

**MANGO HILL INFRASTRUCTURE
DEVELOPMENT CONTROL PLAN**

Precinct Plan No. 025

for

Southern Golf Residential Precinct

North Lakes Development

14 May 2010

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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 *Southern Golf Residential Precinct*. This document constitutes the Precinct plan for the Southern Golf 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 35 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 (MHIA), the requirements of the DCP or MHIA will prevail.

2.0 Structure Plan Context

Southern Golf Residential Precinct is located in the central part of the DCP area. The Precinct is comprised of Urban Residential Area land use element. It is broadly bounded by the Central Open Space Sector (Golf Course) stretching from the North West corner around to the south east corner, Endeavour Boulevard to the west and the future North-South Arterial to the south. 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

The Precinct’s location adjacent to the Central Open Space Sector (Golf Course), Endeavour Boulevard and the proposed North-South Arterial Fairway Chase Linear Park, have strongly influenced the design concept. Key principles to consider in the wider development context of the Precinct are outlined below:

- 5.1.1 The interface treatment, as shown on Figure 3, should present as a special landscaped edge treatment to the precinct (landscaped interface to residential development including road and park frontages). The landscape design will ensure the surrounding urban development enjoys good exposure to a predominantly landscaped enclosure of the open space.
- 5.1.2 A strong sense of arrival to the Precinct will be provided by the extension of existing roads leading to the central Village Park located on a ridgeline and intersection of the extended Endeavour Boulevard and Swords Parade. The ridgeline provides views to the Golf Course, Town Centre and Wetland Park. The Precinct is littered with open space connections through the North Lakes Golf Course and Wetland Park and provides a high level of built form and landscaping for this new premium residential Precinct through the incorporation of contemporary materials with existing elements.
- 5.1.3 A series of roundabouts on Endeavour Boulevard and Astley Parade will provide neighbourhood entry points to the Southern Golf Residential Precinct. The theme of these entry points will extend through the road network and provide visual links with the vista to the Golf Course and Linear Parks forming key focal points.
- 5.1.4 An informal grid pattern of local collector and access roads is proposed to provide for a dispersal of traffic and a high level of connectivity.
- 5.1.5 This road pattern will also provide enhanced legibility as well as permeable landscape connections with numerous movement and view corridors to the major open spaces within and adjoining the Precinct including the Village and Local Parks, and Wetland Park.

- 5.1.7 The network of different park types across the Precinct will provide important structural landscape elements and open space focal points for each sub-Precinct of housing development. The parks have been designed and located to focus views on vistas to adjacent elements of major open space including the Wetland Park and North Lakes Golf Course.
- 5.1.8 The Southern Golf Residential Precinct is in proximity to the developing Hilltop Residential Precinct with its Local Community Facilities. This future Local Community Facilities node, is the focus for the western side of the golf course and is likely to include a local community centre, child care centre, district playing field, convenience retail and other relevant services, and therefore has removed the need for such facilities to be provided within the Precinct.
- 5.1.9 Vehicular connections are proposed to the Hilltop Residential Precinct (029) to the west, the Central Golf Precincts in the east and North Lakes Golf Course to the north and east. These connections will reinforce opportunities for pedestrian and cyclist movements that have been allowed for by the surrounding Precinct plans.
- 5.1.10 Residents of this Precinct will have convenient access to a wide range of higher order retail, commercial, employment, community, educational and recreational facilities within the Town Centre via the comprehensive road, cycleway and pathway system.
- 5.1.11 The interface treatment should be a combination of golf frontage lots, esplanade road and linear park.

5.2 Concept Overview

The Southern Golf Residential Precinct is proposed to be developed as a high quality, residential community comprising a mix of residential dwelling types (as anticipated by the DCP). It will integrate a range of low to medium density residential accommodation types (which may include retirement village), with the future commercial and community facilities in the adjacent town centre, consistent with the DCP, together with 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 for the Precinct will include:

- A residential village which has capacity to accommodate approximately 650 dwellings or some 1500 residents;
- A number of neighbouring major open space elements including Tributary 1, the Fairway Chase Linear Park and the North Lakes Golf Course. These areas are key components to the open space network within the DCP area and will be linked to the Precinct by an extension of the linear park system or open space corridors. The linear park system will extend the landscape theme of these major open space elements providing strong connectivity with surrounding Precincts and open space.
- Convenient access for residents to the next level of open space in the form of Village Parks, Local Parks and Linear parks. One Village Park will be positioned along the linear park spine running through the centre of the Precinct. Residents will have access to a second Village Park located outside the Precinct in the middle of the Hilltop Residential Precinct. Both Village Parks will be centrally located with the residential land use element and will be within easy walking distance of most residents.
- 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 Local Community Facilities node located outside the Precinct to the west within Hilltop Residential Precinct (029);
 - (ii) the adjoining Central Open Space Precinct which has been developed as a golf course and incorporates east-west pedestrian/cyclist crossings; and
 - (iii) The North Lakes Town Park and future Town Centre development to the south.

