutes are to be cylindrical with a diameter not less than 450mm;

(viii) wherever possible chutes are to be vertical but in no case will a change in direction be permitted below the level of the highest hopper;

(ix) the chute is to be continued in full bore above the roof of the building, but not less than 600mm above the level of the highest hopper;

(x) chutes are fully supported at each floor level

(xi) chutes are contained in fire rated shafts in compliance with appropriate legislation and standards;

(xii) arranged to discharge centrally above the waste container or compactor in the waste storage room;

(xiii) the bottom edge of the chute finishes at least 25mm below the level of the ceiling;

(xiv) each chute pipe is to have provision for—

(A) access at appropriate levels to assist in clearing obstructions and cleaning;

(B) a deodorant spray and vermin spray can be fitted at the base of the chute. The deodorant spray can be automatically from the top of the chute; and

(C) a nylon brush or similar appliance on a pulley system to allow cleaning of the chute;

(xv) a shutter is fitted for closing off the chute in case of fire or when the waste container is withdrawn;

(xvi) The shutter is to be self closing and fitted with a fusible link for automatic operation in the case of a fire occurring in the waste container or waste room. The fusible link is selected to operate at a temperature at least 5 degrees Celsius above

the operating temperature of the automatic fire control system installed; and

(xvii) tenants are to be encouraged to wrap food or vegetable waste before disposal in chute.

(4) Hoppers—

(a) Hoppers (chute access door) for the disposal of waste into waste chutes are provided on each residential floor and are located, designed and constructed as follows—

(i) in a freely ventilated position, in the open air, for example sheltered balconies or in a dedicated waste disposal room and is to be easily accessible to the occupants of each unit;

(ii) fixed at a height so that the top of the hopper door is not lees than 900mm above floor level;

(iii) is not to be located in any habitable room or place used in connection with food preparation;

(iv) be designed to effectively close off the service opening in the chute when the device is opened for loading;

(v) weighted to automatically return to the closed position after use;

(vi) permit free flow of waste into the chute;

(vii) does not project into the chute;

(viii) designed to allow ease of cleaning of the hopper and the chute branch;

(ix) be insect and vermin proof;

(x) materials used for the hopper doors, frames and accessories are to be of adequate strength for their purpose and are to be non-corrosive and non-combustible. If they are not located in a fire-rated service compartment they are to be of equivalent fire rating to the chute;

(xi) surfaces around the hopper that waste may come in contact with are to be able to be easily cleaned with no cracks or crevices;

(xii) the throat dimension of the hopper is to be no less than the dimension of the service opening;

(xiii) the largest dimension of the service opening (the diagonal of a rectangular opening) is not to exceed ¾ diameter of the chute with which the hopper is connected;

(xiv) each unit is to comprise of a door, receiving plate and two retaining side cheeks so formed or continuously fixed to prevent any seepage;

(xv) suitable material is to be fixed to the door frame to reduce noise and a device, made of suitable

material, is to be incorporated to act as a buffer between the back of the receiving unit and the hood to reduce dust emission; and

(xvi) The door is to be designed so that it can not be removed from its frame without the use of a tool.

(5) Waste Storage Areas—

(a) Waste storage areas are provided for the storage of waste in standard waste containers at the bottom of each waste chute which meet the following criteria—

(i) located at collection vehicle access level, preferably away from the main entrance to the building;

(ii) allow unobstructed access for removal of containers to the collection point and for positioning of the containers correctly in relation to the waste chute;

(iii) are designed to be at the collection point or located within 40m of the collection point;

(iv) not located adjacent to or within any habitable room or place used in connection with food preparation;

(v) overall dimensions of the waste rooms will be determined by the number and type of containers housed, by their height above floor level, by the clearance necessary to permit convenient positioning, removal and replacement of the containers and the type of shutter used;

(vi) all containers are to be fully contained within the waste room with doors that are close fitting, self closing and not less than 820mm wide;

(vii) walls, doors and roof of each waste room are to be constructed of or lined with non-combustible and impervious material with a smooth finish and a fire resistance rating of one hour;

(viii) waste room is to be constructed to be fly and vermin proof;

(ix) door frames are rebated with a lock capable of being activated from within the room without a key at all times;

(x) artificial lighting is provided within the waste room;

(xi) water supplied through a tap with a high hazard back flow device and an adequate length of hand hose, minimum internal diameter of 12mm is to be provided;

(xii) floor of the waste room is to be graded to a drain;

(xiii) drainage is to be by means of a stainless steel gauzed bucket trap connected to the sewer;

(xiv) gullies are to be positioned to avoid the track of waste container wheels;

(xv) rainfall and other surface water is not to be allowed to flow into the waste room;

(xvi) automatic sprinklers of approved design or other approved system are to be installed for effective means of fire control in the waste room;

(xvii) where equipment is fitted with wheels or castors the wheels or castors are to be capable of adequately supporting and easily manoeuvring such equipment under full load. The tread of all wheels and castors fitted will be of rubber or other approved materials that will reduce noise; and

(xviii) waste containers are easily accessed for the direct disposal of bulky items or a separate accessible enclosed area is provided at ground level for the disposal of bulky waste.

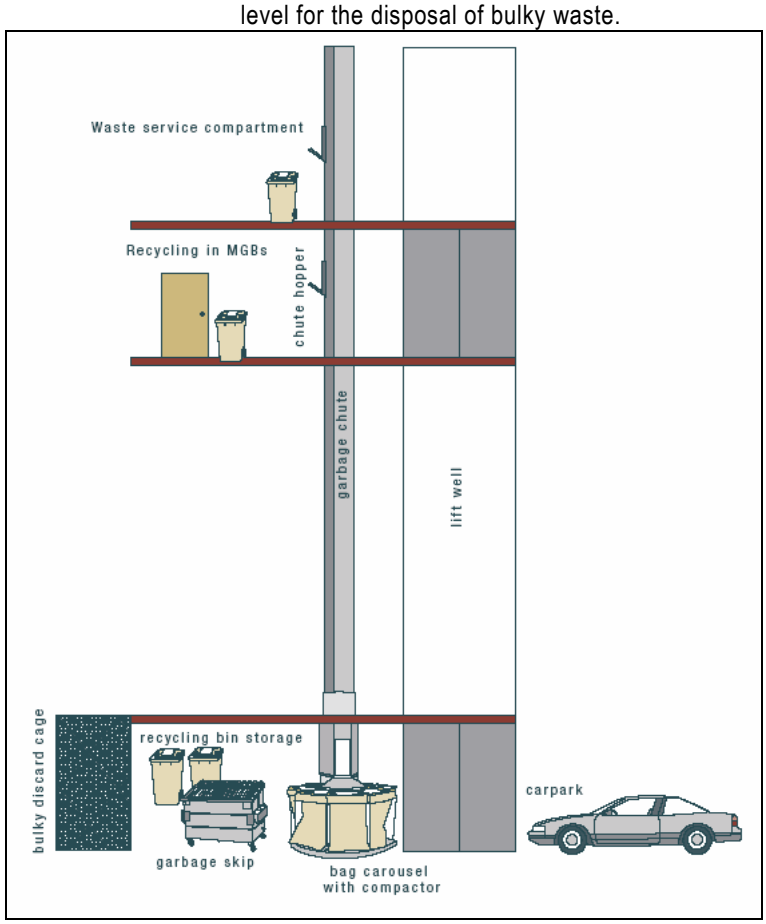


Figure 5 System for waste-chute with recycling Mobile Garbage Bin on each floor

6.11 Tourist Parks and Relocatable Home Parks

6.11.1 General requirements

(1) The following requirements apply generally to Tourist Parks and Relocatable Home Parks.

(2) Waste management for Tourist Parks and Relocatable Home Parks are to meet the following—

(a) have adequate areas for storage of recyclables and garbage that is suitably positioned, sized, constructed, convenient and safe to use, that is maintained in a clean and sanitary state and maintains the amenity of the locality;

(b) bins are to be collected on site;

(c) a level area is to be provided, on the property, for the storage of waste and recyclable items in bins; bins may service more than one site;

(d) a hardstand is to be provided for bin storage area;

(e) easily accessed and convenient to use;

(f) bins and storage areas are not to be located adjacent to living areas of existing neighbouring properties;

(g) kerbside service for wheelie bins is only to be used if there is sufficient space;

(h) if collection vehicle is required to leave the dedicated road reserve and enter estate—

(i) the driveway entry is to be an adequate length and width; constructed to carry weight and minimise need for reversing (max 60m);

(ii) hardstand is to be provided for bins along internal road; and

(iii) the contractor is to be indemnified against potential injury to the public and damage to internal road, underground services or driveway entry

(i) provision of a waste wash down area for cleaning of waste containers which is; easily accessed; not located near eating or living areas; floor is graded to a drainage point within wash down area; drained by means of a trapped gully connected to sewer; rain water and other

surface water not able to enter wash down area; and hose cock located in the vicinity of wash down area.

(j) waste storage and collection respect character and protect the amenity and aesthetics of the area by being located and/or screened so as to be not visible from the street or from another public space.

(k) if individual garbage bins are used the following applies—

(i) a single collection point for all bins;

(ii) the collection point is to be within property boundary;

(iii) the caretaker/employee is responsible for transporting bins to and from collection point;

(iv) the collection point road surface is to be designed to carry collection vehicles; and

(v) the collection vehicles are to be able to enter and exit the collection point in a forward motion.

6.11.2 Ongoing management

(1) For communal waste areas, it is important to establish and delegate responsibility for the tasks involved in the ongoing management of the bin bay such as—

(a) moving bins to and from kerbside, or onsite collection point on collection day;

(b) for kerbside collection, bins are to be placed along straight sections of the road for ease of mechanical collection. They are to be—

(i) clearly separated from car parking bays and loading bays;

(ii) clear of overhanging branches and awnings;

(iii) clear of footpaths and pedestrian access;

(iv) not in front of shop or residential entrances;

(v) not blocking vision of vehicles using the roadway; and

(vi) capable of being collected without the collection vehicle disrupting traffic flow.

(c) washing bins and bin bay;

(d) arranging for the prompt removal of dumped rubbish; and

(e) ensuring all residents are informed of the waste and recycling arrangements.

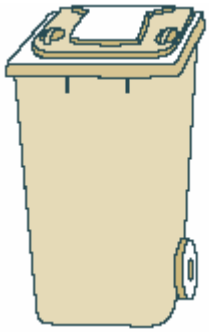
6.12 APPENDIX 1 - Waste and Recyclables Generation – Typical Rates

Type of Premises	Typical Waste Generation Rate	Typical Recyclables Generation Rate	Notes in the use of container type
Residential Uses—			
Higher-density housing up to and including 10 units	140L/unit/week	240L/unit/fortnight	One 140L mobile garbage bin (MGB) per unit for waste and one 240L MGB (yellow top) per unit for recycling
Higher-density housing over 10 units	140L/unit/week	240L/5units/fortnight	Hopper/s of suitable size for waste and MGB's or hoppers for recyclables
Higher-density housing— hostels, hotels and Motel Serviced Apartments	15L / bed / day 100L/room/week	Hostels: 20L / person / week Hotels: 50L / 100m^2 / bar / day Motels: 5L / bed / day	Wastes from restaurants are additional
Tourist Parks or relocatable home parks	60L / site / week	240L/4units/fortnight	
Business Uses—			
Retail Trading Shops Food Shops	0.1 to 0.2 m^3 / 100m^2 gross floor area / day	Discretionary	Hopper/s or MGB
Retail Trading Shops (Non-food shops)	50L / 100m^2 floor area / day	<100m^2:25L / 100m^2 / day > 100m^2:50L / 100m^2 / day	Hopper/s or MGB
Restaurants, Cafes, Takeaways and Clubs	0.5m^3 / 100 meals	Additional 0.15m^3 of glass / 100 meals	At least two waste collections per week are desirable
Office Buildings	30L / 100m^2 gross floor area / day	Waste paper 0.005m^3 / 100m2 / day Glass and plastics, 0.001 to 0.003m^3 / 100m^2 / day	Wastes from café / canteen are additional

6.13 APPENDIX 2 – BIN SIZES

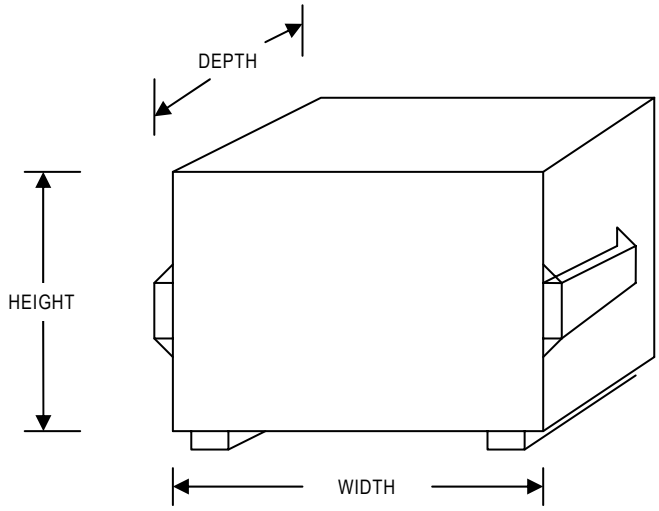
Mobile Garbage Bin (MGB) Sizes

Bin Type	140 Litre	240 Litre
Height	1065mm	1080mm
Depth	540mm	735mm
Width	500mm	580mm



Bulk Bin Sizes

Bin Type	.765m	1m	1.5m	3m	4.5m flat top	4.5m slope top
Height	900mm plus 300mm for wheels	1200m plus 300mm for wheels m	900mm plus 300mm for wheels	1400mm plus 300mm for wheels	1500mm plus 300mm for wheels	1940mm plus 300mm for wheels
Depth	900mm	900mm	900mm	1200mm	1700mm	1700mm
Width	900mm plus 200mm for lifting pockets	900mm plus 200mm for lifting pockets	1800mm plus 200mm for lifting pockets	1800mm plus 200mm for lifting pockets	1800mm plus 200mm for lifting pockets	1800mm plus 200mm for lifting pockets

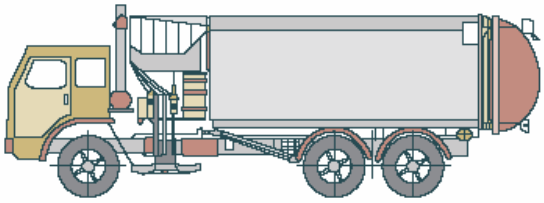


6.14 APPENDIX 3 - Collection Trucks Dimensions and Turning Circle Designs

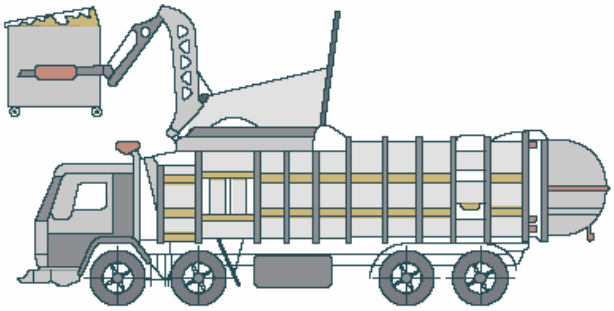
System	Vehicle length (m)	Vehicle height (m)	Vehicle working height (m)	Access width (m)	Turning circle (m)	Max weight (Tonnes)	Max reach side arm (m)
Front-lift	10.7	4.2	6.1	2.8	23	27.5	N/A

Cleanaway							
Liquid tanker large Cleanaway	10	3.5	3.5	2.8	21	27.5	N/A
Liquid tanker small Cleanaway	4.9	2.4	2.4	2.8	11.7	4.3	N/A
Side loading garbage	8.7	3.65	4	2.8	18.14	22	2
Side loading recycle	9.9	3.8	3.8	2.8	19.2	22	1.7

Side loading collection vehicle



Front-lift loading collection vehicle



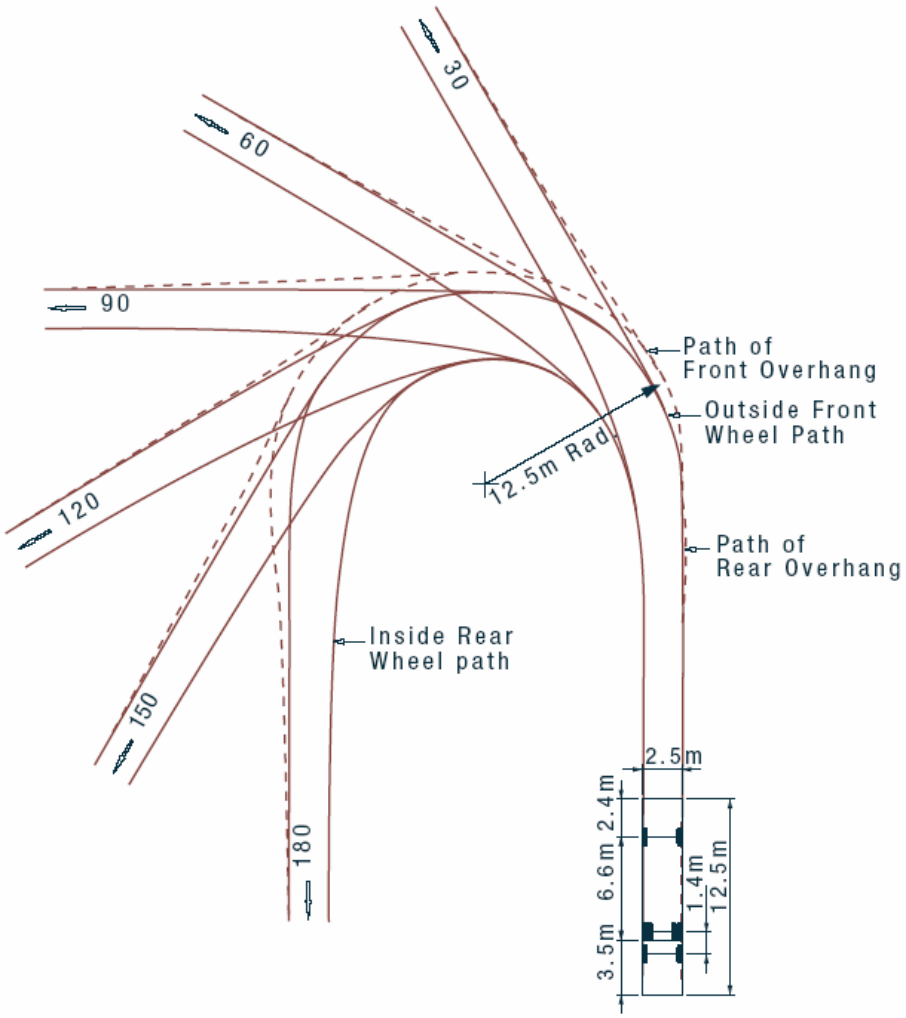
Sample turning circle design

source: AUSTROADS design single unit truck / BUS (12.5m)

scale 1 : 200 radius 12.5m

ABSOLUTE MINIMUM RADIUS

For use at mandatory stop only. Turning speed up to 5km/h.



