

**MANGO HILL INFRASTRUCTURE
DEVELOPMENT CONTROL PLAN**

Precinct Plan No. 005

for

Central East Residential Precinct

North Lakes Development

21 September 2000

(Approved without conditions by Council on 21 September 2000 (MP00/3163))

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1.0 Introduction

- 1.1** The Mango Hill Infrastructure Development Control Plan (DCP) provides for the creation of a precinct within any part of the DCP area chosen by the principal developer. The principal developer may then prepare a precinct plan and lodge it with Council for approval in accordance with the relevant provisions of the DCP.
- 1.2** The purpose of a precinct plan, as provided for in the DCP, is to show in indicative terms more detail for a planning area within one land use element of the DCP Structure Plan or across a number of elements. This planning area is created to allow for a more detailed interpretation of a part of the structure plan.
- 1.3** The principal developer has created a precinct to be known for planning purposes as the Central East Residential Precinct. This document constitutes the precinct plan for the Central East Residential Precinct.
- 1.4** The location of the precinct within the DCP area is shown on Figure 1. The area of the precinct is approximately 20 hectares although, consistent with DCP requirements, the areas and boundaries shown on the plan are only notional.
- 1.5** Where a discrepancy arises between the performance criteria of this precinct plan and the requirements of the DCP or Mango Hill Infrastructure Agreement, the requirements of the DCP or Infrastructure Agreement will prevail.

2.0 Structure Plan Context

The precinct comprises the Urban Residential land use element together with a small portion of the Open Space element, and is located towards the central part of the DCP area. It is broadly bounded by the North-South Arterial Road to the south, the Central Open Space Precinct (Precinct Plan No. 003) to the west, the future major road extension of Discovery Drive to the east, and future urban residential development to the north. The location of the precinct within the Structure Plan is shown on Figure 2.

3.0 General Desired Environmental Outcomes

In relation to the land use element of Urban Residential Area, the DCP states the following general desired environmental outcomes:

“(a) to establish residential villages that have a high level of amenity and sense of community;

- (b) *to establish residential villages that are appropriately designed in the context of ecological sustainability and offer a range of dwelling types that are conveniently located with respect to community facilities, open spaces and public transport.*”

4.0 Planning Intent

Clause 6.2 of the DCP provides an outline of the planning intent for the Urban Residential Area, including the following summary:

“The urban residential area is intended to provide for a wide range of housing needs in a variety of forms, styles and densities to reflect the prevailing market demands. Residential development will occur in a collection of residential villages reflecting a range of densities being low, standard and medium density. Each village will focus on a centrally located village park. Villages are to be progressively developed having particular regard to the timely, efficient and economic provision of engineering and social infrastructure.”

5.0 Development Concept

5.1 Development Context

Figure 3 shows the urban design concept for the Central East Residential Precinct in relation to its wider development context.

The precinct’s location within a larger urban residential district extending northwards from the Town Centre Frame, its proximity to the east of the Central Open Space Precinct and its timing following the development of the Lakeside Residential Precinct immediately to the south, have strongly influenced the design concept. Key principles to consider in the wider development context of the precinct are outlined below:

- 5.1.1 A high level of connectivity to both the north and the south is proposed via the extension northwards of Discovery Drive, a mid-precinct trunk collector off the North-South Arterial Road and an esplanade collector corridor to the west. Discovery Drive and the esplanade road also provide major trunk pathway connections to the north and south.
- 5.1.2 A strong arrival image will be provided via a major roundabout entry off the Discovery Drive extension at the point where it provides views into the valley to the north and potentially reduces to a lower order road.
- 5.1.3 An informal grid pattern of collector and access roads is proposed to provide for a dispersal of traffic and a high level of connectivity.
- 5.1.4 This road pattern will also provide enhanced legibility as well as permeable landscape connections with frequent movement and view corridors to the

Central Open Space Precinct to the west, the proposed east-west valley open space further to the north, and to the village and local parks within the precinct.