Most of the above facilities will be within a 15 to 30 minute walk (i.e. approximately 2.5km radius) of the Precinct.

The Precinct Plan shows the Urban Residential land use and other 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 will provide more detail on the precise locations of roads and the various types of residential development.

6.0 Precinct Plan

6.1 Introduction

Figure 3, Southern Golf Residential Precinct Plan Map, provides a 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 4 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

A residential village is proposed with an overall capacity to accommodate approximately 350 dwellings or some 800 residents. The Precinct is to provide for a range of housing choices from traditional to small lot housing and, where appropriate, duplex dwellings, townhouse units and/or other forms of medium density residential development. 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.

It is noted that the whole Precinct has been nominated as Standard and/or Medium Density Residential. It is anticipated that in the development of the Sector Plan for this Precinct, that suitable sites for Medium Density Residential will be determined through assessment against a number of criteria relating to accessibility to open spaces, community facilities and major roads, public transport and pedestrian/cyclist networks. It is expected that generally not more than 20% of the area of the Precinct will be developed for Medium Density Residential purposes. Two locations for a retirement village may be accommodated within the Precinct. This may include a range of different dwelling types including self-contained townhouse-styled units, condominium-styled units & apartment-styled units. The retirement village will include community facilities, private open space, and sport & recreation facilities. Principally, these will be for use of residents, which will also cater for the local park needs of the future residents. If a retirement village is not established the land use will revert back to a residential use.

6.2.3 Open Space

The provision of open space in the Precinct is influenced by the adjoining Central Open Space Sector extending from the north east to the south east boundary of the Precinct. In the context of the major open spaces both within and in proximity to the Precinct, lower order open spaces are also planned within the Precinct. To ensure residents are provided with convenient and efficient access to these open space areas a pedestrian/cyclist network in the form of open space corridors will provide access to major open space areas outside the Precinct.

Local open space will be provided in the form of notionally located Village and Local Parks serving adjacent housing in accordance with the residential planning principles established in the DCP. The Precinct will provide one Local Park part of which will also act as a stormwater filtration wetland. It is noted that the Village Parks located outside the Precinct within the Hilltop Village Residential Precinct, Central East Residential Precincts, and Central Golf Course Residential Precincts will supplement the Precinct's local open space facility. Consequently, it is considered that Village Park facilities will be located within 400 metres of most residents.

In addition, the future district sporting fields are proposed to the north-west of the Precinct, which provides an opportunity for active recreation for residents and the wider regional community. The district sporting fields may be supported with amenities buildings, clubhouse facilities and car parking.

The residents of the Precinct will therefore be well serviced by all levels of open space.

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 in reasonable proximity of the Southern Golf 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 cycle ways. • A developing regional public transport system to serve the growing residential population of the DCP area.
Housing diversity is essential.	<ul style="list-style-type: none"> • A range of lot sizes and dwelling types, including detached houses, and possibly rear lane housing, duplex dwellings, townhouses and the like. Possibility for other forms of residential accommodation such as retirement village, may include a range of self contained townhouse-styled dwelling units, condominium-styled units, and apartment-styled units.
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 part of the DCP:</p> <ul style="list-style-type: none"> • Existing and provision of facilities for pre-school and primary education. • An existing state and private primary/secondary school. • 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 northern, 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"> • Structured recreation facilities outside 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 ridgelines or typically running along or perpendicular to the natural contours, wherever practicable, providing 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.

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

A hierarchy of roadways related to traffic function, including bus movements, is to be adopted in the detailed design. The amenity of the Precinct 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 will be planned so that through traffic is generally limited to the sub-arterial and arterial roads associated with the wider road network.

The main external road connections (refer Figure 6) to the Precinct will be provided via:

- Extension of Swords Parade from north-western end of Central East 'B' Residential Precinct Bridgehaven Residential Precinct (006) along the northern boundary of the Precinct providing the main eastern connection to the Precinct.
- Extension of Endeavour Boulevard from outside the northern boundary of the Hilltop Residential Precinct (029); and
- Possible extension of Astley Parade from the southern boundary of the Hilltop Residential Precinct (029).

The local collector roads will be designed to link this Precinct to adjacent major roads, and ultimately to the Town Centre, and the MIBA. To ensure the safe and efficient movement of vehicular traffic along major roads, traffic lights are proposed at the intersection of Bounty Boulevard and MIBA Connection Road.

Variations in the horizontal alignment of roadways within the Precinct 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 access streets.