Notes:- 1. Locate face of kerbs at least 0.6m clear of wheel paths.

2. Allow 0.6m clearance outside path of overhang and ensure that this area is kept free of road furniture.

PSP 7: ON-SITE SEWERAGE FACILITIES

PLANNING SCHEME POLICY

7.1 Background

Relevant legislation
Plumbing and Drainage Act 2002

(1) This policy has been developed as a response to the increasing number of On-Site Sewerage Facilities being proposed within the Shire and the need to:

(a) acknowledge the heightened risk to public health and export of pollutants to the environment associated with intensive development given the variation in soil conditions, the extent of underlying aquifers, and multiple beneficial uses made of same in the Shire;

(b) provide guidance in complying with the *Plumbing and Drainage Act 2002; and*

(c) to clarify the interpretation or implementation of the Queensland Plumbing and Wastewater Code (QPWC)and its supporting Australian Standards and Guidelines.

(2) This policy applies to proposed development supporting 20 or less equivalent persons. An approval from the Environmental Protection Agency is required for proposed developments exceeding 20 equivalent persons.

7.2 Effective Date

(1) This policy has effect on and from the day the IPA Planning Scheme for Burnett Shire Council commences.

7.3 Application of policy

(1) This policy applies to-

(a) all non-sewered areas of Burnett Shire; and

(b) development involving the supply, installation and ongoing maintenance of On-site Sewerage Facilities; and

(c) all material change of use applications for –

(i) High-density Housing; and

(ii) Dual Occupancies.

7.4 Purpose

(1) The purpose of this policy for On-Site Sewerage Facilities is to –

(a) ensure effective, sustainable compliance with the Queensland Plumbing and Wastewater Code by providing supplementary administrative and technical determinations; and

(b) affirm that the intensity of the physical footprint and distribution of the site to achieve sustainable development may be determined by site specific variables such as soil conditions; the required effluent land application area; and separation distances to structures, bores, aquifers, waterways, lot boundaries, stormwater absorption trenches and the like.

(2) The objectives of this policy are to—

(a) protect public health;

(b) maintain and protect the environment;

(c) promote measures to achieve sustainable use of soils and their capacity to assimilate and accumulate nutrients, dissolved salts, beneficial bacteria and other biological organisms;

(d) control the effects on both surface and groundwater to ensure that the quality of natural waters is maintained and where appropriate, enhanced;

(e) maintain and enhance community amenity;

(f) ensure that only State Government approved On-site Sewerage Facilities are installed;

(g) ensure that the adverse effects from failure of On-site Sewerage Facilities are contained within the development property;

(h) ensure that On-site Sewerage Facilities are maintained to achieve sustainable long term performance.

(3) The outcomes sought for On-site Sewerage Facilities include—

(a) wastewater effluent reuse practices that minimise the risk for transmission of disease. Systems are to be designed and operated so that human contact with wastewater effluent is avoided;

(b) the most efficient method of application of wastewater effluent to landscaped areas predominates;

(c) user friendly operation and routine service requirements are achieved;

(d) the hygienic disposal of by-products, whilst maintaining environmental and public health; and

(e) wastewater effluent disposal and its potential disease and pollutant transmission effects are contained within the property boundary from which it is produced.

7.5 Definitions

(1) The definitions of terms used in this policy are set out below -

(a) "bedroom" means any habitable room in accordance with the Building Code of Australia (BCA) including bedroom, music room, television/media room, sewing room, study/office, playroom, sunroom or the like that has adequate size, ventilation and windows to comply with bedroom building codes (refer BCA). Whether the room has built-in wardrobes is not relevant to the room's potential use as a bedroom. A room deemed to be a bedroom is an enclosed room or a room capable of being enclosed by sliding doors, screens or similar device.

(b) "equivalent person/s (EP)" means the basic unit or units used for determining the change in demand for a service as a result of a proposed development. This unit is based on a comparison with the usage of a service by an average occupant of an average residential dwelling.

(c) "On-site Sewerage Facilities" means a facility installed on premises (unsewered area) for treating, on the premises, sewage generated on the premises, and disposing of the resulting effluent on the premises.

(d) "responsible person (licensed Plumber and Drainer)" means the person responsible for carrying out the work.

(e) "suitably qualified person" means a person who possesses an on-site sewerage/maintenance/designers certificate or a suitably qualified engineer.

7.6 Performance Requirements

(1) All domestic wastewater effluent reuse systems are to be designed, constructed and maintained to—

(a) convey wastewater effluent from the unit to the appropriate reuse area;

(b) avoid blockage, leakage or overflow;

(c) allow provision for access, maintenance, servicing and cleaning;

(d) avoid contamination of potable and alternate water supplies;

(e) ensure wastewater effluent does not have a detrimental impact on the environment;

(f) avoid offensive odours and nuisance from the wastewater effluent discharging into reuse areas;

(g) avoid the surfacing of wastewater effluent after it has been applied to the reuse area through inappropriate soil loading;

(h) ensure surface run off water does not enter or affect the reuse area; and

(i) meet the requirements of Queensland Plumbing and Wastewater Code for 20 or less EP and the AS1547-2000.

7.7 Design Requirements

(1) On-site Sewerage Facilities are to be designed in accordance with the Queensland Plumbing and Wastewater Code for 20 or less EP and AS1547 – 2000.

7.7.1 Information Requirements

(1) The applicant is to provide an Effluent Disposal Report prepared by a suitably qualified person and containing the following information—

(a) soil percolation report prepared by a National Association of Testing Authorities (NATA) certified testing laboratory;

(b) scaled and dimensioned site plan showing the location of effluent land application areas in relation to property boundaries, existing and proposed structures, as well as on-site bores and those on adjoining properties;

(c) floor plan of the dwelling showing the number of bedrooms;

(d) calculations showing assumed loadings (including fixture types) and sizing of disposal areas; and

(e) details of the type of treatment system to be used, including manufacturer's specifications and maintenance programs to demonstrate that a system is available to accommodate the design standards.

This determination ensures that the peak design capacity (refer EPA Environmental Protection Regulation Schedule 1) will be adequate for the dwelling's peak sewage loading.

(2) If after preparation of an Effluent Disposal Report, filling is required on the site, then a revised Effluent Disposal Report will be required to determine whether the properties of the fill material will alter the effluent land application area from that stated in the original report.

7.7.2 Equivalent Person Loadings

(1) The number of equivalent persons (EP) is to be calculated as 1.5 EP per bedroom.

7.7.3 Design Flows

(1) A minimum of 200 L/persons/day is to be adopted for the design of the treatment system including the effluent land application area.

(2) The system is to be designed for both hydraulic and nutrient loadings.

(3) Reduced flows may be considered if it can be demonstrated that increased nutrient concentrations can be accommodated.

7.7.4 Number of Wastewater Treatment Systems

(1) There is to be only one (1) On-site Sewerage Facility per allotment within the Medium Density Residential Precinct, given the intended intensity of urban development and heightened risk to public health and export of pollutants to the environment beyond the boundaries of the site.

(2) Council may consider additional Wastewater Treatment Systems in the following circumstances:

(a) staged development where each stage exceeds 20 EP; or

(b) the site area of a Community Title lot complies with the minimum lot size applicable to the zone in which the land is located; or

(c) where natural constraints such as site topography or the location of sensitive environmental areas (e.g. water

courses) prevent wastewater being drained to a single location. To clarify, this provision does not extend to circumstances generated or caused by the development, including the number of dwelling units proposed.

7.7.5 Determination of Effluent Land Application Area

(1) Water balance calculations are to be carried out to determine the effluent land application area required. The designated effluent land application area is to be the average of the two highest areas determined by the calculation and excludes provision for wastewater storage.

(2) Development of allotments is to be undertaken to ensure effluent land application areas are of regular shape and that separated or disjointed areas are avoided wherever possible.

7.7.6 Garbage Grinders

(1) Garbage grinders or equivalent are not recommended for on-site sewerage facilities due the accelerated rate of accumulations of un-digestable bone matter and increased BOD loading on the treatment system.

(2) If a garbage grinder is to be used, then a 30% increase in loading (in the design of the system) is to be applied.

(3) Proposed garbage grinders are to be nominated in the wastewater report and shown on the proposed plan/s.

7.8 Treatment Systems

7.8.1 General

(1) The only On-site Sewerage Facilities that are to be used are those approved under the *Plumbing and Drainage Act 2002* and approved for use by the Queensland Department of Local Government, Planning, Sport and Recreation (DLGPSR), the Queensland Department of Health; and the Environmental Protection Agency.

(2) Septic tank systems will only be considered in rural and rural residential areas, where site conditions permit. For example, there is sufficient site area to permit a 100% reprovision area for primary effluent land application areas.

(3) Fixed landscape reuse areas for the irrigation of wastewater are not to be used for passive or active recreation purposes. Paths, barbecues, play equipment and the like are not to be constructed or erected in reuse areas.

(4) On-site Sewerage Facilities, comprising a wastewater treatment system and effluent land application areas, are to be wholly contained within the common title area of a community title development. Otherwise, the size of community title lots is to comply with the minimum lot size applicable to the zone in which the land is located and all effluent produced on the property is to remain within its property boundaries for treatment and disposal.

(5) The owner is responsible for ensuring that the installation complies with Queensland Department of Local Government, Planning, Sport and Recreation (DLGPSR), and Queensland Department of Health license conditions, the *Plumbing and Drainage Act 2002,* Council's policy. and the Environmental Protection Agency's conditions.

(6) The On-site Sewerage Facility is to be chosen to suit the site's ability to contain and reuse all the wastewater within the property boundaries of their place of origin.

(7) The effluent land application areas are to be sited so that surface runoff water is diverted away from the disposal area.

7.8.2 Aerated Wastewater Treatment Systems (AWTS)

(1) The owner of an Aerated Wastewater Treatment System (AWTS) is to enter into a maintenance contract with the supplier of the system, or other agent, to ensure proper care and maintenance of both the treatment and reuse systems is performed.

(2) The owner is to provide to Council every twelve (12) months a copy of the maintenance contract for the next twelve (12) months.

(3) Inspection and maintenance is to be carried out by the maintenance contractor who is to provide to Council—

(a) a copy of all reports carried out by the maintenance contractor (usually inspections are required on a quarterly basis or as specified under the model approval for the system); and

(b) a copy of an annual report prepared by an accredited water testing laboratory on a sample of the effluent forNitrogen, Phosphorous, and total coliforms.

7.8.3 Septic tank

(1) The owner of a septic tank and effluent disposal system is to have the system inspected annually to ensure its proper operation and submit a report to Council.

7.8.4 Effluent and Wastewater Reuse System

(1) Effluent or wastewater is not to be permitted to discharge into any natural waterway or stormwater drain.

(2) A 'responsible person' is responsible for the installation/ construction of wastewater reuse areas in accordance with the Council approved design.

(3) The effluent irrigation system is to be constructed, operated and maintained to ensure that effluent or wastewater does not pond and to prevent any runoff from the reuse area.

(4) Effluent and land application areas are to be completed prior to the commissioning of the wastewater treatment system and occupancy of the premises.

(5) A sign readable at 3.0m is to be erected, maintained and visible from any approach to each reuse area advising that recycled water is being used for irrigation.

(6) A scaled map of the subject site displaying all building footprint and reuse areas is to be attached and maintained on the wastewater treatment system.

PSP 8: RECONFIGURATION OF GOOD QUALITY AGRICULTURAL LAND

PLANNING SCHEME POLICY

8.1 Effective Date

This policy has effect on and from the day the IPA Planning Scheme for Burnett Shire Council commences.

8.2 Preliminary

(1) The purpose of this policy is to—

(a) identify the matters that the local government is to consider in assessing whether or not applications comply with the Reconfiguring a Lot Code; and

(b) identify the information to be provided to support as part of a reconfiguring application or which may be required by the local government in an information request.

(2) For the purpose of the policy, the following terms are defined as—

(a) Primary production — includes agriculture, horticulture, animal husbandry (whether or not intensive), flowers, ornamental plants or succulents grown on a commercial basis (but not including a wholesale or retail nursery).

(b) "Sustaining" or "sustainable" means— the primary production or rural activities are capable of financially supporting a family unit whereby income is derived from on-farm primary production activities (to be established by a Business Plan) and capable of long term production with no net loss of environmental values, (to be

established by a Land Capability and Environmental Assessment Report).

8.3 Considerations for determining reconfiguration applications

(1) In deciding a development application involving reconfiguring of a lot in the Rural Zone, the local government is required to consider whether or not the proposal would compromise the capability of the land to be used sustainably for crop or animal production[7].

(2) The local government may approve reconfiguration of Class A and Class B Good Quality Agricultural Land below the minimum lot sizes identified in the Reconfiguring a Lot Code in the planning scheme.

(3) In determining a development application involving reconfiguring a lot resulting in a lot less than 100ha for Class A land or below 200ha for Class B land the local government will consider the following matters for the purpose of assessing whether a proposal complies with the relevant specific outcomes of the code—

(a) whether the lot is to be used for primary production or a rural activity with supporting information demonstrating that the proposed lot size is suitable for long term sustainable rural uses;

(b) the matters set out in a Business Plan prepared and submitted in accordance with section 8.4(1); and,

(c) the matters set out in a Land Capability and Environmental Assessment Report prepared and submitted in accordance with section 8.4(2); and

(d) whether the reconfiguration is an improvement on the current configuration by way of one or more of the following—

(i) there is no increase in the number of lots as a result of the reconfiguring; or

(ii) the proposed lots are adequately configured to allow for sustainable primary production;

(e) whether a proposed lot is to accommodate an approved or existing public utility undertaking, rural industry or new

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[7] see specific outcome for the Rural Zone in the Reconfiguring a Lot Code

road provided that other lots are able to be sustainably used for primary production;

(f) whether there is an adequate and suitable area for a detached dwelling, including its curtilage, that does not diminish the availability of land suitable for sustainable primary production;

(g) the capacity of proposed lots to generate income from rural production compared to the configuration of the lots at the time of the application;

(h) whether the proposed lots are able to be used for a range of alternative primary production activities; and

(i) whether there is a suitable area for a dwelling house and its curtilage that—

(i) complies with the Detached Dwelling and Domestic Storage Code;

(ii) contains adequate space for on-site wastewater treatment and disposal;

(iii) provides adequate separation from Agricultural activities in accordance with the Planning Guidelines – Separating Agricultural and Residential Land Uses; and

(iv) will not experience adverse impacts from other nearby activities including for example rural activities and extractive industries.

(4) It is unlikely that a proposed reconfiguration that increases the number of lots and creates a lot that is less than 40ha would comply with the applicable Reconfiguring a Lot Code.

8.4 Information requirements

The Local Government may request the following information[8]—

(1) A Business Plan to be prepared by a suitably qualified financial consultant detailing—

(a) the capacity of the lot to generate income to sustain a family unit in a manner consistent with sustainable use of the lot in accordance with the Land Capability and Environmental Assessment Report;

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[8] Such information should be submitted with the application at the time of lodgement.

(b) viable alternative rural industries to demonstrate flexibility of the lot as a sustainable unit to respond to fluctuating farm economics.

(2) A Land Capability and Environmental Assessment Report prepared by a suitably qualified land consultant providing—

(a) an assessment of the agricultural land class(es) of the subject land with regard to *SPP 1/92 – Development and the Conservation of Agricultural Land;*

(b) an assessment of land capability and constraints with regard to—

(i) climatic conditions and limitations including matters other than rainfall;

(ii) Soil Plant Available Water Capacity (PAWC);

(iii) moisture availability for crop growth;

(iv) effective soil depth;

(v) soil physical factors affecting crop growth (eg. surface crusting, hard pans, cementation, etc);

(vi) soil chemistry

(vii) soil nutrient fertility;

(viii) soil salinity, acidity or sodicity (including any limitations posed by potential or actual acid sulfate soils);

(ix) topography and slope limitations;

(x) matters affecting workability of the soil (eg. rockiness, stiff clay, etc);

(xi) susceptibility to erosion; and

(xii) susceptibility to flooding

(c) an assessment of whether the land is capable of sustained production of the primary production proposed, including the need for rotation and spelling.

(d) the requirement for water supply or irrigation to sustain the primary production, and the availability of an adequate water supply and whether or not the water supply is subject to tradeable rights.

(e) the potential for off-site impacts to existing land uses or features, including areas or sites of high conservation or environmental value.

(f) an assessment of the suitability of the lot for the production of other crops or rural activities suitable for the area.

(g) The report should provide a land classification system that effectively discusses how the soil conditions outlined above affect cropping and land management practices and hence their impact on the potential for the site to provide for a wide range of crop options to ensure long term production in response to fluctuating market conditions or farm economics.

(3) Provide a "farm map" that clearly shows the location of—

(a) infrastructure (roads, detached dwelling, irrigation);

(b) soil types and attributes;

(c) drainage (Stream channels); and

(d) remnant vegetation and areas of existing land degradation.

(4) That there is a suitable area for a dwelling house and its curtilage that—

(a) complies with the *Detached Dwelling and Domestic Storage Code*.;

(b) contains adequate space for on-site wastewater treatment and disposal;

(c) provides adequate separation from Agricultural activities in accordance with the *Planning Guidelines – Separating Agricultural and Residential Land Uses; and*

(d) will not experience adverse impacts from other nearby activities including rural activities and extractive industries.

PSP 9: COMMUNITY TITLE RECONFIGURATION

PLANNING SCHEME POLICY

Division 1—Preliminary

9.1 Effective Date

This policy has effect on and from the day the IPA Planning Scheme for Burnett Shire Council commences.

9.2 Application of the policy

Policy for the reconfiguration of a lot by a standard format plan of subdivision for the purpose of creating a community titles scheme.

9.3 Intent

This policy provides the relevant Council requirements for Reconfiguration of a Lot by standard format plan of subdivision for the purpose of creating a community titles scheme.

9.4 Scope

This policy applies to all reconfiguration of a lot applications by standard format plan of subdivision for the purpose of creating a community titles scheme within the Burnett Shire Council area.

9.5 Introduction

(1) In preparing this policy document Council has endeavored to include all material relevant to the determination of the requirements for the reconfiguration of lot/s by standard format plan of subdivision for the purpose of creating a community titles scheme, as contained in the *Land Title Act 1994*, the *Body Corporate and Community Management Act 1997*, the Burnett Shire Planning Scheme and its adopted policies.

(2) In doing this Council does not accept responsibility for any omission, error, amendment or otherwise with respect to the sections of the *Integrated Planning Act 1997*; the *Land Title Act 1994* and/or the *Body Corporate and Community Management Act 1997* quoted, the Sections of the statutory documents that may be relevant.

(3) The policy sets out the Council's requirements with respect to the most frequently encountered issues but recognises that there will from time to time be issues of a special nature applying to applications and these should be discussed with Council's Development Management Department.

Division 2—Requirements

9.5.1 Applicable Zones

(1) Applications for reconfiguration of lot/s by standard format plan of subdivision for the purpose of creating a community titles scheme within Burnett Shire.