- 5.1.5 A village park spine is proposed within the precinct as a major east-west structural landscape element. This will allow for the retention of stands of existing trees, as well as for an area of regrowth in the gully line at the eastern end of the proposed park.
- 5.1.6 The proximity of the Central East Residential Precinct to the developing Lakeside Residential Precinct with its local community facilities node and to another proposed local community facilities node to the north has reduced the need for such facilities within the precinct.
- 5.1.7 The proximity of the Central East Residential Precinct to the future Town Centre (approximately 10 minutes walk) means residents will have convenient access to a wide range of retail, commercial, employment, community, educational and recreational facilities which, as a consequence, further reduces the need for such facilities within the precinct.

5.2 Concept Overview

The Central East Residential Precinct is proposed to be developed as a high quality, residential community comprising a mix of residential dwelling types. It will integrate a range of housing types with extensive areas of parkland, recreational open space and supporting engineering infrastructure.

The planning study, prepared in support of the DCP, envisages that the following community needs will be served by facilities to be established within or in reasonable proximity of the precinct:

Overview of Assessed Community Service Needs

- A range of transport options will need to be provided, with emphasis on reducing dependence on private motor vehicles.
- Housing diversity is essential.
- Provision will need to be made to largely self contain the child care needs of the population of the DCP area.
- Schools need to be provided for the residents of the DCP area and surrounding areas. State and/or private schools should be located adjacent to open space.
- Local community facilities and services should be integrated with urban residential areas.
- Playgrounds are to be provided.
- Structured recreational facilities should also be located in or adjoining district parks or schools (providing possible opportunities for co-location).

The development concept and indicative land use pattern for the precinct is shown in Figure 4. This plan identifies the principal land use elements which form the basic structure of the precinct, including:

- One residential village which has an overall capacity to accommodate approximately 220 dwellings or some 600 residents;
- Local open space in the form of notionally located linear, village and local parks serving adjacent housing generally in accordance with the residential planning principles established in the DCP.
- An internal road network with a legible geometry providing safe and convenient access for local traffic within the precinct and to a wide range of planned facilities in nearby precincts. These include:-
 - (i) the Central Open Space Precinct which may be developed as a golf course to the west;
 - (ii) planned local community facilities at nodal points to the north and south-west, as identified in notional terms on the DCP Structure Plan;
 - (iii) the private and/or State schools to the south-east and potentially to the north (within the local community facilities nodes);
 - (iv) future MIBA development to the west; and
 - (v) The North Lakes Town Park and future Town Centre development to the south.

Most of the above facilities will be within a 10 minute walk (i.e. approximately 800 metre radius) of the precinct.

The precinct plan shows the major land uses and structuring elements in sufficient detail to allow for the preparation of more detailed sector plans. The areas and locations of the various land uses, roadways, intersections, parkland and other elements are indicative only and will be subject to variation following detailed subdivision and engineering design. Consistent with the DCP, it is important that flexibility be maintained for future planning which needs to be responsive to changing requirements of the community and the market-place. Sector plans to be prepared in the future for individual stages and land uses will provide more detail on the precise locations of roads, parks and the various types of residential development

6.0 Precinct Plan

6.1 Introduction

Figure 4, Central East Residential Precinct Plan Map, provides a more detailed interpretation of the land use planning and development intents for a part of the North Lakes Structure Plan. The key principles which have determined the urban design structure for the precinct plan are summarised on Figure 5 and explained below:

6.2 Land Use Pattern

6.2.1 Background

In accordance with section 2.3.2(f) of the DCP, the desirable land uses are to be identified in generic terms during the preparation of this precinct plan. The desirable land uses are described below. The sector plans stemming from this precinct plan will finalise the specific land use rights as required by section 2.4.9 of the DCP.

