Policy 11: Land Development Guidelines

Section 2

2.0 General Planning Principles

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2.1 Introduction

These Guidelines have been written for the guidance of developers and their consultants who are encouraged to apply the general planning principles of this section to optimise Council's planning goals and objectives. The application of the planning principles will then form the basis for deriving the detailed requirements applicable to a particular site. It should be noted that the Standard Drawings and Specifications have been documented at a base level to provide for the innovative application of the performance based planning principles in the General Planning Guidelines.

2.2 Preliminary Development Layout

2.2.1 General Requirements

The Guidelines are intended to be a general guide. It is appreciated that there will often be circumstances where alternative layout proposals from Consultants may be considered by Council on their merits.

In relation to Roads and Streets, Council has adopted the Goals and Objectives of **Queensland Streets for Design Guidelines (Queensland Streets)**. Council has also adopted elements of the goals and objectives and design philosophy of **Queensland Urban Drainage Manual** (**QUDM**) for Stormwater Drainage.

In relation to Water and Sewerage Reticulation, the abovementioned goals have been adapted and enhanced. This approach will require Water and Sewerage Reticulation issues to be considered at the commencement of the planning process and to interact and integrate with other planning issues and not be considered an end of process infrastructure provision exercise.

Development concepts and final design drawings will be assessed on a performance based criteria employing the goals listed below.

The development goals are summarised as follows:

Safety – Derived from Queensland Streets and QUDM

- accident prevention – obviously the major component in the case of subdivision design;
- hazard mitigation – flood events, mosquito and midge control, bushfire, traffic, water supply and sewerage;
- emergency vehicles access – fire and ambulance, water supply and sewerage;
- crime prevention ‘Neighbourhood’ planning; safe pedestrian routes;
- community health and safety; and
- workplace health and safety.

Amenity – Derived from Queensland Streets and QUDM

- pollution reduction, eg. traffic, noise, water, quality, scour;
- preservation and enhancement of visual amenity;
- social and community interaction/ integration;
- land use compatibility;
- to control and temporarily detain catchment run-off to reduce the impact of urbanisation;
- to preserve ground water supply; and
- visual appearance of infrastructure elements.

Convenience – Derived from Queensland Streets and QUDM

- access to services;
- logical, efficient and accessible staged development of water and sewerage infrastructure;
- minimum travel distances to major destinations;
- minimum travel times in low-speed environment;
- reduce car dependence by encouraging other modes of transport, ie. walking, cycling, passenger transport;
- legible street layout; and
- minimise effects of frequent flood inundation.

Economy – Derived from Queensland Streets and QUDM

- capital cost of subdivision construction;
- maintenance costs;
- user and community costs;
- economic development;
- staged and full development infrastructure benefits and costs; and
- optimise use of existing resource.

Sustainability

Sustainability in this context is defined as a comprehensive approach to site planning that is ecological in its concept, based on the premise that nothing exists in isolation and everything is interconnected.

Sustainability also involves an understanding of the effect on the environment of each design decision. The aim is to ensure that development can occur without future degradation of Australia's natural resources and environment.

Sustainability is best achieved through the integration of professional expertise and skill. This requires a systems approach so that each problem and solution is not defined and evaluated from a single point of view.

The objectives of Sustainability are as follows:

a) Natural Resource Management

In general Natural Resource Management relates to the management of the environment to preserve and conserve the ecological values particular to the development site and its surrounds, and minimise the disturbances to the natural landform.

A thorough knowledge and understanding of the natural values of the development site and its surrounds is an essential prerequisite for planning the development's design and management. The regional environmental context of a development site needs to be established at the outset of the design process.

b) Flora and Fauna

- endangered, vulnerable and rare species should be identified and linkages provided to preserve habitat types;
- long term flora and fauna viability should be preserved for the site in terms of the context of the local area;
- recognition of habitat value of the site in the context of local and regional open space networks; and
- development plans should link and interact with council vegetation and environment strategies to ensure preservation of habitat values, continuity, long-term viability and preservation of open space areas that assist the preservation of species types.

c) Soils and Catchment/ Stormwater Management

Development should minimise soil erosion, instability of formed and natural slopes, scour and siltation.

