



FNQROC DEVELOPMENT MANUAL

OPERATIONAL WORKS

DP1

DEVELOPMENT PRINCIPLES

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GENERAL

DP1.01 INTRODUCTION

1. This section of the Development Manual has been prepared to provide guidance on the design principles and issues to be considered by the designer in the preparation of layout plans for new urban developments. It is to be read in conjunction with the relevant planning scheme, and any local laws and policies.

DP1.02 URBAN DEVELOPMENT OBJECTIVES

1. In addition to the requirements of the relevant planning scheme, local laws and policies, urban development layouts should:
 - Protect and enhance environmentally significant areas.
 - Be sympathetic to the existing topography and landform.
 - Minimise the impacts on the surrounding environment.
 - Facilitate the provision of urban services.
 - Provide a safe urban living environment.

DP1.03 IDENTIFICATION OF SITE CONSTRAINTS AND VALUES

1. In preparing an urban development layout, it important to identify the natural constraints and values of the site and any engineering constraints on the provision of urban services and amenities.
2. Factors that may impose constraints on the development layout include but are not limited to the following:
 - Existing significant vegetation;
 - Road and service connections to adjoining properties;
 - Public transport networks;
 - Railway and cane tramway lines;
 - External stormwater drainage catchments;
 - Downstream stormwater drainage and receiving waters;
 - Low lying areas subject to flooding and ponding;
 - Constraints and impact on adjoining properties;
 - Constraints and limitation of existing utility services and planned augmentation works;
 - Main Roads resumption requirements;
 - Existing topographical features;
 - Water quality issues;
 - Geotechnical considerations;
3. Designers are encouraged to consult with the Council and other relevant authorities prior to or during the preparation of the site layout and design concept. Designers should in addition to requirements of this manual ascertain any specific requirements of these authorities as they relate to the designs in hand.

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DP1.04 VEGETATION PROTECTION AND ENVIRONMENTALLY SIGNIFICANT AREAS

1. Prior to preparing a development layout, all areas that have significant environmental value should be identified and incorporated into the layout design to enable them to be preserved and protected. Any disturbances within these areas shall be minimised to the satisfaction of Council and other relevant authorities, as may be appropriate.
2. All existing natural streams, watercourse and riparian vegetation shall be preserved. To minimise the impacts on stream bank vegetation, all streams and watercourses shall be protected by a drainage reserve. The extent of the drainage reserve shall determined by following criteria:
 - Not less than 3m clear of tree trunks of adjacent trees;
 - Not less than 10m clear of the high bank of the adjacent drainage path;
 - Not less than 20m clear of the high bank of a perennial stream;
 - Clear of the ARI 100 year storm event influence from the adjacent drainage path
 - Clear of the vertical projection of the tree canopy of the adjacent trees.