6.2.2 Urban Residential

One residential village is proposed with an overall capacity to accommodate approximately 220 dwellings or 600 residents. The village is to provide for a range of housing choices from traditional to small lot housing and, where appropriate, duplex dwellings and townhouse units. Rear lane access may also be provided to some small lots, which are typically located adjacent to parks, to achieve a distinctive architectural style and streetscape by removing garages and garbage collection to the rear of housing.

6.2.3 Open Space

The provision of open space within this residential village is influenced by its proximity to the Central Open Space Precinct and the North Lakes Town Park, as well as topographic and existing vegetation considerations. A large village park is proposed and will be within 400 metres walking distance of most residents. This park will provide a major lineal landscape focus for the residents of the precinct.

The village park will incorporate passive and active open spaces, and its lineal form is intended to provide a central structuring element for the residential village. Consistent with the principle of locating small lot housing in prime locations, housing adjacent to this village park may include more tightly arranged small lot dwellings to create a sense of semi-enclosure along some edges to the park. The village park has also been located to allow for the retention of some stands of existing vegetation.

Part of a linear park is to be established along the western edge of the precinct and will accommodate a trunk pedestrian/cyclist pathway adjacent to the Central Open Space Precinct.

Local parks have also been proposed in the western and eastern parts of the precinct to provide a landscaped open space focus for residents within a 200 metre radius. The westernmost local park may be merged with the nearby village park to form a larger lineal open space which provides for both passive and active open space functions.

Consistent with the Mango Hill Infrastructure Agreement (MHIA), the village and local parks will provide a range of recreational opportunities which could include play structures, seating, drinking fountains and, in the case of the village park, shelters and picnic facilities. These village and local parks will be linked to the linear park, North Lakes Town Park and local community facilities via recreational pathways, and the local road network.

6.3 **Summary of Assessed Needs**

The following table (Table 1) provides an indicative summary of the key community needs and the services and facilities to be provided within or in reasonable proximity of the Central East Residential Precinct.

Table 1: Indicative Summary of Assessed Needs

Community Service Needs	Development to Provide
A range of transport options will need to be provided, with emphasis on reducing dependence on private motor vehicles.	<ul style="list-style-type: none"> • An effective community design to promote the viability of public transport. • Local accessibility to facilities and services, especially by pedestrian routes and cycleways. • Community bus to serve initial residents of the DCP area and link to the regional public transport system.
Housing diversity is essential.	<ul style="list-style-type: none"> • A range of lot sizes and dwelling types, including detached houses, and possibly duplex dwellings and townhouses.
Provision will need to be made for the child care needs of the population.	<ul style="list-style-type: none"> • A range of long day and occasional child care services provided in local community facilities nodes and in the town centre.
Schools need to be provided for the residents of the DCP area and surrounding areas. Schools should be located adjacent to open space.	<p>Within the southern and central parts of the DCP area:</p> <ul style="list-style-type: none"> • Provision of facilities for pre-school and primary education. • A possible P-12 school by either the State and/ or a private provider. • Possible shared use of facilities to minimise duplication and increase community accessibility. • Integration of some social infrastructure facilities may be possible, eg. child care, ministry centres and libraries.
Local community facilities and services should be integrated within Urban Residential areas.	<ul style="list-style-type: none"> • Facilities and services, eg. child care and local shopping, provided in the southern and central local community facilities nodes (as identified on the DCP Structure Plan).
Access for people with disabilities.	<ul style="list-style-type: none"> • Facilities which take account of the accessibility needs of people with disabilities.
Playgrounds	<ul style="list-style-type: none"> • Provide adventure play spaces for 7 - 11 year olds. • Provide meeting places for older children and the aged. • Create larger district parks (ie. linear park and town park) incorporating a range of activity settings within reasonable proximity of the precinct.
Structured recreation facilities should also be located in or adjoining district parks or schools (opportunity for co-location).	<ul style="list-style-type: none"> • Some structured recreation facilities possibly co-located with schools to the south-east or possibly to the north of the precinct.