A sustainable approach to Stormwater Management should be able to integrate the movement of water through a site so that grading, layout, buildings, infrastructures and the landscape contribute to the maintenance or restoration of the hydrologic patterns of a site.

Development should minimise re-arrangement of the existing landforms and the concentration of stormwater run off in pipe systems that take no account of the pre-existing drainage regime and the effect on downstream ecosystems.

Sustainable Stormwater Management requires a fundamental recognition of the value of Stormwater as a resource. Council has adopted **QUDM** (with amendments), in particular attention is drawn to **Section 4** of **QUDM** (**Planning of the Drainage System**) and the principles of **Water Sensitive Urban Design** (**WSUD**). The philosophy and guiding principles of **WSUD** seek to integrate stormwater management into the planning and design of Urban Development to maximise environmental, economic and social sustainability. Developers and their Consultants should refer to Council's policy document **Stormwater Quality Management Guidelines for Development Applications within Gold Coast City** for further detailed information.

2.2.2 Aim

a) Street/ Road Network and Lot Layout

The aim of this guideline is to provide developers and their consultants with general criteria for horizontal and vertical road design for developments (residential, rural residential, industrial) and associated major roads.

These aims include the objectives in **Section 2.2.1**, Council's philosophy for Long and Short Term Planning Horizons, Functional Road Hierarchy, Transport Planning and to provide acceptable levels of residential amenities and convenience for all street users.

b) Stormwater Drainage

Stormwater design is to be integrated into the urban planning process using the planning and design elements set out in **QUDM** and principles of **WSUD**. This approach will place greater emphasis on the hydrologic and hydraulic elements in the design of the stormwater system. Council will assess drainage proposals with particular reference to **Section 4.00 QUDM** (**Planning of the Drainage System**) and Council's policy document, **Stormwater Quality Management Guidelines for Development Applications within Gold Coast City**.

c) Water and Sewerage Reticulation

The aim of Water and Sewerage Reticulation provision is to contribute to the development of a sustainable and economic city relating to:

- the appropriate use of resources to provide for proposed and long term sustainable development;
- satisfying community obligations – adequate pressure, quantity, quality, ease of connection, convenience of sequencing development, appropriate level of service for economically important land uses;
- the management of the infrastructure taking into account water conservation strategies, community health and safety, waste management strategies, vandalism/ contamination vulnerability, and operational strategies;
- ensuring the environment is not degraded by the failure of water supply and sewerage infrastructure and/or waste water treatment facilities;
- limiting the density of development in areas subject to a higher risk of waste treatment facility failure, eg. unsuitable soil types, steep slopes and allotment size;
- provision of satisfactory low maintenance infrastructure, headworks/ infrastructure delivery mechanisms;
- promoting economic development and employment;
- accurate 'as constructed' information for ease of connection;
- provision of infrastructure architecture consistent with local community environment;
- identification and preservation of the communities long term strategic infrastructure elements;
- integration of water and sewerage planning with other community infrastructure – strategic, wildlife, network corridors; and
- limiting Council's maintenance liability for schemes in remote areas with a higher *per capita* operation and maintenance cost ratio to the population served by the development.

Various technically correct schemes are to be compared using the goals and objectives outlined in **Section 2.2.1** to provide a higher quality infrastructure.

As an example, a comparison of Schemes could include:

- **Water Reticulation**

  For small schemes, comparison of large ground level water storage with low pump rates versus a system with small, elevated storage and high pump rates.

- **Sewerage Reticulation**

  A deep gravity sewer with minimal pump stations versus a shallow gravity system with more pump/ lift stations.

Note: ***Focusing on the goals of convenience, economy and sustainability.***

d) Waterfront Development

The aim of this guideline is to provide developers and their Consultants with general criteria for design elements to be incorporated into development waterfront allotments, including canals, lakes, rivers, creeks, and ocean foreshore.