Most residents of Southern Golf Residential Precinct will be within 400 metres (5 minutes walking time) of a local bus route.

Pedestrian and bicycle circulation within and through the Precinct is shown in notional terms on the Precinct Plan Map. Recreational pedestrian / cyclist pathways will be provided within the Precinct. These pathways will provide important linkages to surrounding residential villages and other major commercial, community and employment facilities throughout the DCP area. At the local level, residential streets and/or local pathways will provide a network of linkages from homes to the major pedestrian / cyclist system.

The amenity of a residential village is to be preserved by discouraging through traffic and by the implementation of streetscape treatments and traffic management techniques.

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, together with streetscape treatments, will form part of the comprehensive and integrated system of open space and landscaping 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 5 and summarised as follows:

- *Local Parks:* Three Local Parks are proposed, and 1 Village Park with a minimum area 5,000 square metres. The parks will be placed at a convenient location within the Precinct and provide landscaped open space focus for nearby residents. In addition, the Village Parks located outside the Precinct within the Hilltop Residential Precinct, Central East Residential Precincts, and Central Golf Residential Precinct will supplement the Precinct's local open space facility. In accordance with the MHIA, Local parks will provide a range of recreational opportunities which could include play structures, picnic facilities, seating and drinking fountains.
- *Streetscape Planting:* The streetscape treatments of local collector and access streets will create 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, widened road reserves for collector streets within the Precinct may be provided to allow for additional special landscape treatments and visual linkages to the water body, as well as ensuring a meaningful way of reinforcing different road types in the road hierarchy.

The resulting open space system and streetscape treatments within and adjacent to 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.

6.6 Engineering Services

6.6.1 Water Supply

A trunk water main is being constructed which will service the Southern Golf Residential Precinct. This extension to the trunk water main 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 systems referenced as TM4, TM4A and TM4B and gravity trunk sewer mains referenced GTS4 and GTS5 on the Sewerage Headworks Plan (refer Figure 8).

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 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. An underground gas supply will be available to all 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

Stormwater drainage 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 Plans for Tributary B 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 Land Use Element

Queensland Residential Design Guidelines (QRDG), Queensland Department of Local Government and Planning, provides statements of intent and performance criteria for a range of design elements which are applicable to housing development 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 therefore identified alternative provisions in accordance with Section 34 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 land use element.

8.0 Environmental Management Objectives

8.1 Stormwater Discharge

Objectives

To ensure that stormwater infrastructure, constructed within the catchments of Tributaries B and 1, are 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 Plan 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 adjacent residential Precincts. The infrastructure obligations relevant to the Southern Golf 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 street lighting. 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 The provisions and timing of construction of the North-South Arterial Road from Aurora Boulevard to the Boundary Road connection (and connecting with the internal MIBA road network) will be completed by 2010, or otherwise in accordance with any alternative findings from ongoing traffic reviews provided in accordance with Section 4.2.2 of the MHIA.
- .3 The provisions and timing of construction of the North-South Arterial Road from Aurora Boulevard to Node D (and connecting with Boundary Road, Endeavour Boulevard and the internal MIBA road network to the final standard of construction) will be completed by the date Council approves a Sector Plan which allows for development of 85% of the DCP area, or when required by conditions of development approval in accordance with Section 4.2.2 (h) of the MHIA, whichever is the sooner.
- .4 The provisions and timing of construction of the North-South Arterial Road from Node D to Node C (and connecting with Endeavour Boulevard and Discovery Drive) will be completed to the final standard of construction by the date Council approves a Sector Plan which allows for development of 90% of the DCP area, or when required by conditions of development approval in accordance with Section 4.2.2 (h) of the MHIA, whichever is the sooner.
- .5 Bikeways and pathways, including commuter and recreational bikeways generally as shown on Figure 4, in accordance with the MHIA.

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 7, 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 TM4B from the connection point with the internal sewerage system to the existing gravity trunk sewer main GTS4;
- .2 Construct the trunk gravity main TM4 from the connection point with the internal sewerage system to the proposed gravity trunk sewer main GTS4 as shown on ***Figure 8 – Sewerage Headworks***;

10.1.4 Stormwater

- .1 Construct stormwater management works progressively in accordance with the Stormwater Management Plans for Tributary B 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 a major open space area, three Local Parks and 1 Village Park, as generally shown on Figure 3;
- .2 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

- .1 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 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 February 2010. The completion of the roadworks where approved by Council will be as described in clause 10.1.1 and the MHIA.

10.5.2 Except as described elsewhere in this clause, no other works depend on the provision of this infrastructure.

10.5.3 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 525 ET;
- .2 For the purpose of assessing sewerage capacity, the estimated number of Equivalent Persons for this Precinct is 1050 EP.