9.5.2 General Requirements

(1) Council may approve applications for the reconfiguration of vacant land by standard format plan of subdivision. All standard format lots are to comply with the minimum lot size applicable to the zone in which the land is located. In un-sewered areas, applications must be accompanied by a development plan showing building envelopes for each dwelling and the location of the On-site Sewerage Facilities and adequate effluent land application area within the Common Area.

(2) If Development Approval is not initially required under the Planning Scheme Council may require a plan to be prepared of the buildings proposed to be erected on each lot together with associated outbuildings in order to ensure that the proposed lots are capable

of accommodating the proposed buildings in compliance with this policy and other relevant statutory documents.

(3) An application for reconfiguring a lot/s by standard format plan of subdivision for the purpose of creating a community titles scheme must be accompanied by a plan showing—

(a) scale, north point and contours;

(b) all lot and easement boundaries;

(c) adjacent roadways and footpaths;

(d) access ways, driveways, car parking and car wash-down areas;

(e) the position of proposed and existing buildings on the site;

(f) the position of existing buildings on adjacent lots;

(g) in the case of vacant land, building envelopes for future dwellings;

(h) Common Areas;

(i) garbage bin storage area, mail boxes and recreation facilities.

(4) A parks contribution will be required in respect of every application for reconfiguration of lot/s by standard format plan of subdivision, for the purpose of creating a community titles scheme, in accordance with Council's Contributions to Parks, Open Space and Nature Conservation Planning Scheme Policy.

9.5.3 Specific Requirements

(1) The minimum site area in accordance with this policy shall be as follows:-

(a) For Residential Purposes 800m^2

(b) For Commercial Purposes 500m^2

(c) For Industrial Purposes 500m^2

(2) The minimum standard format lot area in accordance with this policy is to be as follows—

(a) for residential uses—no minimum lot area prescribed, the maximum number of dwellings will be determined by the relevant minimum lot size in the zone; or

(b) for Commercial Uses—no minimum lot area prescribed; or

(c) for Industrial Uses—no minimum lot area prescribed.

(3) The minimum private open area per lot, free of buildings shall be as follows—

(a) for Residential Uses—45m^2 with a minimum dimension of 5 metres.

(b) for Commercial or Industrial Uses—No minimum requirements.

(4) In accordance with the *Body Corporate and Community Management Act 1997*, a common area is required in each development proposal. No minimum area is prescribed for the Common Area, but it must be accessible to all units in the community titles scheme. Recreation facilities proposed in the common area are to be located so as not to intrude on the visual privacy of the nearest lots.

(5) Service areas, including clothes drying areas, storage areas and garbage bin storage areas are to be located or screened from view so they are not visible from a public road or Common Area.

(6) Visitor car parking is to be located in the Common Area.

9.5.4 Building Requirements

(1) The height, set back and car parking requirements of all buildings is to be in accordance with the relevant provisions of the Planning Scheme.

9.5.5 Roads and Access Requirements

(1) The minimum width of a driveway serving up to 2 dwelling units is to be 3 metres.

(2) Access ways no longer than 50 metres and serving between 2 and twenty-five parking spaces, are to meet the following requirements—

(a) Maximum design speed - 15 kilometres per hour;

(b) At an entrance to a public road the minimum width of carriageway - 6.0 metres and extend into the lot for no less than 5m;

(c) The minimum carriageway width is to be 5.5 metres; and

(d) Turning space is to be provided for every car park.

(3) Access ways being capable of both vehicular and pedestrian use and no longer than 100 metres for a cul-de-sac or 200 metres for a loop road are to be designed to the satisfaction of Council.

(4) All roads, access ways, parking areas and pathways are to be constructed in accordance with Council's Development Works Planning Scheme Policy.

(5) Council may vary any of the above requirements in any particular case where it deems such variation to be warranted bearing in mind the nature of the site and the proposed layout and design of the development and amenity of adjoining properties.

(6) Survey Plans for the reconfiguration of lot/s by standard format plan of subdivision for the purpose of creating a community titles scheme for lots which are less than the minimum frontage and area requirements of the Planning Scheme will not be sealed until such time as the slab or footings have been constructed in accordance with Council's development permit for Material Change of Use.

9.5.6 Service Requirements

(1) All development applications for reconfiguration of lot/s by standard format plan of subdivision for the purpose of creating a community titles scheme, shall provide services including sewerage and water supply, electricity, telephone, stormwater disposal and external road access. In un-sewered areas, sewage treatment shall be provided by a single treatment plant serving the whole community titles scheme which shall be located in the Common Area. Adequate effluent land applicationarea to service the plant shall be located in the Common Area.

9.5.7 Standard Format Subdivision of Existing Multiple Units for the Purpose of Creating a Community Titles Scheme Requirements

(1) Council may grant development approval to the reconfiguration of lot/s by standard format plan of subdivision for the purpose of creating a community titles scheme for existing lawful buildings notwithstanding that the development does not comply with any or all of the provisions of this policy provided that—

(a) the plan of survey shall not be signed and sealed by the Council until a Building Surveyor has certified to the effect that the development has been completed in accordance with Council's development approval; and

(b) arrangements satisfactory to Council have been made for the provision of public open space, sewerage, water supply, electricity, telephone, stormwater disposal, external road access and where the development is in an area designated by Council for that purpose.

PSP 10: PROVISION OF FORESHORE PARKS AND ESPLANADES

PLANNING SCHEME POLICY

10.1 Effective Date

This policy has effect on and from the day the IPA Planning Scheme for Burnett Shire Council commences.

10.2 Introduction

(1) Due to a number of historical and topographical factors, urban development within the Shire has tended to concentrate within a narrow band along the Woongarra Coast between Burnett Heads and Elliott Heads. The result of this form of development in a number of areas has been the development of coastal foreshore land as private residential allotments without adequate provision for public access, visual aesthetics and recreation opportunities. The areas of Miller Street and south of Kellys Creek, Bargara are cases in point.

(2) In addition, the location of urban development immediately adjacent to foreshores, rivers, creeks and other marine areas has a number of environmental implications. Urban development may be affected by wave damage and cyclonic effects, erosion, flooding and insect breeding. The marine environment suffers from septic waste disposal, household chemicals and insecticides and rubbish disposal from houses.

(3) Council takes the view that coastal land is a limited resource for all Australians and should therefore be held in public ownership wherever possible. It also takes the view, that a separation or buffer should be provided between the urban and marine environments to preserve environmental quality and provide a better quality of life for the entire community.

(4) This Policy aims to ensure that remaining coastal land and land subject to development within close proximity to aquatic environments is planned so that both urban and marine areas may be better

protected from their impacts upon each other and to provide coastal recreational opportunities and views to all the community.

10.3 Designated Policy Area

(1) This Policy covers any form of development requiring Council approval for material change of use and reconfiguring a lot on land which is in proximity to, includes, or has frontage to, a river, creek or other watercourse, tidal flats, mangroves, estuary or the Ocean.

10.4 Intent

(1) The intent of this policy is to ensure —

(a) that foreshore areas are preserved for public use and access;

(b) that an open space system is provided which reinforces Council's intent to provide pedestrian foreshore links and a coastal park network. This intent is shown in Council's Contributions to Parks, Open Space and Nature Conservation Planning Scheme Policy;

(c) that a buffer area is provided to reduce impacts between urban development and the marine environment ;

(d) that areas, which in the Council's or the community's opinion, contain sensitive marine environments, or areas of scenic or aesthetic value, may be publicly acquired to ensure their protection and preservation for the benefit of the entire community.

10.5 Implementation

(1) When considering any application for development Council will—

(a) consider the intent and implementation provisions of this Policy;

(b) require, wherever possible, a minimum fifty (50) metre foreshore park / buffer along water frontages measured from either the High Water Mark (HWM) or Deed Boundary whichever provides the greater area of land;

(c) consider the acquisition or purchase of a greater width and/or area of land if it considers that the circumstances warrant such additional area.

10.5.1 Reconfiguring a lot Development Applications

(1) When considering any application for reconfiguration within the designated policy area, the Council will require all or part of the land which would normally be provided as parkland to be provided along the Ocean foreshore or other such marine frontage as described above.

(2) In the case of land with an ocean frontage being developed, the Council will also require a twenty (20) metre road reserve to be provided on the western side of the foreshore park areas as an extension of the Woongarra Scenic Drive or an Esplanade, or a proposed Esplanade to establish a scenic drive along the Burnett Shire Coastline.

(3) In cases where the Council considers that the circumstances warrant, such as, but not limited to, areas of scenic beauty or environmental sensitivity or uniqueness, Council may require a greater area of land to be provided. In these circumstances Council will either negotiate with the developer for any additional land required over and above the 10% or if necessary, acquire the land compulsorily.

(4) In the case of coastal land, no form of urban subdivision or development will be permitted to the East of the existing or proposed alignment of the Woongarra Scenic Drive or an Esplanade, whether existing or proposed which will establish a scenic drive along the Burnett Shire coastline.

10.5.2 Material Change of Use Development Applications

(1) For material change of use applications which are to be followed by reconfiguration, the developer will be advised by Council of the requirements of this policy and that such requirements should be incorporated in any future reconfiguring a lot over the land.

(2) For material change of use applications which are ***not*** to be followed by reconfiguration, Council may require the dedication of foreshore land to either the Crown or Council in accordance with the reconfiguring a lot provisions set out above.

(3) Council may require as part of its conditions of approval that the proposed development not conflict with the intent or operation of this policy, i.e. in the case of material change of use approval being considered by Council for a detached dwelling, higher density housing or other development proposal over land with ocean or estuarine frontage, Council may require the buildings, ancillary structures or land to be used for a development purpose, to be set back from the foreshore or river so that it will meet the requirements of this policy or will not prejudice an ability to meet the requirements of this policy in the future.

PSP 11: CONTRIBUTIONS TO PARKS, OPEN SPACE AND NATURE CONSERVATION

PLANNING SCHEME POLICY

Division 1—Preliminary

(1) Effective Date—

(a) This policy has effect on and from the day the IPA Planning Scheme for Burnett Shire Council commences.

(2) The purpose of this policy is—

(a) where land is to be provided for use as a park, recreation space or nature conservation area ("community open space") as a condition of a development permit, to state the minimum area to be provided;

(b) to state the amount of any monetary contribution to be paid in lieu of providing community open space; and

(c) to state the local government's criteria for determining the contribution requirements, including the mix of land and monetary contribution for a development application involving reconfiguring a lot.

Division 2—Contributions

11.1 When contributions are required

(1) The local government may require land to be dedicated as part of any proposed reconfiguring of a lot for the purpose of using that land for community open space.

(2) Without limiting its powers under the IPA[9], the local government may require the dedication of land for community open space in the following circumstances—

(a) the proposed reconfiguring is within the Hinterland Residential Zone, the Urban Residential Zone or the Industrial Zone; and

(b) the development is creating additional lots; and

(c) the development comprises an area of land of 4 hectares or greater; and

(d) where it is in the community interest to provide land for community open space.

(3) In other circumstances the local government may require a monetary contribution in lieu of providing land.

(4) The local government, in determining whether it will require the provision of land for community open space, will consider—

(a) the size, shape, situation and general suitability of the land to be provided as community open space;

(b) whether it is likely that the proposed community open space will conform to any strategy of the local government for acquiring, improving or developing community open space;

(c) whether part of the land to be reconfigured or adjoining land is included in Community Zone; and

(d) the situation of the land to be reconfigured in relation to existing community open space, including accessibility to and utility of such community open space.

(5) The local government, in its consideration under paragraph (4) above, will not ordinarily accept the contribution of land for community open space that will result in the total area of contiguous community open space being less than 1.0 hectare unless it is a 'Local Urban Park' or it is likely that such land will form part of a network or adjoin future community open space.

(6) Without limiting its powers under the *Integrated Planning Act 1997*, the local government may require monetary contributions in lieu of dedication of land, including in the following circumstances—

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[9] IPA, section 3.5.30 (Conditions must be reasonable or relevant)

(a) where there is no opportunity for an area of community open space to be linked into an existing or future open space network; or

(b) where the area of land would be of insufficient size or dimension to cater for the active or passive recreational needs of the residents of the local community or residents of and visitors to the local government area; or

(c) where the area of land would be unsuitable for the active or passive recreational needs of the residents of the local community or residents of and visitors to the local government area due to the physical site constraints; or

(d) where the local government determines there is no need for additional active or passive recreational space in the locality.

11.2 Rate of contributions

Council will calculate contributions as follows—

(1) Where the dedication of land is required—

(a) up to 10% of the land area the subject of the development; or

(b) if agreed to by the developer, a greater area of land.

(2) Where a monetary contribution is required in the Hinterland Residential Zone or the Urban Residential Zone, the greater value of—

(a) an amount equivalent to 10% of the unimproved value of the land to be developed; or

(b) the amount identified in the local government's Schedule of Parks Contributions in Table 11.1.

(3) Where a monetary contribution is required in the Industrial Zone an amount equivalent to 10% of the unimproved value of the land to be development.

Table 11.1—Schedule of Parks Contributions

Locality	Parks Contribution (per lot)
Bargara	$6 549.00
Burnett Heads / Port Bundaberg	$3 443.00
Elliott Heads	$4 330.00
Hummock	$3 765.00

Locality	Parks Contribution (per lot)
Innes Park	$4 911.00
Coral Cove	$6 644.00
Riverview	$4 009.00
Moore Park	$5 358.00
Any other area	An amount equivalent to 10% of the unimproved value of the land

11.3 Use of contributions

(1) Acceptance of monetary contributions by the local government does not imply that the contribution will be used immediately or in the immediate vicinity of the land being reconfigured.

(2) Moneys contributed in lieu of providing community open space are to be expended as determined by Council in accordance with the repealed *Local Government (Planning and Environment) Act 1990*.

(3) In determining how to expend monetary contributions, the local government will consider—

(a) the need for additional community open space and improvements on existing community open space in the locality of the land being reconfigured;

(b) whether the needs of the residents of the land being reconfigured for community open space and facilities provided thereon of the residents of the land being reconfigured would be met;

(c) whether the quantum of available moneys is sufficient to acquire suitable land or the improvement of land in the locality of the land being reconfigured; and

(d) whether moneys should be expended on the acquisition of suitable land or the improvement of community open space that would be likely to serve the residents of the local government area as a whole.

(4) Contributions may be used for purposes relating to the provision of passive and active recreational space within the local government area including—

(a) as a contribution toward the upgrading or renovation of existing community open space; or

(b) as a contribution toward the acquisition of land for community open space; or

(c) as a contribution towards the development of new areas of community open space; or

(d) any combination of the above.

PSP 12: DEVELOPMENT CONTRIBUTIONS—WATER AND SEWERAGE—BURNETT SOUTH

PLANNING SCHEME POLICY

Division 1—Introduction

12.1 Effective Date

This policy has effect on and from the day the IPA Planning Scheme for Burnett Shire Council commences.

12.2 Purpose

(1) This policy was formulated in accordance with Section 6.2 of the *repealed Local Government (Planning and Environment) Act (No. 2) 1990* as amended which provides for monetary contributions towards the provision of water supply and sewerage works in the former Woongarra Shire (Burnett South). It is intended that the policy will result in reasonable and relevant conditions being applied, in that the applicant will be required to make a contribution based on the actual cost of provision of water supply and sewerage works for the particular scheme, service and catchment areas within which the development is located.

12.3 Relationship to the Integrated Planning Act 1997

(1) The repealed *Local Government (Planning and Environment) Act 1990* permitted a local authority to require, as a condition of granting approval of certain application, the applicant to pay a

contribution towards the cost of Water Supply and Sewerage Supply Headworks and works external.

(2) This policy is an interim measure allowed under the transitional provisions of the *Integrated* Planning Act 1997 until the adoption of a Priority Infrastructure Plan and Infrastructure Charges Plan.

12.4 Definitions

(1) The definitions of terms used in this policy are set out below—

(a) "*water supply headworks*" means those works, structures or equipment determined by the Local Authority to be water supply headworks in accordance with 12.10(2) and 12.11(2) of this policy and listed as such in Policy Volume 2 - Supporting Information.

(b) "*water supply works external*" means all works, structures or equipment for the purpose of connecting land to the Local Authority's water supply scheme. The term does not include water supply headworks, or water supply works internal.

(c) "*sewerage headworks*" means those works, structures or equipment determined by the Local Authority to be sewerage headworks in accordance with 12.10(3) and 12.11(4) of this policy and listed as such in Policy Volume 2 - Supporting Information.

(d) "*sewerage works external*" means all works, structures or equipment for the purpose of connecting land to the Local Authority's sewerage scheme. The term does not include sewerage headworks, or sewerage works internal.

(e) "*applicant*" shall where the context so admits and without limiting the generality thereof include the person firm or corporation who is developing the subject land or other property.

(f) "*consumer price index*" shall mean the Commonwealth Statisticians All Groups Consumer Price Index for the City of Brisbane.

(g) "*equivalent person/s*" the basic unit or units used for determining the change in demand for a service as a result of a proposed development. This unit is based on a comparison with the usage of a service by an average occupant of an average residential dwelling.

(h) "*equivalent population*" the number of equivalent persons which constitute the "as-of-right" usage of a service by the subject land, or an existing use being undertaken on the subject land, as well as the total number of equivalent persons resulting from a proposed development or change in use on the subject land. The determination of equivalent populations is to be calculated in accordance with section 12.19 and/or section 12.20.

(i) "*water consumption factors*" - include the water consumption factors, set out in section 12.19 and section 12.20, which have been adopted by Council to reflect the anticipated service demand for particular developments. Provided that where design flows are provided by the applicant, or may be reasonably determined, water consumption factors shall be calculated as a ratio to the service demand for an average single family dwelling house on a conventional residential allotment. The service demand shall be taken as the calculated average daily demand used in design reports for the relevant scheme works as referenced in Policy Volume 2 - Supporting Information.

(j) "*sewerage generation factors*" may be based on the service demand ratios set forth in section 12.19. Unless otherwise determined, the sewerage generation factor shall be taken as unity.

(2) The following definitions relate to subdivision of land proposals only—

(a) "*water supply works internal*" means works necessary for the reticulation of water supply to each allotment into which the relevant land is proposed to be subdivided.

(b) "*sewerage works internal*" means works necessary for the reticulation of sewerage to each allotment into which the relevant land is proposed to be subdivided.

12.5 Philosophy

(1) The Local Authority's basic philosophy is that the applicant is required to make a monetary contribution to the Local Authority, on a fair and equitable basis, which will allow the applicant to utilise part of the reserve capacity which is available or will be made available by future works in either the headworks or works external for either the water supply or sewerage scheme. Such contribution

will allow for that portion of the reserve capacity required by the applicant to be reprovided by the Local Authority in time.

(2) It will be appreciated that the contribution will not always be sufficient to permit the necessary augmentation of headworks and works external. This can only be undertaken in well planned staged increments which bear a relationship to the design capacities of each component of the system. For these reasons the monies lodged with the Council as a contribution towards headworks and works external may be directly applied to the purpose for which they were lodged or will otherwise be held in trust for the staged augmentation of the works required or programmed.