These aims include:

- minimise maintenance for residential amenity;
- provide acceptable water quality limits;
- sustainability of foreshores;
- acceptability of flood, tidal storage and flow conveyance;
- contributing positively to Council's public foreshore and navigation networks.

2.2.3 Prior to a Development Application

2.2.3.1 Background Research

Council requires that initial research be undertaken by the Developer to identify the values of the development site and place these values in a local and regional context. Such values include habitat, vegetation, visual amenity, cultural heritage, landform (topography), water quality, soil and stormwater drainage regime. This research is aimed at satisfying the following areas of planning (but not limited to):

a) Street/ Road Network and Lot Layout

- Functional Road Hierarchy classification:
  - short-term hierarchy classification;
  - 2011 hierarchy classification;
- long term transport needs of road reserve width;
- bus route and associated set downs;
- car parking requirements;
- bikeway and pedestrian networks;
- extra verge widths for special services;
- local problem issues – traffic speed management, noise attenuation;
- constraints/ opportunities/ expected lot yield.

b) Stormwater

- drainage design criteria;
- water engineering;
- flood levels, legal points of discharge;
- building locations and floor height;
- local problem issues;
- water quality and **WSUD**.

Note: **Water Sensitive Urban Design** ***is a new approach to urban planning and design that embodies the principles of Ecologically Sustainable Development with particular emphasis on providing more economical and environmentally appropriate ways of providing water, wastewater and stormwater solutions.***

There are a number of best planning practices and best management practices that support the principles of **Water Sensitive Urban Design** and these are documented in numerous texts and manuals. The reader is referred to **Chapter 4** of the Institution of Engineers Australia publication, **Australian Runoff Quality** for a detailed overview of **Water Sensitive Urban Design** and its associated best planning practices and best management practices. **Australian Water Quality** is a companion document to **Australian Rainfall and Runoff** and is considered to be the current industry standard for the management of urban stormwater quality.

c) Water and Sewerage Reticulation

- level of service available, future level of service proposed;
- upgrading works consistent with infrastructure development strategies;
- local problem issues – flow, pressure, bushfire, infrastructure staging;
- State government approval processes – use of borewater, effluent discharge criteria, treatment plant licensing;
- key sites for infrastructure provision and associated environmental issues;
- high risk areas – fire hazards, vandalism, industrial waste, health and safety;
- amenity issues – visual features, buffer zones, architectural features for proposed infrastructure;
- water conservation issues – reuse, 'greywater' in rural areas, landscape planting elements.

d) General

- amenity/ environment;
- Council strategies – conservation and resource management/ flora/ fauna / landscape/ open space/ bushfire/ flooding/ acid sulfate/ air/ noise/ water;
- local service authorities;
- Cultural Heritage – Aboriginal and European heritage values of both an historic and contemporary nature; social, aesthetic, scientific value;
- Community/ Social values, Social Impact Assessment, where needed;
- Local Planning Policies;
- Development Control Plans, Local Area Plans;
- recreational opportunities;
- affected flora and fauna species/ population;
- Planning Scheme Codes and Policies.

e) Contaminated and Acid Sulfate Soils

- **Contaminated Soils**

  Council requires that the developer examines:

  i) **Contaminated Land Register**; and

  ii) **Environmental Management Register** held by the Department of Environment and Heritage.

  In the event that the site is listed on either register, a site contamination report detailing the extent of any soil contamination shall be submitted to Council. The report shall be of a standard that is acceptable to the Department of Environment and Heritage.

- **Acid Sulfate Soils**

  Attention is drawn to Council's **Code for the Management of Activities to be located within Areas of Acid Sulfate Soils in the City of Gold Coast**.

  The objective of this code is to assist in the effective management in the acknowledged issues associated with activities to be located within areas of acid sulfate soils in a proper scientific manner consistent with the principles of ecologically sustainable development.

f) Geotechnical

- steep and/or unstable slopes;
- bulk earthworks creating steep slopes or retaining structures; and
- safety issues of existing buildings and infrastructure, either within or external to the site.

g) Waterfront Development

- **Dune Vegetation**

  Attention is drawn to Council's Policy for the **Management of Coastal Dune Vegetation**. The objective of this policy is to encourage the retention and enhancement of natural dune vegetation communities along the Pacific Ocean.