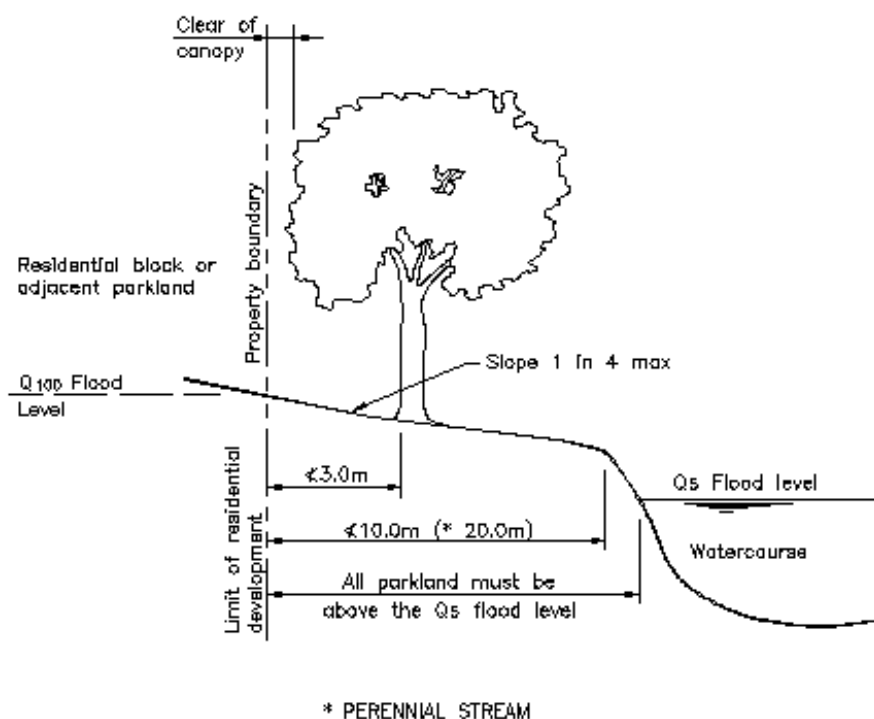


Figure DP1.1

Limits of development adjacent natural stream banks

3. In order to retain any established landscape character, all trees located within existing road reserves shall be protected and retained unless approved otherwise by Council.
4. Reference should be made to the Vegetation Management Act and any Local Laws and Policies to ascertain any requirements in relation to tree clearing.

DP1.05 CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN

1. It is important when designing development layouts that the principles of crime prevention through environmental design are considered, in particular:
 - Natural surveillance of public open spaces is optimised;
 - Long pathway or obscured park areas that can become potential assault site are avoided.

ENGINEERING ISSUES

DP1.06 GENERAL

1. The optimum site and road layout needs to be developed through consideration of social, environmental, town planning, traffic and engineering issues.
2. Although the engineering design of roads is the province of the Engineer, it is essential that the Surveyor, and Planner preparing the site layout be fully aware of the engineering issues to ensure that the road layouts proposed are satisfactory in this respect. Major alterations to the development layout may otherwise be necessary to accommodate engineering requirements.
3. The factors to be taken into consideration when designing new development layouts include the following:
 - Proposed land use;
 - Road hierarchy, interim and ultimate;
 - Public transport network;
 - Local planning policies, bikeways / pathways and open space;
 - Council's drainage management plans;
 - Council's traffic management plans;
 - Railway and cane tramway lines;
 - Access requirements for services vehicles and emergency vehicles;
 - Topography of the area;
 - Adequate road frontage to parks and drainage reserves;
 - Existing utility services constraints and proposed augmentation works;
 - Crime prevention through environmental design;
 - Impacts on adjoining properties;
 - Existing stormwater drainage;
 - Flooding and ponding;
 - Preservation of natural watercourses;
 - Significant existing vegetation;
 - Bushfire protection measures;
 - Impact of earthworks;
 - Water quality improvement structures and features;
 - Existing soil conditions,
 - Geotechnical considerations.

DP1.07 ROAD NETWORK

1. The provision of a road network within a subdivision development is to be designed so as to achieve the following aims:
 - Convenient and safe access to all allotments for pedestrians, vehicles and cyclists;
 - Safe, logical and hierarchical transport linkages with existing street system;
 - Appropriate access for buses, emergency and service vehicles;
 - Convenient service corridors for public utilities;
 - Opportunity for street landscaping;
 - Convenient parking for visitors;
2. A hierarchical road network is essential to maximise road safety, residential amenity and legibility. Each class of road in the network serves a distinct set of functions and is designed accordingly. A typical hierarchy is shown on Figure DP1.2.