(3) The contribution shall be based upon the estimated cost, or if known, the current construction cost of relevant headworks and works external services (as summarised in the appendices and as set out in Volume 2 - Supporting Information) which are required to be augmented for the provision of services to the particular development or the reprovision of system reserves.

(4) In this policy document for the purpose of calculation of the design capacity of headworks facilities the concept of "equivalent population" (e.p.) is used. An equivalent population may be considered as the number of persons who would generate the same sewerage or water demand on the facility as the industry or other establishment being considered.

12.6 Transition

(1) In respect of either a reconfiguring a lot application or an application to open a new road which comes within the scope of Section 6.2 (6)(a) of the repealed *Local Government (Planning and Environment) Act (No. 2) 1990* the headworks contribution required to be paid shall be calculated in accordance with Council's Planning Scheme. PROVIDED THAT the calculation of the applicable costs shall be based on the costs applying as at the date of Council's decision in respect of the reconfiguring a lot application.

(2) Following the adoption of this policy by the Council pursuant to Section 6.2 (6)(b) of the repealed *Local Government (Planning and Environment) Act (No. 2) 1990* such policy shall subject to sub-paragraph (8) hereof supersede any previous policy which Council has adopted pursuant to the said Section 6.2 (6)(b).

Division 2—Payment of headworks charges

12.7 General

(1) Where the applicant is required to pay or contribute towards the cost of water supply and sewerage headworks, water supply and sewerage works external or water supply and sewerage works internal, the amounts as determined by the Local Authority shall be payable to the Local Authority in accordance with Section 6.2 (10) of the repealed *Local Government (Planning and Environment) Act (No. 2) 1990* or at such other time or times as may be agreed to between the Local Authority and the applicant.

(2) The approval of an application for material change of use or reconfiguring a lot may include a condition requiring the applicant to lodge and maintain a security in a form approved by the Local Authority for the amount of any contribution required to be paid by the applicant; moreover nothing in this policy shall preclude an applicant from entering into an agreement under which the applicant will carry out the required works to the satisfaction of the Local Authority within the time specified.

(3) In the event of an agreement being required in respect of a material change of use or reconfiguring a lot application the agreement with the Local Authority (which will be at the cost of the applicant) will inter alia set forth—

(a) The cost or a contribution towards the cost of providing water supply and/or sewerage headworks;

(b) The cost or a contribution towards the cost of providing water supply and/or sewerage works external;

(c) The cost of water supply and/or sewerage works internal (where required);

(d) The nature and extent of the works for which payment is to be made (including a general specification thereto);

(e) All sums that the applicant is required to pay to the Local Authority including provisions for the indexation or adjustment of amounts payable as referred to in 12.12(5) and 12.12(11);

(f) The time within which the sum is to be paid;

(g) Provision relating to appropriation of interest accrued to sums held in the Local Authority's trust fund;

(h) The amount and nature of any security required to be lodged;

(i) The date on or before which the Local Authority shall commence the works; and

(j) The date on or before which such works shall be completed by the Local Authority.

(4) Records of receipts and expenditure of sums referred to in 12.7(3) hereof shall be kept in such a manner that the receipts and expenditures of such sums received by the Local Authority under each agreement entered into shall be recorded separately and distinctly.

12.8 Onus of Proof

(1) Upon written application and where a fee has been set by the Local Authority, upon payment of the appropriate fee, the Local Authority will advise the applicant whether Headworks Charges have been previously paid in respect of a designated parcel of land or the development thereon and the extent to which prior contribution has satisfied the Headworks Charges applicable under this policy. Where the enquiry relates to an ongoing application, the applicant will have fourteen days from the notification by the Local Authority to produce documentary evidence to the contrary and after that time the appropriate charges shall be paid on the basis of the advice provided by the Local Authority, before any approval will be granted or permit issued in response to the relevant application.

12.9 Introduction of headworks charges

(1) It is the intent of this policy that Headworks and Works External Charges will henceforth be imposed on all material change of use and reconfiguring a lot applications where there will be an increase in the number of equivalent persons on the land or where no appropriate charges have been received in respect of that land.

(2) The distinction between Headworks Charges applicable at the material change of use (inconsistent uses) or where reconfiguring a lot is impact assessable stage and those applicable at the reconfiguring a lot (code assessable) stage will be applied; these are defined respectively as Headworks Charges A and Headworks Charges B as set out below.

12.10 Headworks Charges A

(1) Headworks Charges A are a contribution towards the costs incurred or to be incurred by the Council in providing the

necessary capacity in the water supply and sewerage systems at the point of water supply and at the point of sewerage treatment respectively.

(2) For water supply, Headworks Charges A are a contribution towards the following facilities, where applicable—

(a) Water supply catchments and storage structures (e.g. dams);

(b) Inlet structures;

(c) Raw water pumping stations (e.g. bores);

(d) Water treatment facilities;

(e) Service reservoirs;

(f) Rising mains to supply side of elevated reservoirs and to booster stations for the distribution systems;

(g) Elevated reservoirs or booster stations for the distribution system; and

(h) Acquisition of land.

For details see Policy Volume 2 - Supporting Information.

(3) For sewerage, Headworks Charges A are a contribution towards the following facilities, where applicable—

(a) Sewage Treatment Works;

(b) Effluent Disposal Systems; and

(c) Acquisition of Land.

For details see Policy Volume 2 - Supporting Information.

(4) The basis for calculation of water supply and sewerage Headworks Charge A is a uniform rate per equivalent person applicable throughout the whole of each separate water supply and sewerage scheme.

See sections 12.15 and 12.17.

12.11 Headworks Charges B

(1) Headworks Charges B are a contribution towards the costs incurred or to be incurred by the Council in providing the necessary capacity in the trunk mains and pumping stations between the point of water supply or the point of sewage treatment and the point at which the new development will connect to each system.

(2) For water supply, Headworks Charges B are a contribution towards the following facilities—

(a) Distribution and trunk water mains;

(b) Booster stations within the distribution system;

(c) Secondary storages (elevated or on ground); and

(d) Acquisition of land.

For details see Policy Volume 2 - Supporting Information.

(3) The basis for calculation of Water Headworks Charge B is a uniform rate per equivalent person applicable throughout each separate service area, notwithstanding that several service areas may comprise a water supply scheme.

See section 12.16.

(4) For sewerage, Headworks Charges B are a contribution towards the following facilities—

(a) Trunk sewers;

(b) Sewage pumping stations;

(c) Pressure mains, required to transport sewage from a particular catchment to the point of treatment; and

(d) Acquisition of land.

For details see Policy Volume 2—Supporting Information.

(5) The basis for calculation of Sewerage Headworks Charge B is a uniform rate per equivalent person applicable throughout each separate sewerage catchment, notwithstanding that several catchments may comprise a sewerage scheme.

See section 12.18.

(6) Headworks Charges will take into account any of the above facilities which are established in any other local authority area and which are applicable to services provided by the Burnett Shire Council. Charges for such works will be related to the Council's share of contribution towards the cost of said works.

12.11.1 Application of Headworks Charges

(1) The splitting of Headworks Charges into the A & B components enables separate charges to be imposed at the material change of use (inconsistent use) and reconfiguring a lot stage.

(2) Both charges will however be applicable to a consent application and where rezoning is not to be followed by a subdivision or consent application.

(3) The four cases are as follows—

Applicable Headworks Charges		
1	Rezoning to be followed by subdivision or consent	A
2	Rezoning not followed by subdivision or consent	A & B
3	Consent Applications	A & B
4	Subdivision Applications	B

12.12 Determination of headworks charges

(1) The method of determining Headworks Charges is based on the increase in the equivalent population which may result from the Council approving an application for rezoning, consent or subdivision. In order to do this, the provisions of Planning Scheme are relevant to determine the appropriate "as of right" equivalent population which can be accommodated on land included in each zone under the town planning scheme. The normal population densities permitted under the Council's Planning Scheme for the various town planning zonings and to be used in the calculation of Headworks Charges for the policy are set out in 12.19.

(2) For consent applications the population increase resulting from the development shall be based on the actual number of persons where this can be ascertained or if the future population is not known, shall be calculated in accordance with the population densities for particular developments as set down in section 12.20.

(3) The basis for calculation of unit Headworks Charges has been to determine the per capita cost of facilities within each scheme area for Charges A and within each catchment area or service area for Charges B.

(4) Appendices 1 - 4 (sections 12.15 to 12.18) of this Policy list the per capita costs at 30th June, 1990. The capital costs have been based in general on the current estimated cost of replacement of the facilities. Where applicable, capital costs have been adjusted for subsidies to be paid on approved augmentation works to determine the final cost to Council.

(5) In addition to any amendments to this policy arising from the adoption of further design reports or the completion of programmed works—

(a) The headworks contribution amounts referred to in this policy shall be adjusted annually pursuant to sub-clause (b) hereof; and

(b) The headworks contribution amounts payable in respect of each annual period from 1st July to 30th June shall be the amounts payable as at the preceding 30th June increased in proportion to the decrease in the value of one dollar ($1.00) Australian during the preceding annual period to 31st March the basis of such calculation being the Consumer Price Index. (Refer 12.23)

(6) The Appendices to this Policy will be updated from time to time to incorporate Design, Planning or Strategy Reports which have been approved by Council and reviewed where required by the relevant State Government Department.

(7) Updating will also be required as the status of facilities change from "future works" to "constructed works" and more accurate costings become available.

(8) The Council may in its absolute discretion apply a discounting factor to contributions required for development applications or applications for material change of use (rezoning) or reconfigurations in particular catchments or service areas. Further, different levels of discounting factor may be applied at different stages of the development action (e.g. differing discounting factors applying to rezoning contributions than those applying to subdivision in the same catchment or service area).

(9) Additionally, Council may introduce such factors to encourage infill in areas where existing headworks are currently under-utilised rather than further extend the service areas.

(10) The adoption of a discounting factor and the identification of the nature of applications and localities to which the discounting factor is intended to be applied shall for the purposes of this policy be deemed to be part of this policy and shall be reviewed accordingly.

(11) A further factor will be the indexation of all headworks contributions. Where a period of more than twelve months elapses between the date of Council approval of an application and the date on which the headworks contribution payment is being effected, the amount of the headworks contribution shall be adjusted to the level of equivalent headworks contribution then payable pursuant to this policy at that time otherwise the amount shall be adjusted in accordance with 12.12(5).

(12) In the case of staged developments, the amount of contributions payable shall be determined at the time of approval of the respective stages. Where formal approval is sought for a multi-staged development the amount of the headworks contributions will be taken as the total amount applicable to all stages and shall

become payable at the time prescribed for the first stage of development.

(13) It shall be a condition of approval for any requests for an extension of time that the amount of the headworks contribution payable to Council be adjusted to equal the equivalent current headworks adopted by Council at that time.

12.13 Calculating headworks charges

(1) Contributions for Headworks Charges will generally be determined by the estimated increase in the equivalent population of the relevant land as a result of the proposed development. Alternative methods for calculating Headworks Charges have been set out in 12.21.

12.13.1 Water Supply Headworks Charges

(1) Contributions for Water Supply Headworks Charges shall be calculated for each application as follows—

(a) Water Supply Headworks Charge A (WHa)

$$WHa = \Delta P \times Caw \times I \times D$$

where ΔP = the increase in equivalent population resulting from the proposed development.

$$= P_2F_2 - P_1F_1$$

where P_2 = the population resulting from the development

P_1 = the 'as-of-right' population of the subject land prior to development.

F_2 = water consumption factor applicable to the proposed development

F_1 = water consumption factor applicable to the subject land prior to development.

P_2, P_1, F_2, & F_1 are determined in accordance with Appendices 5 and/or 6.

Caw = unit cost per head for water supply headworks as determined in Appendix 1.

I = rise and fall factors to adjust for construction cost differential between date at which headworks costs were calculated and date of the application. I is listed in Appendix 9.

D = discounting factor adopted by Council as set out in Appendix 8, otherwise D = 1.0 for all other applications.

(b) Water Supply Headworks Charge B (WHb)

WHb = P x Cbw x I x D

where P, P, F, I and D are as per (a) above

Cbw - unit cost per head for water supply headworks as determined in Appendix 2.

12.13.2 Sewerage Headworks Charges

(1) Contributions for Sewerage Headworks Charges shall be determined for each application as follows:

(a) Sewerage Headworks Charge A (SHa)

SHa = P x Cas x I x D

where P = the increase in equivalent population resulting from the proposed development as determined in 5.02(a) above. S_2 & S_1 are generally taken as unity (1) in accordance with Appendix 6.

i.e. P = $P_2 - P_1$

Cas = unit cost per head for sewerage headworks as determined in Appendix 3;

I and D as per 5.02 above.

(b) Sewerage Headworks Charge B(SHb)

SHb = P x Cbs x I x D

where P, S, I and D are as per 5.03 (a) above

Cbs = unit cost per head for sewerage headworks as determined in Appendix 4.

S_1 & S_2 = Sewerage Generation Factor (taken as unity unless determined otherwise)

Division 3—Works external charges

12.13.3 Definition

(1) Works external charges are interpreted as the immediate cost incurred or to be incurred by Council in providing the appropriate works external where the relevant land is the only land that will be serviced by the works, or a contribution towards the cost, where the relevant land and other land will be serviced by the works, exclusive of any works summarised as headworks in 12.15, 12.16, 12.17 and 12.18 of this Policy or specified as such in Volume 2 - Supporting Information.

12.13.4 Applicability

(1) Works External Charges will generally be applied in the following cases—

(a) On rezoning of land, where it is stated that it is not proposed to subdivide the relevant land;

(b) On consent use of land; and

(c) On subdivision of land.

(2) The extent of works external shall be determined for each application and the contribution amounts applicable for such works shall be set out in the agreement between Council and the applicant as specified in (3).

12.13.5 Determination of Works External Charge

WE total = WE 1 + WE 2 where

WE total = estimated cost of initial works external contribution, which will subsequently be adjusted to equal actual cost.

WE 1 = estimated cost of works required solely to service the proposed development.

WE = actual cost if known)

WE 2 = the developer's share of the estimated cost of common works external based on the ratio of utilisation of the common works.

(Actual costs to be used if known)

where WE2 = $\frac{\text{Est. cost x equiv pop of proposed dev}}{\text{Equiv pop of area serviced by common works}}$

(1) The works external may include, inter alia—

(a) Work immediately necessary to connect the relevant land to the water and sewerage system and this may include but is not limited to mains, pump stations, rising mains.

(b) Work immediately necessary external to the development to provide the level of service appropriate to the development as required by Statute and/or the Local Authority and Council guidelines.

(2) In cases where Council may require a larger main and/or other facility to allow for future development within the sewerage catchment or water supply area, the applicant shall only be responsible for the applicant's share of the cost of such works.

(3) The share of the cost shall be in proportion to the cost of such works if constructed in the size required for the development alone, to the cost of the works required by Council.

(4) Should Council be unable to meet its share of the cost of such external connections, the development will be considered as being premature.

12.14 Works Internal

12.14.1 Application of Policy

(1) Where an applicant seeks to develop land and the Local Authority provides water supply and/or sewerage and requests the land to be connected to these systems and for the water and/or sewerage to be reticulated within that development, the applicant shall design, detail and construct the necessary works internal to engineering standards defined by the Local Authority and in accordance with detailed engineering plans which have been approved by the Local Authority prior to the commencement of construction. The applicant may engage the Council to carry out the works and enter into an agreement if required. The whole of the cost of works internal including, inter alia, mains and fittings, pump stations, rising mains, shall be met by the applicant seeking to develop the land.

(2) Subject to 12.13.5 in cases where Council may require a larger main and/or other facility to allow for future development within the sewerage catchment or water supply area, the applicant shall only be responsible for the applicant's share of the cost of such works.

(3) The share of the cost shall be in proportion to the cost of such works if constructed in the size required for the development alone, to the cost of the works required by Council.

12.15 APPENDIX 1
Schedule of water supply headworks and contributions per equivalent person

(1) PART A—Applicable to Scheme from which supply is provided

Scheme Title	Unit Contribution Per Equiv. Person $/ep.
Riverpark	576.32
Coastal System	335.01

12.16 Appendix 2
Schedule of water supply headworks by scheme and service area and associated contributions per equivalent person

(1) PART B—Applicable to the Scheme and Service area to which subject land is connected

Scheme Title and Service Area	Unit Contribution per equivalent person $/ep
Riverpark	57.89
Coastal system—	
Kalkie/Booloolah	161.61
Burnett Heads	436.14
Hummock	516.71
Bargara	212.80
Innes Park	178.12
Elliott Heads	613.54
Riverview	1108.45

12.17 Appendix 3
Schedule of sewerage headworks and contributions per equivalent person

PART A—Applicable to Scheme to which subject land will discharge

Scheme Title and Service Area	Unit Contribution per equiv. person ($/ep.)
Bargara Sewerage Scheme	571.43

12.18 Appendix 4
Schedule of sewerage headworks by scheme and catchment and associated contributions per equivalent person

PART B—Applicable to the Scheme and catchment in which subject land is situated.

TABLE 2—Bargara/Kelly's Beach Sewerage Scheme

Catchment	Contribution per equiv person($/e.p.)
A	325.50
B	177.77
C	134.98
D	65.64
F	565.23
G	483.46
H	433.93
I	476.90
J	329.71
K	367.82
L	441.47
M	270.82
N	453.28
P	813.92
Q	553.70
S	515.83
T	564.43

12.19 Appendix 5
Population densities and water consumption factors

Zone	Population per hectare (P)	Water Consumption Factor (F)
Urban Residential (where not in a precinct)	32	1.0
Urban Residential (medium-density residential precinct)	100	0.75
Urban Residential (higher-density residential precinct)	100	0.75
Urban Residential (Large Lot Residential Precinct) Rural Residential	6	1.0
Hinterland Residential	6	1.0
Business	80	0.5
Industrial	80	0.5
Other zones	to be assessed at time of application	

NOTES—

(1) The above figures are intended to be indicative only.

(2) Population densities shall generally be determined on the basis of the particular development proposal submitted with an application.

(3) It shall be a requirement of all applications for material change of use and reconfiguring a lot, that the applicant submit a detailed plan indicating the nature and extent of the proposed development.

(4) Service Demand Ratios shall be determined as follows—

(a) Water Supply

Average daily consumption (AD) shall be taken as the average daily demand identified in the relevant Design Reports

Mean Day Max. Month	MDMM	= 1.5 x AD
Max. Day	MD	= 2.25 x AD

Max. Hour MH = $\frac{2 \times MD}{24}$

(b) Sewerage

Hydraulic Loading

Average dry weather flow (ADWF) = 2401/EP/day

Peak dry weather flow (PDWF) = 2 x ADWF

Peak wet weather flow (PWWF) = 5 x ADWF

Pollutional Loading

70g of BOD5 per EP/day

70g of non-filtrable residue per EP/day

(5) Unless provided, water consumption factors and sewage generation factors shall be determined in accordance with the above service demand ratios with an average household of 3.2 persons being taken as the basic unit.