- **Riparian Vegetation**

  Council aims to protect the amenity of waterways and seeks to retain, enhance and expand areas of natural riparian vegetation.

- **Water Quality**

  Dead ends, long straight sections of water parallel to wind direction and narrow entranceways, can all lead to unacceptable water 'turn over' rates and poor water quality. Sustainability of water quality is an ongoing priority.

- **Foreshore Sustainability**

  Development of catchment areas adjacent to the foreshore can result in increases to tidal and 'boat wake' impacts on foreshore areas. Foreshores may require modification to cope with these new impacts including the provision of set backs to the riparian zone, rock protection or the establishment of other foreshore management regimes to ensure ongoing sustainability.

- **Flood and Tidal Flows**

  Most new waterway sites are part of larger flood and tidal systems where Council requires that the impact of new waterways on tidal and flood networks remain acceptable. Developers and their Consultants should ensure they are familiar with any flood or tidal requirements and consider the following issues prior to the commencement of waterway layouts:

  - minimum fill and habitable floors levels required within the site;
  - effects of any filling on flood levels external to the site;
  - proposed changes in flood storage volume within the site;
  - any increase in peak flow rates downstream of the site.

2.2.3.2 Preliminary Discussions with Council

Where an application is pending Council will, with the property owner's consent, hold a Pre-Lodgement Meeting with the Applicant accompanied by its Consultant.

Council has produced a standard request form to assist industry for request of a pre-lodgement meeting relating to a Development Application. For further information the Consultant should contact Council.

It is not intended that the procedure become a 'bureaucratic hurdle'. Rather, it will provide greater certainty and consistency in relation to the assessment of development applications.

a) Street/ Road Network and Lot Layout

These discussions should include the following planning issues being cognisant of the fact that Council has adopted the year 2011 as the significant year for determining transport planning requirements:

- Council's requirements regarding the objectives of **Queensland Streets**;
- Council's open space and recreational requirements;
- how the development will provide timely access to a range of transport services to accommodate community needs;
- appropriate provisions for suitable bus routes, walkways, bikeways and other transport services and how the transport network impacts on the social, economical and environmental values of the area;
- that the concept layout provides a high level of safety for all users and provides acceptable levels of residential amenity and protection from the impact of traffic and establishes focal points of social interaction;
- regional or local precinct context (wildlife corridor, transport corridor, community facilities); and
- Council's landscape requirements.

b) Stormwater Drainage

These discussions should address the design of urban stormwater drainage to be adopted for the Development taking into consideration Council's requirements in relation to **WSUD**, **QUDM** and as a minimum include:

- demonstrating how the concept layout satisfies the requirements of the goals set out elsewhere in this section including those of **WSUD** and **QUDM**;
- consideration of technical and regulatory aspects in relation to the existing regime; and
- environmental and legal aspects.

c) Water and Sewerage Reticulation

These discussions should address the design of water and sewerage reticulation to be adopted for the Development taking into consideration Council's infrastructure development strategies and the requirements of Council and **Queensland Water Resources Guidelines (QWR)** and as a minimum include:

- how the concept layout assists the convenient and orderly development necessary for the prosperity of the region;
- demonstrating how the concept layout satisfies the requirements of the goals set out elsewhere in this section;
- identification of key infrastructure sites and environmental related issues;
- the level of infrastructure provision required to satisfy the proposed development;
- the interaction of the proposed layout and the effect of the development on the performance of the water and sewerage reticulation infrastructure;
- provide remote location licensing, eg. biological toilets; and
- identification of water conservation strategies relevant to the development proposed.

d) Waterfront Development

These discussions should include the following planning issues consistent with Council's development goals and objectives:

- that the street/ road network and concept layout allows for a sustainable system of waterways such as canals or lakes;
- that the concept layout makes a positive contribution to Council's network of navigational channels and public foreshore access ways; and
- compliance with Council's requirements regarding the location of quay lines, waterway regulation lines and building setback lines for boating activities associated with waterfront allotments.