6.4 Transport and Circulation System

Consistent with the DCP Structure Plan, the internal road network is based on a modified grid layout. Roads are to be generally located along minor overland flowpaths and ridgelines or running with the natural contours, wherever practicable, and will provide high connectivity throughout the precinct. Residential development will be structured around, and defined by, a pattern of generally north-south and east-west running streets encouraging visual linkages, connectedness and continuity of movement from surrounding residential areas. This pattern of roads will be structured around an east-west aligned village park centrally located within the precinct.

Special streetscape treatments along the internal roads will promote the concept of a landscaped environment, thereby enhancing the driving experience. Major entry points to the precinct may also incorporate gateway signage and ornamental landscaping to create a strong sense of community identity.

A hierarchy of roadways related to traffic function, including bus movements, is to be adopted in the detailed design of the precinct. The amenity of the residential village is to be preserved by discouraging the amount of through traffic by the implementation of special streetscape treatments and traffic management techniques. The road network has been planned so that through traffic will be generally limited to the sub-arterial and arterial roads associated with the wider road network.

The main external road connections will be provided via:

- A connection to the future major road extension of Discovery Drive along the eastern edge of the precinct which provides the main connection to the North-South Arterial Road, the Lakeside Residential Precinct and town centre to the south, and future residential villages to the north.
- An esplanade collector road underpass to the west below the North-South Arterial Road which will connect this residential precinct to the adjacent Lakeside Residential Precinct and provide an attractively landscaped linear park fronting road.
- A southern trunk collector road connection to the North-South Arterial Road towards the middle of the precinct.

The two latter roads will only provide local area traffic connections from the precinct to the southern part of the DCP area.

The collector roads of the precinct will be designed to link the residential village to adjacent major roads, and to the Town Centre, Mixed Industry and Business Area and nearby local community facilities. The proposed esplanade road alongside the linear park will enable community 'ownership' and casual surveillance of the Central Open Space Precinct which may be developed for outdoor recreational uses such as a golf course. Variations in the horizontal alignment of roadways and limited use of traffic management devices, together with the landscape treatment of verges and the use of special threshold

treatments, will assist in controlling vehicle speed within the precinct, particularly in local residential streets.

Residents of the Central East Residential Precinct will all be within 400 metres (5 minutes walking time) of a local bus route. Provision will be made for buses to utilise collector roads through the precinct and/or the adjacent major roads to ensure this high level of access to public transport is achieved. In accordance with section 10.2.2 of the DCP, a community bus service will be commenced by the principal developer to meet the needs of the initial residents.

Pedestrian and bicycle circulation within the precinct will be a priority of open space and landscape planning. Major commuter and recreational pedestrian / cyclist pathways will be provided within the proposed linear parkland, North-South Arterial Road and Discovery Drive extension along the western, southern and eastern edges of the precinct, respectively. These major pathways will provide important north-south running linkages to surrounding residential villages and other major commercial, community and employment facilities throughout the DCP area. The main east-west pedestrian / cyclist movement through the precinct will be accommodated within the collector road reserve running past the centrally located village park, as shown in notional terms on the Precinct Plan Map. At the local level, residential streets and local pathways will provide a network of linkages from homes to the major pedestrian / cyclist system.

6.5 Open Space and Landscape Concept

The landscape setting of the precinct will be established to ensure its integration into the surrounding local and regional landscapes. Open Space provisions within the precinct will form part of the comprehensive and integrated system of open space planned for the DCP area, fulfilling aesthetic, recreation, transportation and environmental management functions. The principal spatial elements or key areas of the Landscape Concept Plan for the precinct are illustrated on Figure 6 and summarised as follows:-