(6) For Headworks Charges A, design capacities should be based on MDMM demands for water supply and 3xADWF for sewerage. For Headworks Charges B design capacities should be based on maximum hour demands for water supply and 5xADWF for sewerage. This note applies to those cases where accurate field measurements are not available.

12.20 Appendix 6
Water supply and sewerage design populations for particular developments

Item	Case Description	Unit	Population Per Unit (P)	Water Consumption Factor (F)
1.0	*Residential*			
1.1	Detached Dwelling	House	3.2	1.00
1.2	Higher-density Housing	1 bdrm	1.5	0.75
		2 bdrm	2.4	0.75
		3 bedrm+	3.2	0.75
1.4	Higher-density Housing (Hotels)	Suite	1.6	0.50
1.5	Tourist Park	Ha.	150	0.50
		Site	2.5	0.50
2.0	*Community*			
2.1	*Child Care Centres	Child	0.25	0.50
2.2	*Primary Schools (Day)	Pupil	0.25	0.50
2.3	*High Schools (Day)	Pupil	0.5	0.50
2.4	*Tertiary Education Centres (Day)	Pupil	0.5	0.50
2.5	*General Hospitals	Bed	3.4	0.50
2.6	*Convalescent Hospitals	Bed	1.6	0.50
2.7	*Institutional Accommodation	Bed	1.0	0.50
3.0	*Business*			
3.1	Medical Centres	Doctor	5.0	0.50
3.2	Restaurants	Table	5.0	0.50
3.3	Take-away Food Premises	m2**	4.0	0.50
3.4	Special Facilities etc	To be Assessed		
3.5	Offices	W.C.	3.0	0.50
3.6		1.8m of Urinal	3.0	0.50

Notes—

(1) Information in this appendix to be used as a guide only, where particular applications do not itemise maximum population usage.

(2) Refer also to notes following 12.19.

(4) Unless otherwise determined, sewage generation factors shall be taken as unity.

* Allowance to be made for staff.

** Based on usable customer area.

12.21 Appendix 7
Alternative methods for calculating Headworks

12.21.1 Common equations

(a) Water Supply Headworks Charge A

$$WHa = \Delta P \times Caw \times I \times D$$

(b) Water Supply Headworks Charge B

$$WHb = \Delta P \times Cbw \times I \times D$$

(c) Sewerage Headworks Charge A

$$SHa = \Delta P \times Cas \times I \times D$$

(d) Sewerage Headworks Charge B

$$SHb = \Delta P \times Cbs \times I \times D$$

(1) The principal variable associated with all headworks calculations is ΔP i.e. the estimated increase in the equivalent demand ratio in terms of equivalent population which would result from approval of the proposed development.

12.21.2 Area method

(1) Suitable for rezoning where details of future development are unknown.

(2) Typical Area Method formula—

$$H = [A \times \Delta EP] \times [C \times I \times D]$$

i.e. $\Delta P = A \times \Delta EP$

Where A = Area in hectares of land subject to rezoning application.

EP = The increase in equivalent demand ratio in terms of equivalent population density or equivalent tenement density per gross hectare which would result from approval of the application.

$= EP_2 F_2 - EP_1 F_1$

(Refer 12.19)

12.21.3 Equivalent Tenement Method

(1) Suitable for all applications where details of the proposed development are known.

Typical formula -

$$H = \Delta ET \times [C \times I \times D]$$

Where ΔET = The increase in equivalent demand ratio in terms of number of equivalent tenements which would result from approval of the application. In the case of a residential subdivision, the number of equivalent tenements should equal the number of allotments.

i.e. $\Delta P = * 3.2 \times \Delta ET$ for Residential subdivision.

$= ET_2 F_2 - ET_1 F_1$

and C = unit cost per equivalent tenement for water supply headworks or sewerage headworks

* Population per unit to be adjusted as per section 12.20.

12.21.4 Equivalent population method

(1) This method is similar to the equivalent tenement method and suitable for all applications where details of proposed development are known.

Typical formula -

$$H = \Delta EP \times [C \times I \times D]$$

Where ΔEP = The increase in equivalent demand ratio in terms of equivalent population which would result from approval of the application.

i.e. $\Delta P = EP_2 F_2 - EP_1 - F_1$

EP to be determined from section 12.20.

12.21.5 Fundamental method (or Quantity/Quality Method)

(1) This method is suitable for determining contributions in the case of applications which are subject to policy conditions requiring the

contributions to be determined individually on merit, e.g. consent applications for large commercial and industrial developments. This method could be based on forecast flows or pollutional loading which would result from approval of the application and subsequently be adjusted based on actual flows or loading.

Typical formula—

H = f x [C x I x D]

Where f = The increase in annual average flow and/or pollutional loading that is anticipated to result from the proposed development.

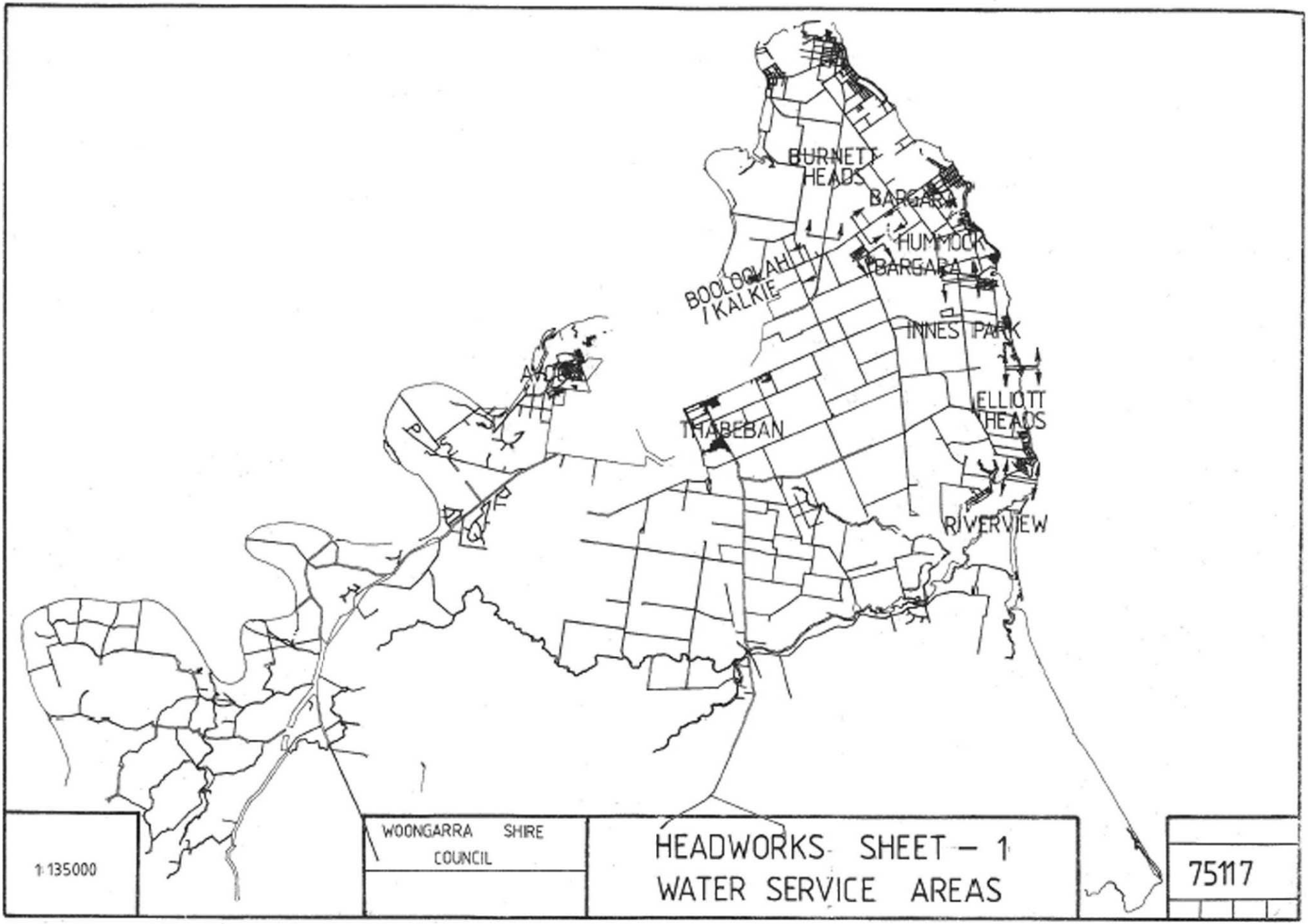
and C = unit cost relevant to increase f.

12.22 Appendix 8
Schedule of discounting factors applicable service areas and type of development application

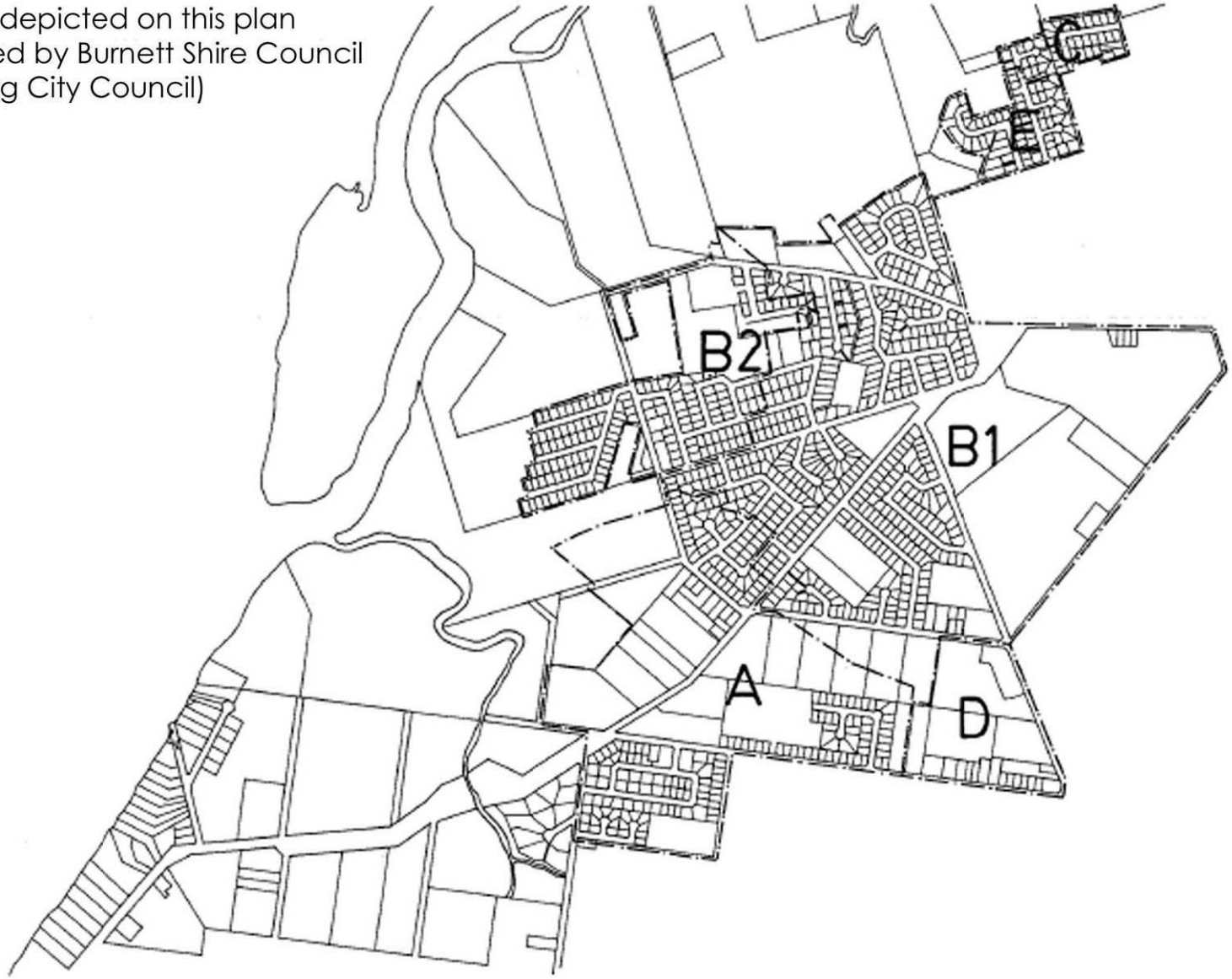
Type of application	Application area (Description or plan reference)	Discount Factor
Any type whether material change of use (inconsistent use)with or without reconfiguration; Reconfiguring a lot or material change of use where both sewerage and water contributions are required	All service areas served by both water and sewerage schemes as of July, 1990, (Bargara, Sewerage and Water Catchments)	0.5

12.23 Appendix 9
Schedule of indexation factors

Date at which applicable from	Consumer Price Index (as at preceding March)	I
30th June, 1990	102.2	1.0
1st July, 1992	107.5	1.05
1st July, 1993	109.1	1.07
1st July, 1994	111.50	1.09
1st July, 1995	116.50	1.14
1st July, 1996	119.60	1.17
1st July, 1997	120.50	1.18
1st July, 1998	121.90	1.19
1st July, 1999	122.80	1.20
1st July, 2000	125.50	1.23
1st July, 2001	132.70	1.30
1st July, 2002	137.10	1.34
1st July, 2003	141.80	1.38
1st July, 2004	145.80	1.42


BURNETT HEADS
BARGARA
HUMMOCK BARGARA
BOOLOOAH / KALKIE
INNES PARK
ELLIOTT HEADS
THABEBAN
RIVERVIEW
1:135000
WOONGARRA SHIRE COUNCIL
HEADWORKS SHEET – 1
WATER SERVICE AREAS
75117

The serviced area depicted on this plan
is no longer serviced by Burnett Shire Council
(refer to Bundaberg City Council)



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	designed	Shire Engineer	Job No.
Revisions	checked	date	Drawing No. 75118

Scales: 1:12500	drawn	WOONGARRA SHIRE COUNCIL	HEADWORKS SHEET – 3 SEWERAGE CATCHMENTS BARGARA
	checked		
	designed	Shire Engineer	Job No.
Revisions	checked	date	Drawing No. 75119

Scales: 1:12500		drawn	
		checked	
		designed	
	Revisions	checked	

WOONGARRA SHIRE COUNCIL

Shire Engineer

date

HEADWORKS SHEET – 4
SEWERAGE CATCHMENTS
BARGARA

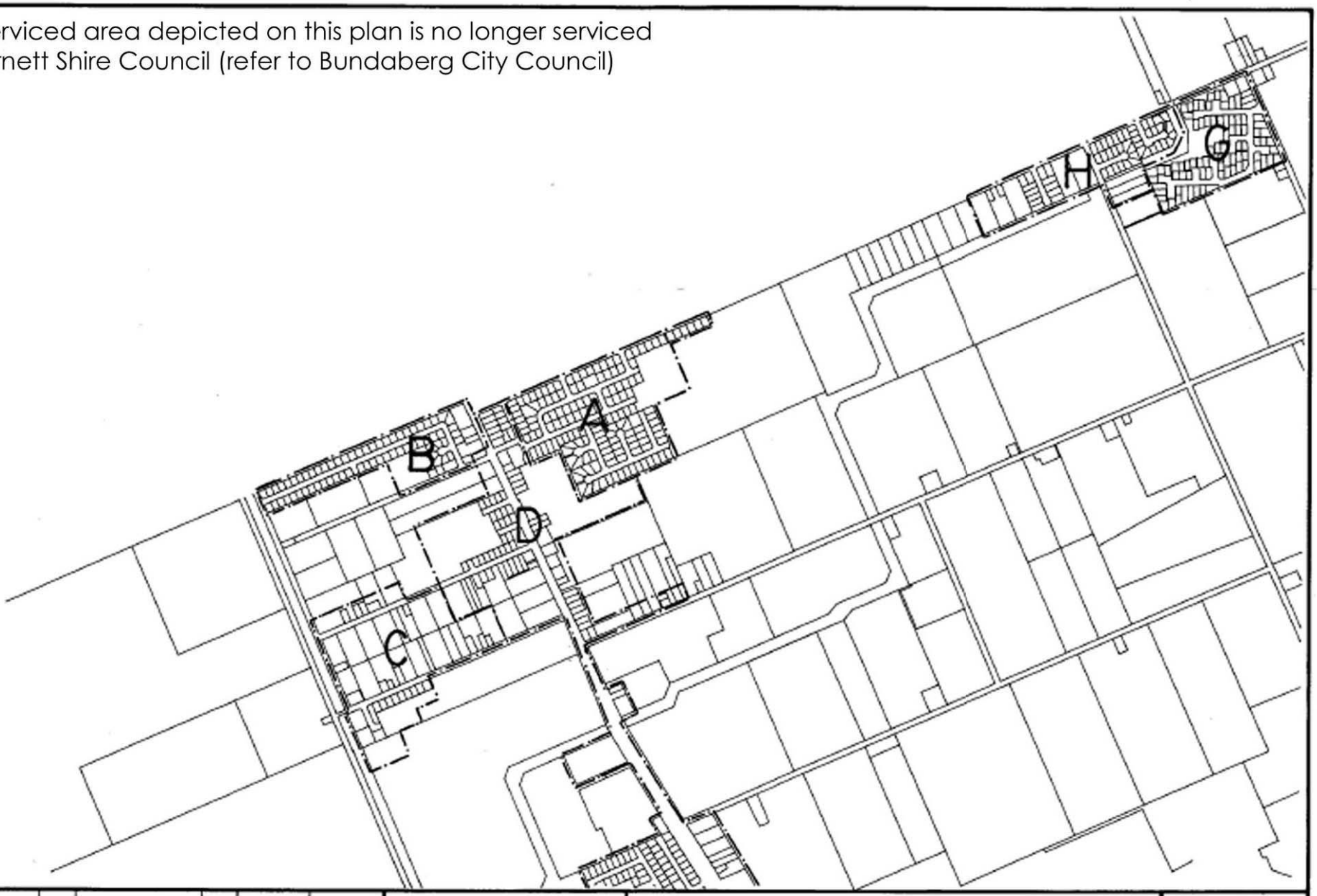
Job No.