Summary

It is considered that following the above consultative process a better understanding can emerge to integrate the possible conflicting goals and thus result in the optimum Design Concept for the Development.

2.2.3.3 General Planning Principles

a) General

The aim of this Guideline is to ensure the Design Concept Plan will incorporate the general planning principles and criteria listed below and in addition demonstrate compliance with Council's requirements.

It is also intended that these General Planning Principles will, following outcomes associated with a pre-lodgement meeting, provide greater certainty and consistency in relation to ongoing consultation with Council and optimise the goals set out in **Section 2.2.1**.

b) Layout Principles

The general layout shall take into consideration the following:

- the Functional Road Hierarchy based on transport connection from regional centres to district centres. The implications of function as distinct from volume and capacity must be specifically considered. The interaction between land use and road use to determine the most appropriate road network shall be addressed;
- nominated connection points to the Road Hierarchy in accordance with Council's transport policy. In addition, reference is to be made to the Veitch Lister Consulting document, **The Future Road Network Strategy for Gold Coast City**, which establishes road network planning and level of service principles;
- alternative design concepts (Main Street, Traditional Neighbourhood Design, 'Grid-Iron') may be considered by Council subject to the issues raised in **Section 1.8** of **Queensland Streets** being satisfactorily addressed;
- Queensland Transport's **Shaping Up Guidelines** illustrate the application of planning principles;
- nominated connection points to the Water and Sewerage Reticulation infrastructure and the required development performance criteria applicable to the site in the local and regional context;
- licensing arrangements for water and sewerage (access and disposal).

Attention is drawn to **Section 7.0** of **Queensland Streets**, which outlines the specialist input required to develop concept designs that apply general planning principles.

Council's aim is to ensure the road and street network provides connectivity with a resultant reduction in the number of turning area facilities, ie. *culs-de-sac*, etc.

c) Street Design

These guidelines are based on **Queensland Streets'** use of branch hierarchies and narrow pavement widths as the only effective method to limit vehicle speeds in order to protect pedestrians and children in the local home environment.

These guidelines incorporate **Queensland Streets'** requirements to provide adequate parking using wider road reserve widths. Additional car parking will be required in clustered townhouses and duplex complexes, particularly where previous socio-economic trends indicate that similar areas will generate higher car parking demands. In providing for narrow pavement widths to limit speed and the requirement for wider road reserves for car parking, Council is cognisant of the need to achieve yield densities that efficiently utilise finite land stocks, particularly in relationship to land locality.

The Major Traffic Route cross sections provide full Austroad standard facilities for car parking, cycling, vehicle traffic lanes and bus set down areas. Where traffic volumes increase, buffer and set back requirements for environmental health shall be addressed as per **Queensland Streets**.

d) Turning Area Facilities

These guidelines provide Council's minimum requirements for turning areas deemed necessary following the discussions associated with **Section 2.2.3.3**.

i) Residential Precincts

Council's preferred turning area facility is a *cul-de-sac*, however where a full turning circle is not achievable Council will consider a 'Three Point Turn' complying with **Section 2.12** of **Queensland Streets**.

Where Council's desirable kerb radii cannot be achieved (refer **Section 3.4.13 – Turning Area Horizontal Geometry**) or a three-point turn facility is approved, the following criteria shall be included in the Design Concept Plan:

- additional off-street parking to be provided (0.75 spaces per lot – rounded up to the full space). Central island or indented parking will be considered in *culs-de-sac*;
- notwithstanding the length of arms shown in **Section 2.12** of **Queensland Streets**, the length shall not exceed ten (10) metres measured from the centre of the three point turn;
- a maximum of three (3) lots shall front each arm of a three point turn;
- no parking will be allowed within the turning area (refer **Section 3.4.13** – **Turning Area Horizontal Geometry**);
- driveway and parking areas to be identified;
- provision of suitable landscaping and streetscape planting;
- location of proposed services.

ii) **Industrial and Commercial Precincts**

Turning areas within these areas shall be a single movement *cul-de-sac* based on the approach and turning circle kerb radii as detailed in **Section 3.4.13 – Turning Area Horizontal Geometry**.

iii) **Access Lanes**

Access lanes are classified as dedicated roads that have an appearance of private driveways.