- *Linear Park:* The linear park along the western frontage which, together with the Central Open Space Precinct, is planned as a network of linked bushland and open space areas aligned with the principal north-south overland flow path. As previously outlined, a commercial recreational facility such as a golf course may be developed within the Central Open Space Precinct.
- *Village and Local Parks:* Active and passive recreation areas of minimum 5,000 square metres and 2,000 square metres, respectively, and placed at convenient locations across the precinct to serve the needs of local residents in accordance with residential planning principles outlined in the DCP. The village park will also allow opportunities for the retention of stands of existing trees.
- *Streetscape Planting:* Streetscape treatments of major roads and local streets creating a cohesive and positive impression of the development, with selection of plant materials for roadways based on aesthetic, practical, maintenance and safety considerations, and the intended scale and characteristics of each road. In particular, streetscape planting will provide a meaningful way of reinforcing different road types in the road hierarchy.

The final location and size of the various park elements will be determined at the sector plan stage. The landscape treatment of these areas will be planned in such a way that their different roles, natural features and locational characteristics will be recognised and enhanced. The resulting open space system within the precinct should have diversity and interest for a wide range of users while at the same time serving as a mechanism for restoring the DCP area's degraded landscape environment.

The Landscape Concept Plan promotes the planting of predominantly native species to reflect the original natural setting of the DCP area. This planting strategy will establish a landscape framework which enhances habitat values, reduces maintenance and water requirements, influences the built form in terms of visual integration and creates a landscaped environment for residents and visitors. Exotic and flowering species may be used primarily for special colour accents at significant entry points or as feature planting within parks. The landscape planning will also include the enhancement of major roads adjacent to the precinct with the planting of trees and provision of acoustic mounds and fencing to establish an attractive visual and acoustic buffer and to enhance the amenity of residential development.

Attractive entry statements, which may include gateway signage walls, landscape planting and possibly water features, may be used to create a sense of arrival at the main entry points to the precinct.

6.6 Engineering Services

6.6.1 Water Supply

A trunk water main has been constructed along Discovery Drive at the eastern end of the precinct. This will be extended along the extension of this major road to service the Central East Residential Precinct. Similarly, at the western end of the precinct, a trunk water main to be located along Copeland Drive will be extended to supplement the water reticulation network servicing the precinct and provide for future development to the north. These extensions to trunk water mains from nodes 83E and 83D (refer Figure 8) will be built by the principal developer in accordance with the MHIA. Individual lots will be served by a network of reticulation mains designed in accordance with Council's Design Manual and Policy WS.W13.

6.6.2 Sewerage

The sewerage system for the precinct will be based on a gravity reticulation strategy, which generally follows similar alignments to stormwater drainage paths for the trunk connection system.

The precinct will be connected to the trunk gravity system referenced as TM3 (refer Figure 9).

The TM3 trunk sewer will need to be extended to the south through future residential stages to service this precinct which is adjacent to the North-South Arterial Road. This gravity sewer will initially drain to the existing Council pump station PS115 and the local Council sewerage discharge network which is to be upgraded in accordance with MHIA requirements. The gravity sewer will ultimately drain further to the east to pump station 2, the generalised location of which is shown on Figure 9.

6.6.3 Energy

Electricity supply will be provided by Energex or another appropriate supplier of electricity. The primary supply to the area is ultimately proposed to be augmented by a major high voltage line located along the North-South Arterial Road and via Anzac Avenue to a sub-station located outside of the precinct. The precinct will be serviced by underground power to pad-mounted transformers located within the local road reserves.

Gas mains have been constructed along Discovery Drive and will be extended to service the precinct. Gas will be available as an underground supply to individual lots.

Electrical, and gas services will generally follow the alignment and timing of the precinct's internal road network.

6.6.4 Communications

Communications and cable services will be installed underground. The network will be installed at each stage of subdivision development. Communication towers are not proposed to be located within this precinct.

Communications services will generally follow the alignment and timing of the precinct's internal road network.