Drawing No. 75120

The serviced area depicted on this plan is no longer serviced by Burnett Shire Council (refer to Bundaberg City Council)

Scales: 1: 5000	drawn	WOONGARRA SHIRE COUNCIL	HEADWORKS SHEET - 5 SEWERAGE CATCHMENTS BOOLOOLAH
	checked		
	designed	Shire Engineer	Job No.
Revisions	checked	date	Drawing No. 75121

The serviced area depicted on this plan is no longer serviced by Burnett Shire Council (refer to Bundaberg City Council)



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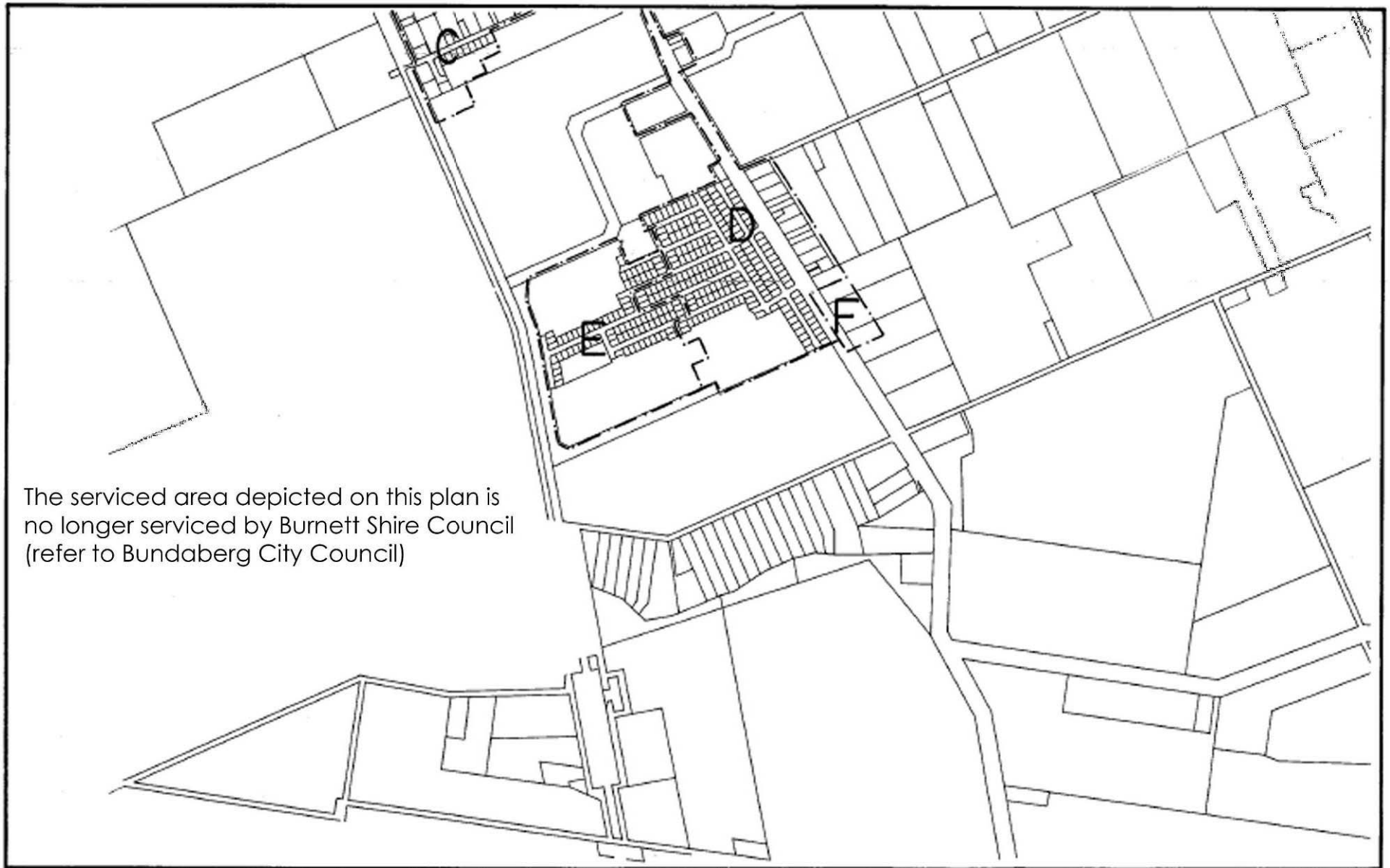
		checked	
		designed	Shire Engineer
	Revisions	checked	date

HEADWORKS SHEET – 6
SEWERAGE CATCHMENTS
THABEBAN

Job No.
Drawing No. 75122



The serviced area depicted on this plan is no longer serviced by Burnett Shire Council (refer to Bundaberg City Council)

Scales: 1:12500	drawn	WOONGARRA SHIRE COUNCIL	HEADWORKS SHEET – 7 SEWERAGE CATCHMENTS THABEBAN
	checked		
	designed	Shire Engineer	Job No.
Revisions	checked	date	Drawing No. 75123

PSP 13: DEVELOPMENT CONTRIBUTIONS— WATER AND SEWERAGE— BURNETT NORTH

PLANNING SCHEME POLICY

This policy is fixed in accordance with paragraph (e) of Subsection (18E) of Section 33 of the *Local Government Act* by resolution on the 11th day of May 1985.

13.1 Effective Date

This policy has effect on and from the day the IPA Planning Scheme for Burnett Shire Council commences.

13.2 General Statement of Policy

(1) Pursuant to the powers under Section 33 and 34 of the Local Government Act, it is the policy of Council to require payment of capital contributions towards or reimbursement of the cost of construction and augmentation of water supply headworks, water supply works external, sewerage headworks, sewerage works external, as hereinafter defined, and to require payment of the cost of or the construction by the applicant of water supply works internal and sewerage works internal in those circumstances where Council is empowered by subsection (12H) of Section 34 of the Act to so require.

(2) This policy shall come into force on the first day of September 1985 and shall supersede any provision of Council's subdivision by-laws that were in force prior to that date in relation to any matter contained within this Policy.

(3) The provisions of this Policy shall apply to every application for approval of reconfiguring a lot which in the opinion of the Council is situated in part of the Shire which is being used or will, if the reconfiguration is effected, be used for residential, rural residential commercial or industrial purposes and which in the opinion of the Court could be connected to whether now or in the future to any existing water supply scheme or sewerage scheme as described herein.

(4) The methods adopted by Council for determining the amount of any contribution are as set forth in section 13.5 of this Policy and shall apply to every application for subdivision of land unless the Council in its discretion shall consider that by reason of the size, shape, location or topography of the said land or of the proposed new allotment or by reason of any prior works or contributions that such conditions or any one or more of them should not be imposed.

(5) Those works, structures and equipment which the Council determines to be water supply headworks or sewerage headworks, as the case may be for the purposes of Subsection (12H) of Section 34 of the Act are as set forth in section 13.6 of this Policy.

13.3 Relationship to the Integrated Planning Act 1997

(1) The repealed *Local Government (Planning and Environment) Act 1990* permitted a local authority to require, as a condition of granting approval of certain application, the applicant to pay a contribution towards the cost of Water Supply and Sewerage supply Headworks and works external.

(2) This policy is an interim measure allowed under the *Integrated Planning Act 1997* until the adoption of a Priority Infrastructure Plan and Infrastructure Charges Schedule.

13.4 Definitions

Cost per person - the construction cost of a section of a sewerage and water supply scheme divided by its population capacity and taken up to the next whole dollar.

Delivery Main - a water main from the source to the water storage

Headworks Charge -the present cost per person of the relevant sections of the scheme headworks multiplied by the Index Number and by the number of persons in the development.

Index Number - The index number is the percentage increase in the total of the Average Weekly Earnings of Employees, Queensland Persons (all

employees) and the price index of materials used in building, other that house building - all groups, Brisbane; from the month/quarter of the year in which the scheme was completed, to the June month/quarter of the financial year prior to that in which the payment of the headworks charges is due.

- *The above information shall be derived from publications of the Australian Bureau of Statistics.*

Present cost per person - the original cost per person multiplied by the Index Number.

Reticulation Main - any water main not a delivery or trunk main.

Sewerage Headworks - existing works structures and equipment used to convey, treat or dispose of sewage, from the point of connection of sewerage works external from a development. It does not include sewers of 150mm diameter or less.

Sewerage Works External - works, structures and equipment used to connect the sewers in a development to an existing sewerage scheme.

Trunk Main - a water main not a delivery main and greater than 150mm

Trunk Sewer - a sewer greater than 150mm diameter

Water Supply Headworks - existing works, structures and equipment used to pump, collect, treat and deliver water to the reticulation system. It does not include reticulation mains of 100mm diameter or less.

Water Supply Works External - works, structures and equipment used to connect the water reticulation system in a development to an existing water supply scheme.

Table 13.1: Index Numbers at Date of Completion of Schemes

	Moore Park Water Supply - July 1977	Burnett Downs Water Supply - August 1978
Average Weekly Earnings of Employees QLD (All employees)	170.24	209.20
Materials used in building other than house building - all groups, Brisbane	80.10	85.70
INDEX NUMBER	250.34	294.90

13.5 General

(1) Where reticulated water supply and/or sewerage services are available for connection to a development, Council requires connection to be made as a condition of approval of the development.

(2) The applicant shall provide all necessary to reticulate the water and sewerage service with the development and Water and Sewerage Works External to the development as are prescribed herein or are found to be required.

(3) Where reticulated water supply and/or sewerage services can not be made available for connection to a development, the development shall not be considered for approval unless a proposal for the supply of potable water and removal of sewage is submitted with the application. Such proposal shall be designed to meet all appropriate sections of the current guidelines for design of Local Authority Sewerage and Water Supply Schemes as published, from time to time, by the Department of Local Government.

(4) Where a development is to be connected to a Council owned and/or operated water supply or sewerage system, the development shall contribute proportionally towards the cost of providing works used by that development whether such works are in existence at the time or are to be provided at some time in the future.

(5) The works referred to in (4) above shall be deemed to consist of Water Supply Headworks and Sewerage Headworks, Water Supply Works External and Sewerage Works External.

(6) The amount of the cost of Water and/or Sewerage Headworks shall be the Headworks Charge as defined. The number of persons shall

be determined on the basis of 3.2 persons per dwelling or equivalent usage for reconfiguring a lot applications and on the basis of Table 13.2 for material change of use (formerly consent or rezoning approvals).

(7) In the situations which are not defined herein the charges shall be based on the additional number of persons expected to use the land because of the subdivision, consent or rezoning approval.

(8) Where landholders have land in the Command Area in the North Bundaberg Sewerage Scheme and decide to develop such land requiring sewerage, then the headworks charge, which would apply to the land if it was outside the Command Area, shall be reduced by the moneys paid as the Command Area sewerage charge modified by the appropriate Index Numbers.

(9) Daily flow rates on which the costs in this statement are charged are—

(a) water supply - average consumption per person per day - 550 L;

(b) sewerage - average daily dry weather flow per person - 225 L.

Table 13.2

No.	Town Planning Zone Or Use	Population Density
1	Village Residential Zone	20 p/ha
2	Residential A Zone	35 p/ha
3	Residential B Zone	70 p/ha
4	Accommodation Units	2.5 p/unit
5	Local Business/General Business Zones	35 p/ha
6	Hotels/Motels/Caravan Parks/ Institutions	2.5 p/room/site
7	Light Industry	35 p/ha
8	Medium Industry	60 p/ha
9	Heavy/hazardous, noxious or offensive industries	As determined by Council
10	Service Industry	70 p/ha

13.6 Headworks Costs

Table 4-1 - Sewerage North Bundaberg - not included in this version of policy

13.6.1 Water & Sewerage Headworks Indexation Factors

Table 13.3: Updated Index Numbers

	November 1993	June 1994	June 1995	June 1996
Average Weekly Earnings of Employees QLD (all employees)	490.60	511.1	501.2	507.5
Materials used in building other than house building. All groups, Brisbane	109.7 x 2.339 = 256.60	110.5 x 2.339 = 258.50	114.5 x 2.339 = 267.82	114.9 x 2.339 = 269.75
Index Number	747.2	769.6	769.02	776.25

2.339 = Factor used to enable comparison with pre 1990 figures

13.7 Appendix 9

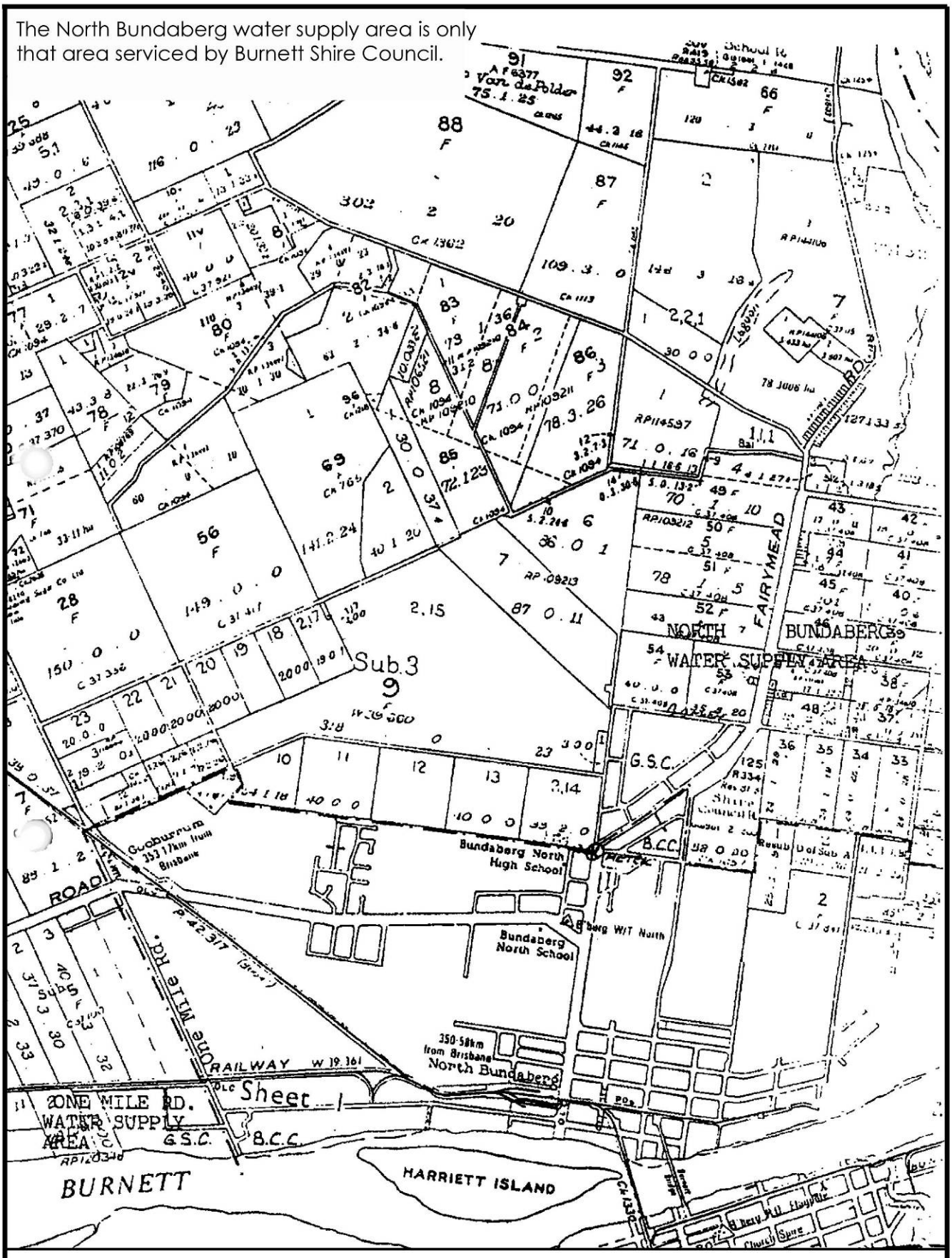
Table 13.4: Schedule of Indexation Factors

Date at which applicable from	Consumer Price Index (as at preceding March)	1
30 June 1990	102.2	1.00
1 July 1992	107.5	1.05
1 July 1993	109.1	1.07
30 June 1994	111.5	1.09
30 June 1995	116.5	1.14
30 June 1996	119.6	1.17
30 June 1997	120.5	1.18
30 June 1998	121.9	1.19

13.7.1 North Bundaberg Water Supply

(1) Costs per person charged will be $290.00 for headworks. Index numbers and dates for Burnett Downs Water Supply in Table 13.1 will apply.

The North Bundaberg water supply area is only that area serviced by Burnett Shire Council.



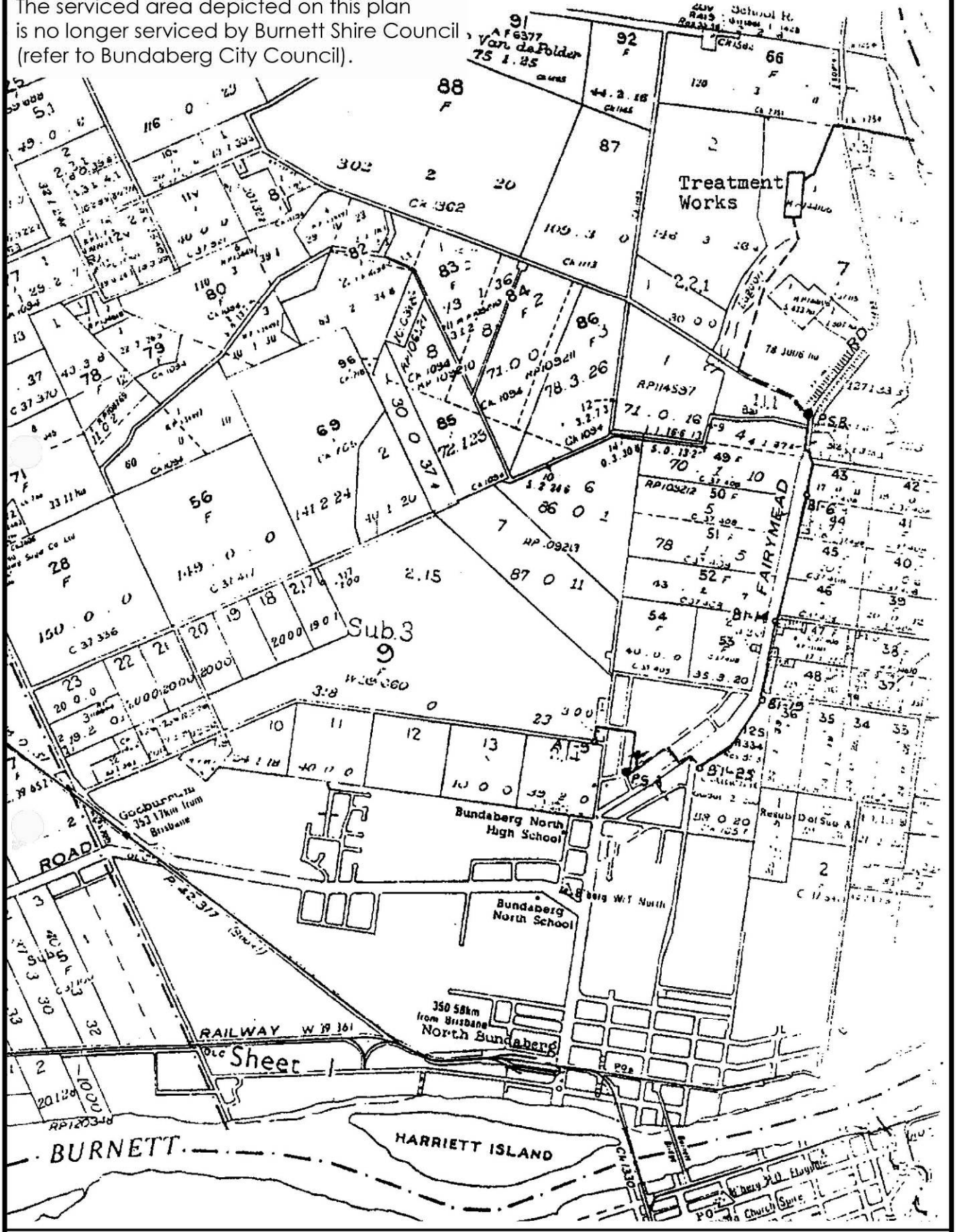
BERNARD TOBIN
ENGINEERS - PLANNERS
FIRST FLOOR 2A BAROLIN STREET

WATER SUPPLY

NORTH BUNDBERG

Not to scale

The serviced area depicted on this plan
is no longer serviced by Burnett Shire Council
(refer to Bundaberg City Council).