Note: ***Council does not consider the provision of an access lane as a desirable outcome.***

Council may consider an access lane facility subject to the following criteria:

- the minimum lane reserve width shall be 12.5 metres;
- additional off-street parking to be provided (0.75 spaces per lot – rounded up to the full space);
- a total of three (3) lots to be serviced from the access lane;
- the length of the access lane shall not exceed fifteen (15) metres in length measured from the nominal kerb line;
- driveway and parking areas to be identified;
- provision of suitable landscaping and streetscape planting; and
- proposed services and garbage bin pick up areas to be delineated.

e) Bus Routes

In Developments where a bus route may reasonably be expected to be provided, the appropriateness of a particular bus route and associated facilities shall be considered with respect to:

i) **Queensland Streets** (**Clause 3.5 Bus Routes**) and in particular that 90% of all allotments be within a 400 metre straight line distance of a potential bus route;

ii) The ease and directness of bus routes between local, district and regional centres; and

iii) Interfaces with neighbourhood centres, car parking and other road access.

Attention is drawn to the provisions of the **Transport Operations (Passenger Transport) Act**. In this Act, Council is required to refer to Main Roads all bus routes for approval.

f) Bikeway Network

In new development areas, it is essential that Bikeway Networks are planned to be separated and protected from high volume/ high speed vehicle environments.

Bikeway Networks should be planned to provide direct, safe, well-graded links to access Community Facilities while making use of continuous dedicated open space area networks.

Council encourages bicycle facilities to be incorporated as part of the development process that will:

i) Be compatible with the **GH & D Strategic Bikeway Strategy**;

ii) Provide connectivity to neighbouring suburbs and local facilities;

iii) Provide on road bikeway allocations where no other treatment is available;

iv) Make provision at signalised intersection for cyclists;

v) Encourage localised bicycle travel in preference to motor vehicle travel;

vi) Designate bicycle parking facilities; and

vii) Centrally locate community facilities that are more easily accessible by bicycle.

Queensland Streets Section 4.0 outlines Planning and Design Standards to improve the provision of bicycle facilities.

g) Walkway/ Trails

In new development areas, a hierarchical plan of proposed access ways should provide connectivity between communities preferably separate from the major road system.

Planning for footpaths should consider the provisions of **Queensland Streets**.

Nominated trails through developments should link to existing and proposed future trails.

h) Traffic Calming

To achieve the objective of reduced speed Council requires that the vehicle speeds be limited by physical design elements as set out in **Queensland Streets**.

Council may consider a minimal use of speed control devices and/or raised platform intersection treatments with the use of contrasting surfaces (concrete segmental paving) to reinforce the low speed environment of the local neighbourhood or minor street connection while having regard to:

- local traffic requirements;
- bus routes (generally prohibited);
- provision for bikeways and pedestrians;
- noise consideration;
- street lighting; and
- maintenance liabilities.

i) Water and Sewerage Reticulation

The preliminary planning for Water and Sewerage Reticulation shall consider the higher level planning elements of infrastructure and denote the proposed performance of the system at critical locations consistent with Council's strategic planning for the region, eg. flow, pressure, firefighting. In addition, the proposal should address high maintenance cost elements and whole-of-lifecycle costs.

Pump stations and infrastructure elements shall be located with adequate provision to minimise noise and odour.

j) Survey Criteria

It is Council's survey policy that all survey information on Engineering Drawings submitted for approval shall comply with **Section 7.2.2** (**Survey Control**). Consequently, any survey required for the preliminary planning should take account of this requirement.

k) Layout and Bush Fire Management

Consultants should consider bush fire management in accordance with Council's **Bushfire Management Code** and provide a layout, which includes, but is not limited to, the following:

- appropriate siting of the development with regard to topography and proximity to vegetation (ie. potential bushfire hazard);
- avoiding development in high potential bushfire hazard areas and where environmental constraints preclude the use of mitigation measure, such as clearing and provision of access (eg. high nature conservation values, high scenic amenity, steep slopes, unstable soils, etc.);
- ensuring that the form of the development is in accordance with relevant planning documents (eg. '**AS3959 – Construction of Building in Bushfire Prone Areas**', the Queensland Government publication '**Sighting and Design of Residential Buildings in Bushfire Prone Areas**', **AMCORD – '95**, Council's **Bushfire Management Strategy**, etc.; and
- provision of fire fighting infrastructure such as fire trails/ breaks and water supplies.