6.7 Stormwater Management

In general, the stormwater in the precinct will be handled by a conventional system of piped drainage in lots and roads. The system will be designed in accordance with Council's Design Manual and the Stormwater Management Plan for Tributaries B, 2 and 3 as approved by Council. At appropriate locations the major drainage will be fed through a system of gross pollutant traps, stormwater filtration wetlands and detention basins as part of an overall stormwater management strategy to manage the impacts of development on stormwater flows and quality before discharging from the DCP area into adjoining land.

7.0 Design Intents and Performance Criteria - Urban Residential Area and Major Open Space Land Use Elements

Queensland Residential Design Guidelines (QRDG), Queensland Department of Communications, Information, Local Government and Planning, provides statements of intent and performance criteria for a range of design elements which are applicable to housing development, open space planning and residential street design within the precinct. The QRDG criteria cover the range of urban residential development forms, including detached housing, attached housing (eg. duplex dwellings, townhouses and residential units up to 3 storeys over carparking), and residential components of mixed use projects. Both the QRDG and *AMCORD - a National Resource Document for Residential Development* (the basis of QRDG with modifications to suit Queensland conditions) are recognised by the DCP as providing appropriate design and siting principles for residential development within the DCP area. By adopting this precinct plan, Council has resolved to apply the provisions of QRDG to this precinct and has made a similar resolution in accordance with Section 45 of the Standard Building Regulation.

The performance criteria outlined in the QRDG are intended to promote best practice in urban residential design and enable more creative and efficient use of land in relation to a wide choice of housing styles. Compliance with these criteria is required for all development works in the Urban Residential Area and Open Space land use elements.

8.0 Environmental Management Objectives

8.1 Stormwater Discharge

Objectives

To ensure that stormwater infrastructure, constructed within the catchments of Tributary B and Tributary 2, is designed to meet agreed discharge standards for specific stormwater pollutants and that peak flow regimes are at pre-development levels.

Performance Indicators

Water discharged must meet the requirements of Environmental Protection Policy (EPP) Water, and in particular, must be designed to achieve the following Annual Mean Concentrations at Chelmsford Road:

- Total Phosphorous - 0.1 mg/l
- Total Nitrogen - 0.75 mg/l
- Suspended Solids - 50 mg/l

The design parameters for peak flows must not exceed the values in the Stormwater Management Plans approved by Council.

8.2 Flora & Fauna

Objectives

To re-establish fauna habitats and wildlife corridors.

To re-establish stands of native vegetation

Performance Indicators

Retention of any significant remnant stands of native vegetation in areas of open space where reasonable and practicable.

Establishment of new stands of appropriate native vegetation which incorporates food species for indigenous fauna.

8.3 Air Quality

Objectives

To ensure people are protected from undue pollution of the air from smoke, dust, odour, fumes and gases generated by development within the precinct.

Performance Indicators

Air quality must meet the requirements of Environmental Protection Policy (EPP) Air.

During construction of the precinct:

- complaints in excess of one per week may indicate unacceptable work practices. For the purposes of this clause, a complaint is one resulting in the issue of an abatement notice under EPP (Air); and
- construction activities are to comply with Council's Policy LP32.

8.4 Noise

Objectives

To ensure noise generated is not unreasonable.

Performance Indicators

Noise generated from development is reasonable as provided by the Environmental Protection Policy (EPP) Noise.

Noise generated from development which is unreasonable is abated as required by EPP (Noise).

During construction of the precinct, infrastructure complaints in excess of one per week may indicate unacceptable work practices. For the purposes of this clause, a complaint is one resulting in the issue of a noise abatement notice under EPP (Noise).

Provision of traffic noise amelioration in accordance with Council Policy LP25.

8.5 Lighting

Objectives

To ensure that lighting associated with development does not create a nuisance.

Performance Indicators

No person will cause, carry out or erect a light source in such a manner that light emanating from the source is a nuisance.