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FIRST FLOOR 2A BAROLIN STREET

SEWERAGE

NORTH BUNDBERG

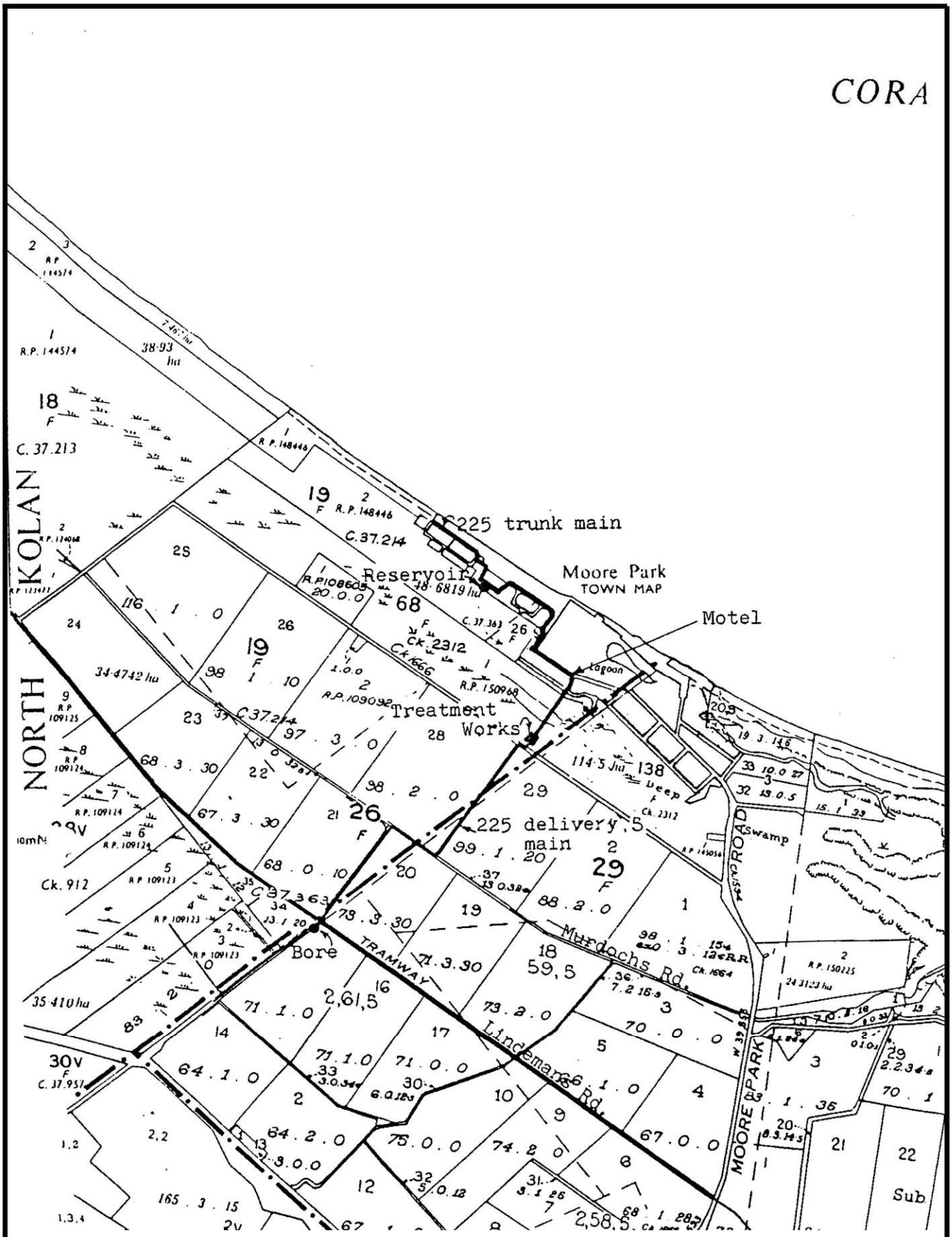
Not to scale

Moore Park Water Supply

Table 13.5:

No.	Description	Date Constructed	Max. Day Population 1977	Population Capacity	Construction Cost	Cost per Person
1	Bore, 225 delivery main to Treatment Works to Motel (Club Ave)	July 1977	517	1920	96,028	51
2	Bore pumps & treatment works pump	July 1977	517	820	24,702	31
3	225 delivery main from Motel to reservoir	July 1977	251	1920	22,466	12
4	273 kl reservoir	July 1977	517	1055	97,882	93
5	225 trunk main from reservoir to north end	July 1977	39	1920	12,352	7

Headworks charge will be calculated by adding the cost per person for only those parts of the scheme used by the developer.



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ENGINEERS - PLANNERS
FIRST FLOOR 2A BAROLIN STREET

WATER SUPPLY

MOORE PARK

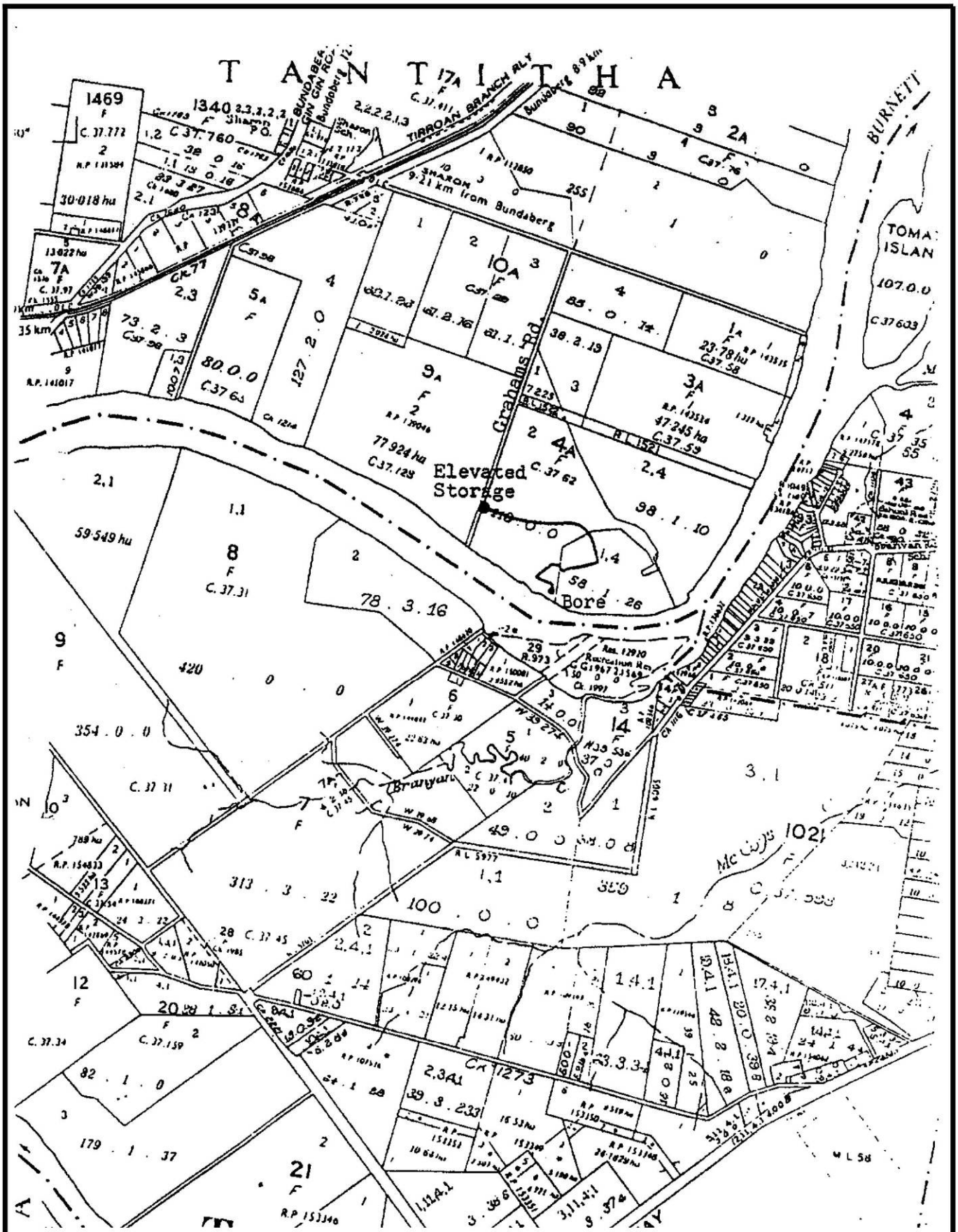
Not to scale

13.7.3 Burnett Downs Water Supply

Table 13.6:

No.	Description	Date Constructed	Max. Day Population 1977	Population Capacity	Construction Cost	Cost per Person
1	Pumps, bore switchboard control building chlorinator	August 1978	192	205	28,200	138
2	45.5 kl elevated storage and roof	August 1978	192	205	23,988	117
3	Delivery Main	August 1978	100	857	29,665	35

Headworks charge will be calculated by adding the cost per person for only those parts of the scheme used by the developer.



BERNARD TOBIN
ENGINEERS - PLANNERS
FIRST FLOOR 2A BAROLIN STREET

WATER SUPPLY

BURNETT DOWNS

Not to scale

(1) Costs per person charged will be $290.00 for headworks. Index numbers and dates for Burnett Downs Water Supply in Table 13.1 will apply.

13.8 Headworks Payments

(1) Applications for material change of use involving future reconfiguration - within 14 days after the date of receipt of reconfiguration approval or in the case where there is an appeal, within 14 days of receipt of the judgment.

(2) Applications for material change of use not involving future reconfiguration - within 14 days of the receipt of material change of use approval.

(3) Applications for material change of use - within 14 days of receipt of Council approval.

PSP 14: SHIRE ROAD NETWORK CONTRIBUTIONS

PLANNING SCHEME POLICY

14.1 Effective Date

This policy has effect on and from the day the IPA Planning Scheme for Burnett Shire Council commences.

14.2 Introduction

(1) Council is responsible for the provision and maintenance of an extensive road network throughout the Shire. Of necessity increasing amounts of general rates revenue must be directed to the on-going maintenance of the Shire's roads.

(2) Residential and other specific development places an additional or incremental strain on the overall road network and an immediate impact on the roads and intersections in the local area. The objective of the application of this policy is to offset some of the financial burden on existing ratepayers caused by developments which increase traffic loadings and volumes on the Shire's road network, by requiring contributions from these developments on an equitable basis towards the upgrading of the roads in the local area. [10]

14.3 Designated Area

(1) This policy applies to those areas of the Shire of Burnett for which no separate Roads Contributions Policies or Guidelines have been developed. [11]

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[10] Refer Attachment A – Explanatory Notes Section 1

[11] Refer Attachment A – Explanatory Notes Section 2

14.4 Intent

(2) The intent of this policy is to ensure that—

(a) the Shire Road Network is maintained and upgraded to meet the demand of additional traffic placed upon it by development; and

(b) the cost of upgrading roads in the Shire Road network be proportionally met by development which creates additional vehicle trips and places additional demand upon the network.

(3) Contributions received through the application of this policy will be directed to road upgrading and construction in the designated locality of the Shire in which the development occurs.[12] Where Council considers that circumstances warrant, contributions can also be directed to the upgrading of roads and intersections providing access to the designated locality. It is expected that where these circumstances arise it would be clear from the nature of vehicular traffic generated and/or the limited traffic routes utilised that special circumstances existed (e.g. extractive industry).

14.5 Implementation

(1) When considering any application for development within the Designated Area, Council will—

(a) consider the intent and implementation provisions of this policy;

(b) when applying contributions, apply the correct proportional amount of roadworks contributions applicable to the nature and scale of development being considered per this policy; and

(c) require that the applied road contribution amount be paid either prior to the sealing of plans of survey or prior to the commencement of the use (as appropriate).

14.6 Determination of Contribution

14.6.1 Definitions

(1) *'Equivalent Standard Residential Allotment (ESRA)'* an allotment on which a single residential dwelling may be constructed as-of-right and to which a standard trip generation applies.

(2) *'Higher Density Housing'* and *'Dual Occupancy'* have the same meanings as the Burnett Shire Planning Scheme.

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[12] Refer Schedule 3 – Locality Maps

(3) *'Standard Trip Generation'* means the average number of vehicle trips originating and ending at a standard residential allotment (ie., the total number of vehicle movements in plus vehicle movements out). For the purposes of this policy, the standard trip generation emanating from a standard residential allotment shall be taken as eight (8) trips per day.[13]

14.6.2 Method

(1) The level of contribution applicable to a particular type of development shall be determined as detailed hereunder. Three different types of development are considered—

(a) which increase or have the potential to increase the population base within the Shire through reconfiguring a lot;

(b) which increase or have the potential to increase the population base within the Shire through the development of Dual Occupancy or Higher Density Housing; and

(c) which increase or have the potential to increase business or other non-residential activity and are likely to generate traffic within the Shire that originates external to the Shire (Material Change of Use).

14.6.3 Methodology Common to Reconfiguration & Material Change of Use Applications

(1) An examination will be undertaken of both the current condition and standard of construction of the roads under consideration. The standard of construction will be determined from the width of seal (if any), width and depth of pavement, width of road formation and the existence or otherwise of other design features including kerb and channel, shoulders and table drains. This process will be restricted to consideration only of roads and intersections which are likely to be traversed by traffic generated by the development; and to a maximum length of 2 km from the site of the development for any road unless special circumstances are considered to apply as per (3) below.

(2) This assessment of the current road condition and standard of construction is to be compared with the desired design standard. [14] It is intended that new road classifications, design standards and associated construction costs will be established following adoption of the Burnett Shire Council - Road Network Hierarchy which is currently under development.

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[13] Refer Schedule 2 - Other Forms of Development. Estimated Traffic Generated

[14] Refer Schedule 4 – Existing Design Standards and Construction Costs

(3) Both the additional traffic generated by the development and the existing traffic volumes and the cost of upgrading the road to the desired standard will be estimated. Actual traffic data will be used for roads where this is available and will be estimated based on areas served and known data for similar roads in the Shire where this is not available. A trip distribution model will be used to assist the estimation of traffic volumes noting significant trip generators including Bundaberg City, beaches and other recreational facilities, schools, churches and shopping centres.

(4) The proportional cost of upgrading the roads attributable to the development will then be calculated.

14.6.4 Reconfiguration

(1) For a reconfiguration, Council may require a contribution per lot for each additional equivalent standard residential allotment (ESRA) created within the Shire. For example, the subdivision of one (1) lot into three (3) lots will attract a contribution amount calculated at the current rate for an ESRA x two (2) additional lots.

(2) This policy may apply to all forms of reconfiguration requiring Council approval. Reconfiguration for Community Title Agreements and Building Format plans will also be subject to a roadworks contribution based on trip generations included in Schedule 2.

(3) A 'capped' rate of contribution per equivalent standard residential allotment may apply to all development within the Designated Area from 1 July 2000. This 'capped' rate will be indexed annually on 1 July, by the annual increase in the Commonwealth Statistician's All Groups Price Index of Materials used in building other than house building (the 'Materials Index') as at the preceding March. The indexed contribution rate will be as listed in Schedule 1. Where 'capped' rates apply they will be the 'capped' maximum rate payable per equivalent standard residential allotment in both residential and rural development within the Designated Area.

14.6.5 Material Change of Use - Higher-density Housing Development and Dual Occupancy

(1) For Higher-density development or Dual Occupancy, Council may require a contribution on the basis of additional traffic generated by the development in accordance with Schedule 2. For example, a six (6) x two-bedroom unit development will be charged a contribution based on 6 x 6 trips per day as per Schedule 2 minus 8 x 1 'as-of-right' trips. In this instance, the net increase of twenty eight (28) vehicle movements per day would equate to that for 3.5 equivalent standard residential allotments and the contribution amount would also equate to 3.5 x that for an ESRA.

(2) Where the development site is vacant, the assumed 'as-of-right' traffic movements for the site will be that which characterises predominant

'as-of-right' landuses in the locality. For example, if the predominant 'as-of-right' landuse in the locality is detached dwellings, the assumed 'as-of-right' traffic movements for the vacant site will be eight (8).

14.6.6 Material Change of Use - Other Forms of Development

(1) Where additional traffic on roads for which the Shire bears responsibility is generated by business or other non-residential activities, and some or all of that traffic originates from outside of the Shire, Council may require a contribution on the basis of externally generated traffic now utilising Shire roads.

(2) The contribution will be calculated on the basis of the estimated additional traffic generated in terms of additional equivalent standard residential allotments and in accordance with Schedule 2. The estimated additional traffic will then be apportioned to those trips expected to originate from outside the Shire (and those trips expected to originate from within the Shire). To remove any doubt, any contribution will apply only to those trip numbers originating from outside of the Shire.

(3) Major developments such as shopping centres, schools and large businesses are expected to act as generators of traffic from both within and outside the Shire. Tourist accommodation facilities are considered to generate traffic from outside the Shire.

(4) The 'capped' contribution rate will not apply to 'Other forms of Development'.

14.7 General

(1) State Controlled Roads in general will not be included in the above calculations as they are funded by the Department of Main Roads. Intersections with State Controlled Roads however may be included as Council is required to bear the proportional cost of upgrading due to the flow of traffic from Shire roads.

(2) The payment of this road network contribution does not negate Council's powers to require any access road to the site, or road fronting the site, or internal road to the site, to be constructed to a standard satisfactory to Council where such works are considered reasonable and relevant in regard to the use and development. Where this is required the payment of the Road Contributions will be additional to these works. [15]

(3) Road contributions will also be payable in circumstances where the development fronts a State Controlled Road or does not require

[15] Developers are invariably responsible for the construction or upgrading of Council roads immediately fronting subdivisions.

frontage works, but only to the extent of effect on adjacent Shire roads and intersections or intersections with State Controlled Roads and any Shire share of costs associated with State Controlled Roads. [16]

(4) No contribution is payable if an approval will result in no additional traffic or decreased traffic being generated. If a road contribution has been paid previously on a particular development, no further contribution is applicable unless a subsequent approval results in increased traffic generation over that for which contributions have already been received.