In high and medium potential bushfire hazard areas, a **Fire Management Plan** is to be submitted with the application. This Plan should identify the location of severity of the site's potential bushfire hazards using a site-based assessment and recommend remedial measures. Such measures might include:

- water storages;
- fire trails/ breaks;
- subdivision design;
- location of house sites;
- recommended standards of building construction;
- clearing and landscaping;
- education of buyers; and
- advice on any necessary ongoing maintenance or management programs.

The Plan should also assess the ecological impact of the chosen mitigation measures.

The Plan should be prepared by a suitably qualified consultant in consultation with the local Rural Fire Brigade. Further information is contained within the **Bushfire Management Strategy**, which can be obtained from Council.

l) Clearing

Vegetation clearing should be minimised to control weed infestation, scarring of landscapes, soil stability, provide a screening buffer to the development, construction/ maintenance costs and habitat retention.

Rehabilitation landscaping should be compatible with naturally occurring local vegetation, or where appropriate, in accordance with the approved landscape plan. Riparian or dunal zones near waterways such as rivers, creeks and ocean beaches should be established, retained and/or expanded.

m) Flora and Fauna Management

The application of general planning principles should incorporate features relevant to the following key issues:

- protection of rare and threatened species, habitats and retention of adequate buffers;
- protection of areas of highest habitat value, including waterways and natural flow paths through their inclusion in open space areas and by providing vegetated buffers;
- identification and integration of links to neighbouring sites within open space areas and provide opportunities for wildlife movement wherever possible;
- retention of significant intact vegetation particularly those with habitat features;
- retention of areas of contiguous vegetation, including those on steep slopes, which have a high landscape value;
- linkage elements to adjacent reserves such as protected areas under the **Nature Conservation Act (National Parks, Conservation Parks)**, State Forests, Fish Habitat Reserves and areas protected by international treaties (eg. RAMSAR sites, World Heritage listed sites); and
- compliance with Council's **Nature Conservation Strategy**. This may include modification or increased sizing of culvert structures and/or bridges to accommodate additional requirements for passage of native fauna.

n) Stormwater Management

The application of the general planning principles should consider creek protection, stormwater management corridors and proposed filling necessary to allow development to occur. This may include, where deemed appropriate by Council, the provision of a drainage reserve of sufficient width to contain fully developed Q100 flows over any natural watercourse.

Consultant's attention is drawn to the Institution of Engineers, Australia (Qld) **Soil Erosion and Sediment Control Guidelines**.

Design for stormwater should include the design principles of water sensitive urban design. Developers should be encouraged to introduce this form of control and consideration will be given to innovative design in stormwater control.

o) Conditions and Statutory Requirements

In conjunction with the application of general planning principles, the following conditions and statutory requirements shall be satisfied:

- Council's general requirements, including minimum flood development level, local planning scheme policies, codes and strategies;
- any Conditions required by:
  - i) Department of Environment and Heritage;
  - ii) Department of Main Roads;
  - iii) Department of Natural Resources and Mines;
  - iv) ENERGEX;
  - v) Telecommunication Utilities;
  - vi) Department of Primary Industry – Water Resources, Fisheries and Forestry, Beach Protection Authority;
  - vii) Downstream Drainage Discharge Rights;
  - viii) Clearance for works on land not owned by the Developer; or
  - ix) Others (as necessary).

p) Public Foreshore Access Network

Consultants should consider the existing network of public foreshore access ways along Council's beaches and waterways to ensure that new waterfront development makes a positive contribution to this network.