All lighting other than public lighting (e.g. road lighting) is to comply with AS4282-1997 *Control of the obtrusive effects of outdoor lighting*. The curfew hours applicable to this precinct are to be 10pm - 6am, unless otherwise varied by a sector plan or Council resolution.

9.0 Special Design Criteria

During the course of development and as contemplated by the DCP, variations to Council's existing development standards are anticipated and will be considered on their technical merits with reference to the intents and performance criteria outlined in previous sections of this precinct plan. Technical details and supporting information on design variances will be recorded in Council's *North Lakes Register of Alternative Acceptable Design Solutions*.

10.0 Infrastructure Obligations of the Principal Developer

10.1 Overview of Infrastructure Obligations

The infrastructure required to be provided by the principal developer to serve the precinct includes internal and external infrastructure to be provided in accordance with the Mango Hill Infrastructure Agreement 1999 (MHIA) and agreements made with the State Government in accordance with the DCP. Initial infrastructure works have been completed as part of development of the adjacent Lakeside Residential Precinct. The infrastructure obligations relevant to the Central East Residential Precinct are summarised as follows:

10.1.1 Roads

Construct the following roads including carriageways, stormwater drainage, verges, bus setdowns, footpaths, bikeways, landscaping, traffic control devices and streetlighting. Any reference to initial construction in this section is a reference to construction approved by Council in accordance with the rezoning conditions and the MHIA.

- .1 All internal collector roads and access streets;
- .2 A four lane median divided arterial road being the extension of Discovery Drive from Node C north to the northern boundary of the precinct in accordance with the MHIA. The initial standard of construction is to be a two lane median divided road.
- .3 A four lane median divided road being the North-South Arterial Road with provision for a public transport corridor between Node C and Node D in accordance with the provisions of the MHIA. The initial standard of

construction will be a two lane road together with possible works required on roadways abutting the precinct.

- .4 A trunk collector road in Townley Drive from the North-South Arterial Road to the next intersection to the South.
- .5 A trunk collector road as an extension of Townley Drive north of the North-South Arterial Road to the next intersection to the north.
- .6 Intersections at the intersection points along the extension northwards of Discovery Drive and the additional intersection with the North-South Arterial Road between Nodes C and D to suit the standard of construction of adjacent roads including, if required, auxiliary left turn, right turn, stand-up lanes and traffic signals. The staging of traffic signals may be undertaken in accordance with a timetable approved by Council as per the MHIA; and
- .7 Bikeways and pathways, including commuter and recreational bikeways generally as shown on Figure 4, in accordance with the MHIA.

The construction of the abovementioned infrastructure to the final standard is to be undertaken in accordance with the staging and timing outlined in the MHIA. The initial standard of construction referred to above will be undertaken to suit the rate of development of the precinct. Where initial construction is not stated, the road is to be constructed to the standard described above to suit the rate of development of the precinct.

10.1.2 Water

- .1 Construct internal reticulation systems to service all properties in the precinct.
- .2 Construct a water supply network within the DCP area, including those sections of the mains shown on Figure 8, necessary to service the anticipated demand in the precinct; and
- .3 Provide contributions towards water headworks and bulk water supply in accordance with the MHIA.

10.1.3 Sewerage

Construct all internal sewerage systems to service the properties in the precinct and make contributions towards sewerage headworks, and unless otherwise agreed with Council:-

- .1 Construct the trunk gravity main TM3 from the connection point with the internal sewerage system to the existing Council pump stations PS116 initially and ultimately to the future pump station PS2 as shown on Figure 9;
- .2 Construct upgrade of the existing Council pump stations PS115 and PS116;

- .3 Construct the extension of rising main RM116 and new rising main RM115 from PS115 to the existing interim pump station TPS2 with ultimate connection to pump station PS1;
- .4 Construct the ultimate pump stations PS1 and PS2, and discharge rising mains RM1 and RM2 in accordance with the staging requirements of the MHIA and Interim Sewerage Discharge Scheme.