(5) Where external roadworks to a site are required because of the development and practical construction of these works requires construction of additional elements that would otherwise need to be undertaken by Council, credit against contributions required by these Guidelines may be granted.

(6) Where Council considers that exceptional or special circumstances exist, or can be substantiated for a particular development, the road contribution amount may be reduced, waived, deferred, or offset against other works, dependent upon these circumstances.

[16] Refer Section 3 - Intent

SCHEDULE 1 – 'Capped' Contribution Rates

Effective Date	CPI~~Material Index~~ (at preceding March) [17]	%Increase from Original	Contribution / ESRA [18] ($)
1st July 1994	111.5		1,050 [19]
1st July 1995	116.5	4.5	1,097
1st July 1996	119.6	7.3	1,127
1st July 1997	121.5	9.0	1,144
1st July 1998	121.9	9.3	1,148
1st July 1999	122.8	10.1	1,156
1st July 2000	125.5	12.6	1,182
1st July 2001	132.7	19.0	1,250
1st July 2002	136.7	22.6	1,127
1st July 2003	141.8	27.2	1,335
1st July 2004	146.3	31.2	1,377.71

[17] Commonwealth Statistician's All Groups Price Index of Materials used in Building other than House Building

[18] Equivalent Standard Residential Allotment

[19] The rate of $1,050 was included in the 1995 Policy. This rate was based on the rate of $1,000 which had been previously adopted by Gooburrum Shire Council.

SCHEDULE 2 – Other Forms of Development

Estimated Traffic Generated

NATURE OF DEVELOPMENT [20]	UNIT	AVERAGE NUMBER OF VEHICLES TRIPS GENERATED PER DAY [21]
Detached Dwelling (including 'Second Dwellings')	House	8 [22]
Higher-density Housing		
Higher-density Housing or Dual Occupancy	1 b/rm unit	4.5
	2 b/rm unit	6
	3 b/rm unit	7
Resort Hotel *	Suite	4
Motel *	Suite	4
Retirement Village*	Dwelling Unit	3
Home based business		
(Farmstay or Bed & Breakfast)	Apartment b/rm	3
	Visitor bedroom	4
Tourist Park	Site	2
Rural reconfiguration	Allotment	4
Hinterland Residential reconfiguration	Allotment	6
Other [23]		To be assessed

* Total number of vehicle trips generated per day may be discounted to reflect anticipated occupancy rates.

[20] The factors adopted here for estimation of traffic generated by other than a separate dwelling are similar to those in Table 2.2.E Equivalent Dwellings in IMEA 'Queensland Streets – Design Guidelines for Subdivisional Streetworks' 1993.

[21] A 'Trip' is defined as a single vehicle movement, i.e. an excursion from a residence to shops, for example, and return would constitute two 'Trips'.

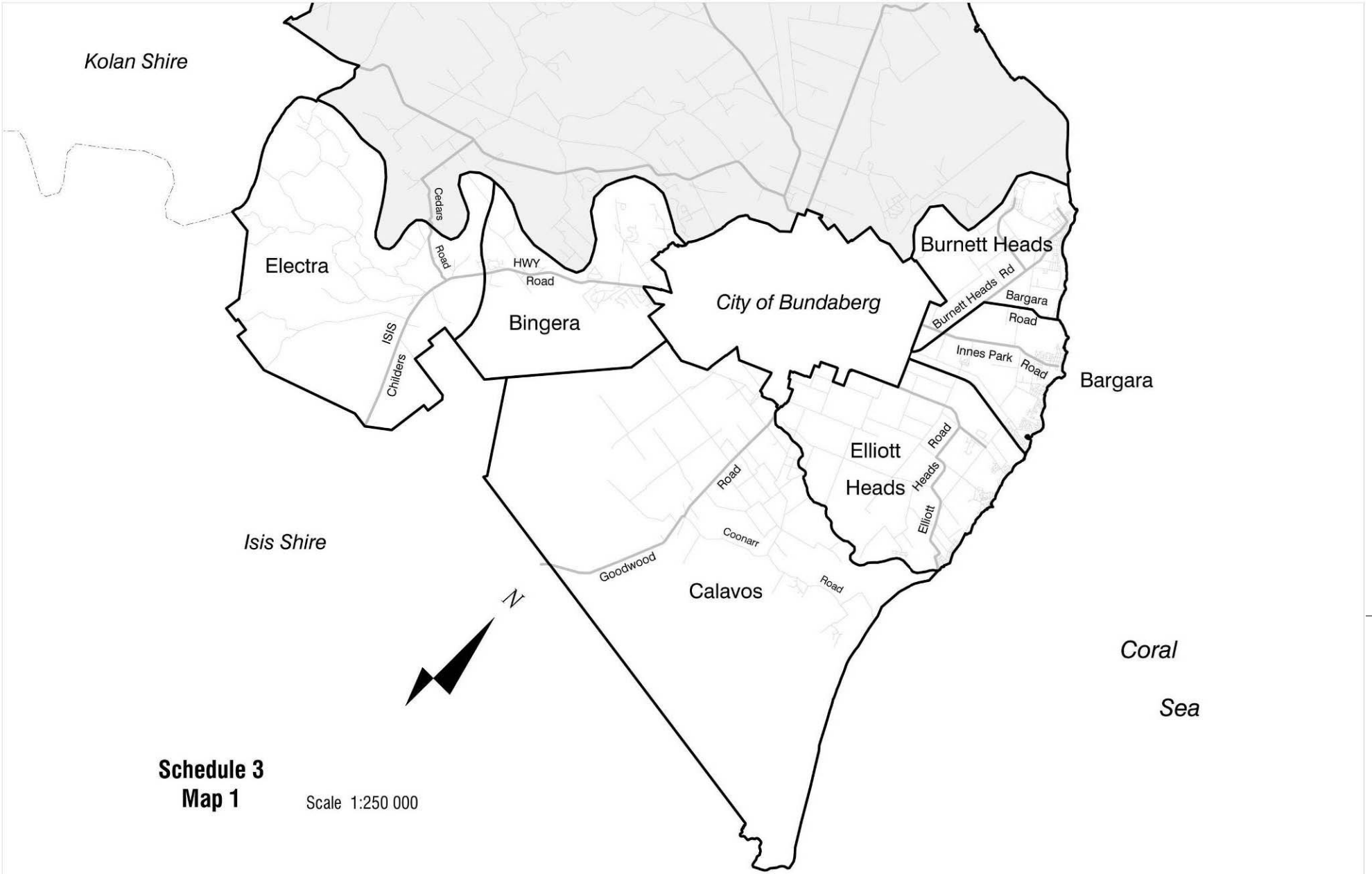
[22] The adopted *'Standard Trip Generation'* of eight vehicle movements per equivalent standard residential allotment per day may be compared with ten as recommended in IMEA 'Queensland Streets – Design Guidelines for Subdivisional Streetworks' 1993. This is consistent with the level used historically and to date is considered to reflect the distributed nature of residences and development within the Shire.

[23] In any case where a Consent Order has been issued in regard to relevant road contributions and trip generations for particular types of development, Council may adopt those factors for their purposes.

SCHEDULE 3 – Locality Maps

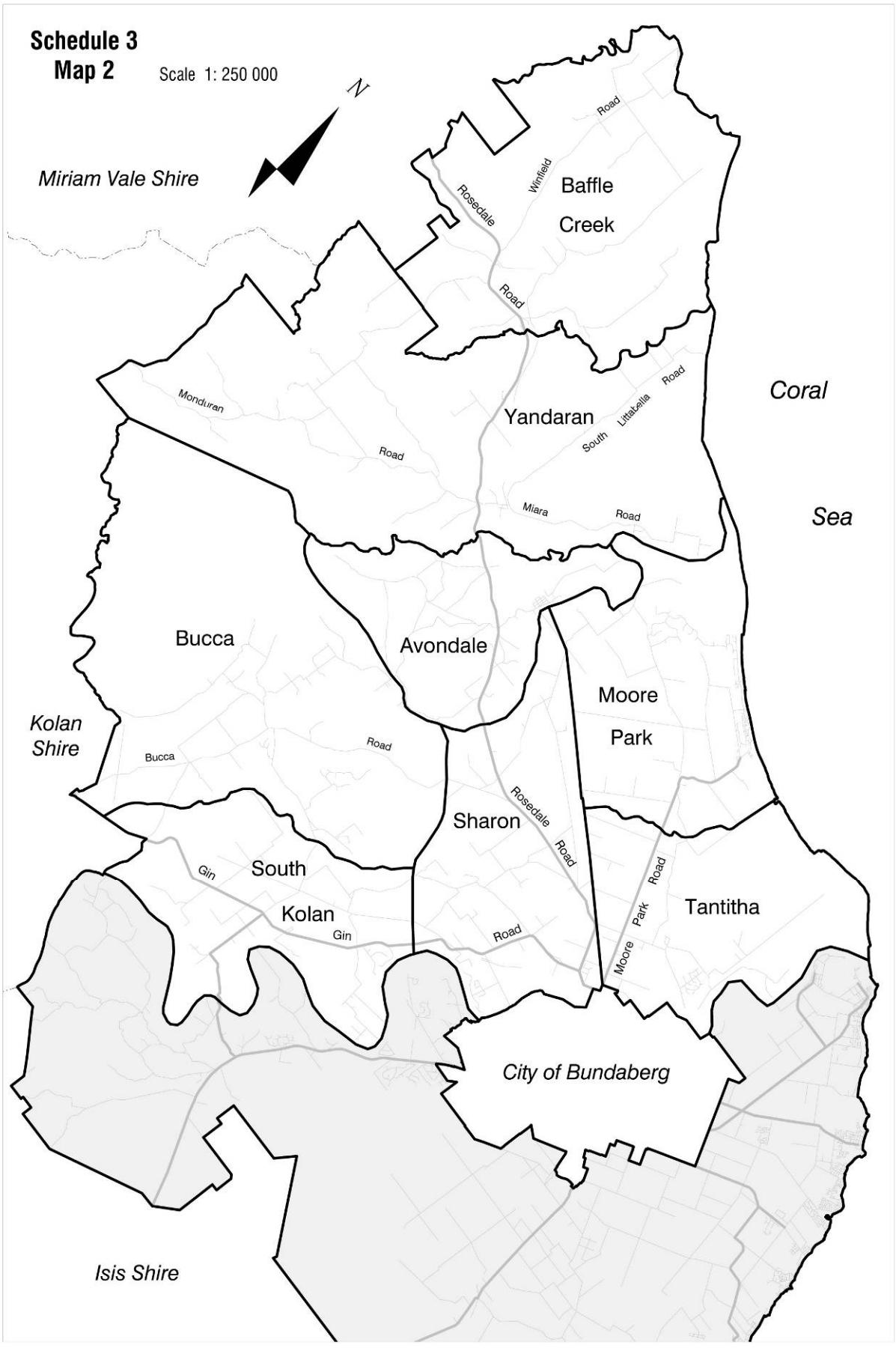
MAP NO.	LOCALITY [24]
1	Burnett Heads
	Bargara
	Elliott Heads
	Calavos
	Bingera
	Electra
2	Baffle Creek
	Yandaran
	Bucca
	Avondale
	Moore Park
	South Kolan
	Sharon
	Tantitha

[24] Locality names and areas are designated as per Schedule 3 Maps 1 & 2 attached rather than newly adopted official place names.



Schedule 3
Map 1

Scale 1:250 000


Schedule 3
Map 2
Scale 1: 250 000
N
Miriam Vale Shire
Baffle Creek
Road
Winfield
Rosedale
Road
Coral
Sea
Monduran
Road
Yandaran
South
Littabella
Road
Miara
Road
Bucca
Avondale
Moore
Park
Kolan
Shire
Bucca
Road
Sharon
Rosedale
Road
Gin
South
Kolan
Gin
Road
Park
Road
Moore
Tantitha
City of Bundaberg
Isis Shire

SCHEDULE 4 - Existing Design Standards and Construction Costs

Table 1 - Typical Costs of Roadworks – Pavement Reconstruction

Table assumes an existing sealed road with a 200mm deep pavement.
Table shows costs to upgrade to a 9m width seal including the addition of a new 100mm depth of pavement.
Costs are shown on a per km basis.

				Amount ($)[25]			
Work description	Quantity	Unit	Rate ($)	Existing seal width			
	Details for 6m width seal			6m	5.5m	3m	No Pavt.
Set out and establish				10000	10000	10000	10000
Excavation	600	m3	10	6000	7000	12000	18000
General earthworks				5000	5000	5000	5000
Pavement	1500	m3	50	75000	80000	105000	135000
Seal	9000	m2	6	54000	54000	54000	54000
Reinstate accesses	10		400	4000	4000	4000	4000
Linemark, guideposts, signs				5000	5000	5000	5000
SUB-TOTAL				159000	165000	195000	231000
Survey, design, contingency			15%	24000	25000	29000	35000
TOTAL				183000	190000	224000	266000

[25] Costs shown are applicable for the financial year 2000/2001 and are to be indexed in accordance with the Materials Index as per Schedule 1.

Table 13.7: Typical Costs of Roadworks – Pavement Widening

- Table assumes an existing sealed road with a 200mm deep pavement.
- Table shows costs to widen pavement by 2m and provide an additional width of 1m seal to each road shoulder.
- Table assumes that no additional depth of pavement over the entire formation is necessary.
- Costs are shown on a per km basis.

				Amount ($)[26]	
Work description	Quantity	Unit	Rate ($)	Existing pavement depth (mm)	
				200	250
Set out and establish				10000	10000
Excavation	800	m^3	10	8000	10000
General earthworks				3000	3000
Pavement	800	m^3	50	40000	50000
Seal	4000	m^2	6	24000	24000
Reinstate accesses	25		400	10000	10000
Road furniture				3000	3000
SUB-TOTAL				98000	110000
Survey, design, contingency	98000		15%	15000	17000
TOTAL				113000	127000

Minor intersection upgrades and LATM treatment $30,000

[26] Costs shown are applicable for the financial year 2000/2001 and are to be indexed in accordance with the Materials Index as per Schedule 1.

Table 13.8: Typical Costs of Roadworks - Major intersections

Table shows costs for a major intersection assuming a 15m diameter roundabout with full kerbing, 6m circulating pavement, 3 legs, 50m approach on the major legs, and 30m approach on the minor leg.

Work Description	Quantity	Unit	Rate ($)	Amount ($)[27]
Seal				
Area of inner circle	175	m^2		
Area of outer circle	570	m^2		
Area roundabout pavement	395	m^2		
Area approach lanes	1560	m^2		
Area of intersection	1955	m^2		
Less area allowed in through road	1120	m^2		
Additional seal area	835	m^2	6	5010
For 300mm pavement - excavate & provide pavement	250.5	m^3	60	15030
Kerbing				
Roundabout	100	m		
Defining shoulder	230	m		
Approach islands	130	m		
Total kerb length	460	m	20	9200
Concrete infill	230	m^2		11500
Set out and establish				10000
Shaping and landscaping				10000
Lighting				25000
Traffic control devices				5000
Resumptions alteration to services				20000
Design, supervision, contingency				16611
Total additional cost on top of roadworks				127000

[27] Costs shown are applicable for the financial year 2000/2001 and are to be indexed in accordance with the Materials Index as per Schedule 1.

14.8 Attachment A - Explanatory Notes

14.8.1 Introduction

(1) Roadworks contributions be calculated for each individual development application and the method will be—

(a) assess the future total development potential in the locality [locality is defined in the Schedule 3 Maps that currently exist];

(b) apply traffic generation parameters from the Development and produce a trip distribution model;

(c) assess road deficiency under future traffic volumes;

(d) cost the required upgrading and obtain a total cost for each locality;

(e) apply road contributions on a development unit basis [proportion total costs over total development or proportion total costs against traffic generation].

14.8.2 Designated Area

(1) In addition to these Guidelines the following Policies and Guidelines cover specific areas within the Shire. They were developed in part due to considerations that a Policy covering the entire Shire was too broad to be applied to a particular development.

'Road Network Strategy for South Eastern (Coastal) Portion of Burnett Shire for Burnett Shire Council' February 1997.

(2) It covers that part of the Shire south of the Burnett River, east of Goodwood Rd., and north of the Elliott River, but excluding the Coral Cove Estate development for which a separate agreement is applicable.

14.8.3 Draft 'Heads of Agreement between Pacific Shores Pty. Ltd. and Burnett Shire Council' 1998

(1) This Agreement has allowed Council to seek contributions to upgrading of intersections and other roadworks external to the Coral Cove Estate where the development of the Estate was considered to be a significant factor in increased traffic loadings on these roads. Contributions sought under this Agreement are additional to those identified in the 1993 Coral Cove Estate development Consent Order.

PSP 15: PEDESTRIAN AND BIKEWAY CONTRIBUTIONS

PLANNING SCHEME POLICY

15.1 Effective Date

This policy has effect on and from the day the IPA Planning Scheme for Burnett Shire Council commences.

15.2 North Bundaberg Bikeway Contributions

15.2.1 Demand

(1) Demand has risen from residents for a bikeway in North Bundaberg.

15.2.2 Location of Bikeway

(1) Council envisages the bikeway shall extend from existing residents in North Bundaberg and link to the existing bikeway at Gooburrum School. This will provide access to schools and recreational facilities in the North Bundaberg area. Other secondary bikeways may be developed as further development occurs throughout the area.

15.2.3 Staging

(1) The bikeway shall be constructed in stages. Stage One being from the corner of Melaleuca Road and Tantitha Road to Whittingtons Road. Further stages shall be developed as required.

15.2.4 Cost

(1) The costs relative to the construction of bikeway throughout the area are developed using the proposed section as a

representative estimate. The cost for the proposed section is estimated to be $57,500.

15.2.5 Contributions

(1) Stage One contribution area is estimated to be approximately 286 hectares, equating to $200.00 per hectare.

(2) Contribution throughout the North Bundaberg area shall be based on this figure. A contribution of $200.00 per hectare or part thereof apply through the entire area deemed by Council to be serviced by the North Bundaberg Bikeway and its secondary spurs.

15.2.6 Moore Park

(1) Council wishes to establish a bikeway/pedestrian way in the Buffer Area of Moore Park extending from the Kolan River Wetlands to Lassig Street.

(2) The bikeway/pedestrian way is proposed to be made of gravel and will extend for approximately 5.4 kilometres at a cost of approximately $60,750.

(3) Establishment of the bikeway/pedestrian way will depend on the level of the population of the area, for this reason the contribution is calculated on an equivalent person amount.

(4) Contributions—

(a) Within the Moore Park area as determined by Council, the $10 per equivalent person (ep) where the following shall apply—

(i) One detached dwelling 3.2 ep's;

(ii) 1 X 1 bedroom unit 1.5 ep's;

(iii) 1 X 2 bedroom unit 2.4 ep's;

(iv) 1 X 3 bedroom unit 3.2 ep's; and

(v) Other uses shall be determined by Council.