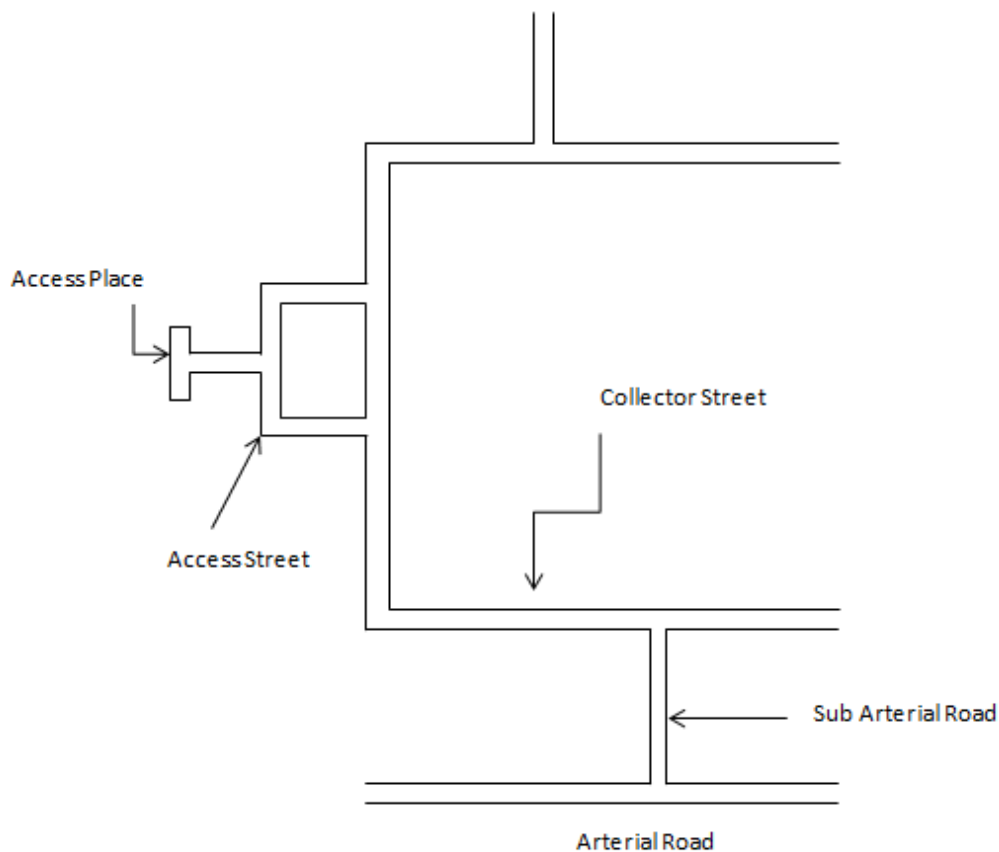


Figure DP1.2
Typical Road Hierarchy

1. The maximum number of turning movements at intersections or junctions that a visitor should be required to undertake to reach a particular address within the development should be minimised.

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2. The road network should be designed to ensure that roads connect to next order of road in the hierarchy. Under no circumstances should a road connect to another road, which is more than two, levels higher or lower in the hierarchy.
3. Where an Access Place forms part of a pedestrian or cycle network, suitable connectivity with adjoining Access Places or open space systems should be provided so as to ensure such pedestrian and cycle network are functionally efficient.
4. Developments layouts should be designed with a road layout to achieve the desired speed environment. The use of traffic control devices in lieu of a suitable road layout is not preferred.
5. It is important that the road hierarchy adequately caters for buses. The main criteria in determining the location of bus routes is that no more than 10 per cent of residents should have to walk in excess of 500 metres to catch a bus. Normally roads above the Access Street in the hierarchy are designed as bus routes.

DP1.08 SITE REGRADING CONCEPT

1. Excessive site regrading should be avoided, wherever possible site layouts should be developed to position roads and drainage networks to take advantage of natural surface grades. Site layouts that minimise the disturbance of the land will require less erosion and sediment control measures during construction phase and reduce the risk of environmental harm.
2. Where earthworks are proposed in any development where the slope of the land exceeds the requirements of State Planning Policy 1/03 "Mitigating the Adverse Impacts of Flooding, Bushfires and landslides", input should be sought from a qualified geotechnical engineer to ascertain slope stability and potential construction issues.