10.1.4 Stormwater

- .1 Construct stormwater management works progressively in accordance with the Stormwater Management Plans for Tributary B and Tributary 2 as approved by Council; and
- .2 Construct stormwater drainage systems to roads, parks and lots as required by the MHIA and Council's Design Manual.

10.1.5 Park

- .1 Provide as part of the linear park that area of linear park generally as shown on Figure 4;
- .2 Provide a village park generally as shown on Figure 4;
- .3 Provide local parks generally as shown on Figure 4;
- .4 Provide Park Enhancement Works in all parks.

10.1.6 Electricity Supply and Lighting

- .1 Provide underground electricity distribution to all properties within the precinct to Energex (or another appropriate supplier of electricity) and Council standards;
- .2 Provide public lighting to all roads, streets, parks and other public areas and facilities within the precinct to Energex (or another appropriate supplier of electricity) and Council standards; and

- .3 Provide high voltage electricity services to service the precinct to Energex (or another appropriate supplier of electricity) and Council standards.

10.1.7 Communications

Arrange for the installation of underground telephone communications services for all properties in the precinct.

10.2 State Government Infrastructure Requirements

- 10.2.1 There are no items of State Government infrastructure to be provided by the principal developer in conjunction with the development of the precinct.
- 10.2.2 A local bus service must be provided to service the precinct in accordance with the agreement with Queensland Transport.
- 10.2.3 The principal developer must contribute towards the cost of providing kerbside infrastructure associated with the public transport system. Such contribution is to be in accordance with the agreement with the State Government.

10.3 Infrastructure Affected by Precinct Development

- 10.3.1 The development of this precinct may place demands on the following infrastructure:

- .1 Roads external to the DCP area and accessing to the precinct;
- .2 Water supply infrastructure;
- .3 Sewerage infrastructure;
- .4 Stormwater;
- .5 Parks;
- .6 Community facilities;
- .7 Electricity and gas supply;
- .8 Communications systems; and
- .9 State Government Infrastructure.

- 10.3.2 The infrastructure described in clauses 10.1 and 10.2, together with the obligations of the principal developer under the MHIA, is required to mitigate the adverse affects on such infrastructure.

10.4 How the Required Infrastructure Relates to the Infrastructure Agreements

- 10.4.1 The MHIA describes the infrastructure which must be provided by the principal developer as part of its obligations to provide infrastructure, as envisaged by Chapter 12 of the DCP. The works described in clause 10.1 are the principal developer's obligations under the MHIA.
- 10.4.2 Infrastructure Agreements have been entered into by the principal developer with the Department of Main Roads and Queensland Transport. Any infrastructure requirements of those State Government Departments relating to this precinct will be provided in accordance with the existing agreements.

10.5 Preliminary Program for Infrastructure Provision

- 10.5.1 The principal developer will provide all the infrastructure referred to in clause 10.1 at times to satisfy the requirements of the MHIA which provides for the infrastructure to be constructed to meet the rate of development in the precinct. Initial infrastructure works are anticipated to be constructed by March 2001. The completion of the roadworks where approved by Council will be as described in clause 10.1.1 and the MHIA.
- 10.5.2 The local bus service will be provided in accordance with clause 10.2.2.
- 10.5.3 Except as described elsewhere in this clause, no other works depend on the provision of this infrastructure.
- 10.5.4 Council is to use its best endeavours, including its powers of resumption if lawful, to obtain all necessary rights to permit the construction of water and sewerage infrastructure if such infrastructure is constructed on land external to the DCP area over which Council does not have such rights.

10.6 Estimated Water and Sewerage Demands

- 10.6.1 As required by the MHIA, the principal developer states as follows:-
- .1 For the purpose of assessing water supply capacity, the estimated number of Equivalent Tenements for this precinct is 186 ET;
 - .2 For the purpose of assessing sewerage capacity, the estimated number of Equivalent Persons for this precinct is 638 EP.