DP1.09 STORMWATER DRAINAGE

1. The design of the drainage system, and earthworks for the proposed development shall be such that the upstream drainage is not adversely affected and that the downstream drainage system is capable of adequately catering for the discharge of the additional flow produced as a result of the development.
2. If the downstream system is not capable of carrying the modified discharge, the designer shall indicate the measures proposed to ensure the downstream system is capable of carrying the modified discharge. This will involve negotiation with adjoining landowners for minor creek systems to produce easements over downstream drainage paths. Written approval from the respective property owners is required for the easement and any engineering works on their property from the development site to the legal point of discharge.
3. The development layout shall be designed to accommodate both existing and future developed flows from upstream catchments on the basis of development in accordance with the relevant Planning Scheme.
4. In preparing a development layout, consideration should be given of the overall site drainage philosophy, and overland flow paths, to ensure that the road network has sufficient drainage capacity to safely convey stormwater runoff to its receiving waters with minimal nuisance or damage to the community.
5. Consideration should be given in the preparation of the layout to ensure that in the event of drainage system failure, adequate emergency relief paths are provided. In particular downhill sloping cul-de-sac heads should be avoided where a sufficient width pathway or open space cannot be provided to convey the overland flow.
6. Some Councils have or are in the process of producing drainage management plans for particular catchments within their boundaries. Where a drainage management plan does not exist, Council may require the developer as a condition of the approval, to undertake a drainage study in accordance with Council's standard brief as supporting information to a drainage management plan for the catchment, to

establish contributions for future upgrading works. The cost of the drainage management plan shall be credited against contributions required under Council's Flooding and Drainage Policy.

DP1.10 STORMWATER QUALITY MANAGEMENT

1. In recognition of the impacts that development may have on the quality of water within the waterways, the over-riding objective for water quality management is to minimize the potential for development activity to cause harm to the environment / receiving waters
2. All developments are required to include appropriate interception devices that ensure removal of suspended matter (litter) and treatment of contaminated stormwater prior to crossing the boundary of the development or discharge into downstream roadside gutters, stormwater drainage systems or waterways.
3. The location of the interception devices within the drainage system is to be planned to ensure that the first flush waters from all parts of the site are treated and they can be easily accessed for cleaning and maintenance.

DP1.11 SEWERAGE RETICULATION

1. In preparing a development layout, consideration should be given to the provision of sewerage reticulation connections to adjoining properties on the basis of their future development in accordance with Council's Strategic Plan.
2. Where an existing sewerage reticulation line pass through a un-development site, the development layout should where possible incorporate the sewer with the development layout. Where this is not practical the layout should be prepared so as to minimise the extent of the sewerage relocation work necessary.

DP1.12 ELECTRICITY SUPPLY AND TELECOMMUNICATION SERVICES

1. In preparing a development layout, the relevant Service Authorities should be consulted to confirm that the provision of services to the proposed development would be provided and if the provision of land for the purpose of siting infrastructure would be necessary.

DP1.13 TRAMLINES THROUGH URBAN AREAS

1. Where cane tramlines run through urban areas a tramway reserve shall be created over tramline and transferred to Council.
2. The width of the tramway reserve for a single line shall be a minimum of twelve (12) metres. The reserve should be centrally located around the tramline except where exceptional circumstances prevent this. (eg. adjoining tramway easement or reserve is placed off centre).
3. Under certain embankment / cutting conditions it may be necessary to widen the easement to provide a 3.0m wide access to at least one side of the track.
4. Where multiple tracks exist, the tramway reserve shall include all tracks plus a distance of six (6) metres from the centreline of the outermost tracks on each side.
5. This widened section shall be continued past the point of convergence of the tracks (ie. the point of the switch of the first turnout of single line) a minimum of twenty (20) metres before becoming a standard twelve (12) metre easement again.
6. Residential areas should be sited away from siding locations if at all possible because of major dust and noise pollution problems. For cases where development will adjoin siding locations (closer than one hundred (100) metres from any part of the planned subdivision to the cane unloading point) then each

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such location would need to be the subject of a special study between the developer, the appointed consultants, representatives of the Mill and Council, in order to identify the unique problems of the location.

7. The number of road crossings should be kept to a minimum. Factors affecting the positioning of road crossings include: sight distances, track grades, proximity of the nearest crossing and the noise problem associated with the use of the train whistle at close successive crossings. Of particular importance is the adjacent grading of the track. The locating of road crossings on or near the base of falling grades should be avoided. Any road crossing proposal must be submitted to the Mill for the assessment of its likely implications on its own operations and on road users and residents.