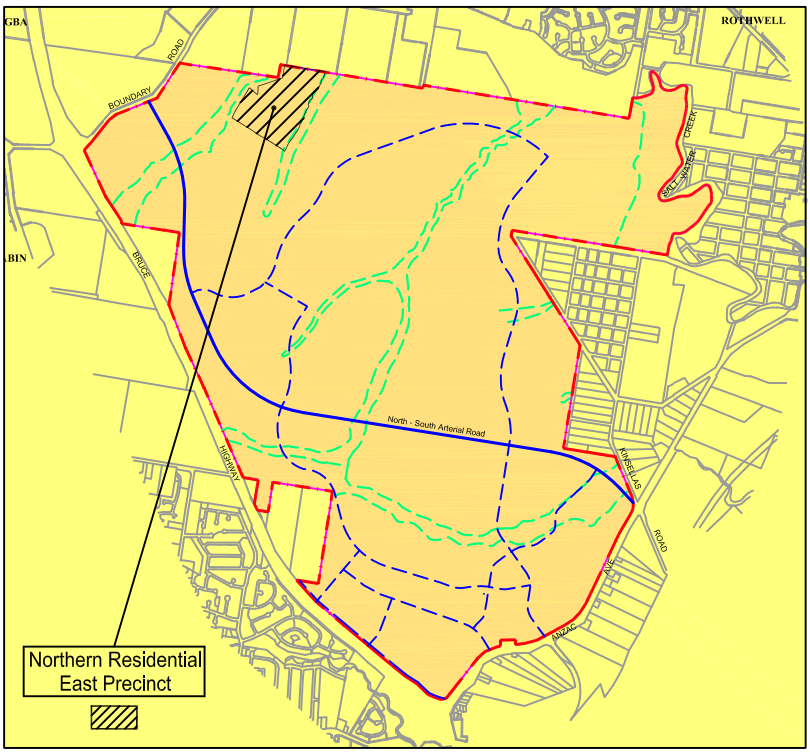
MANGO HILL INFRASTRUCTURE DEVELOPMENT CONTROL PLAN

Precinct Plan 047



Northern Residential East Precinct

16 September 2011

MANGO HILL INFRASTRUCTURE

DEVELOPMENT CONTROL PLAN

Precinct Plan No. 047

for

Northern Residential North Eastern Precinct

North Lakes Development

16 September 2011

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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 *Northern Residential North Eastern Precinct*. This document constitutes the Precinct Plan for the Northern Residential North Eastern Precinct.

1.4 The location of the Precinct within the DCP area is shown on Figure 1. The area of the Precinct is approximately 17.49 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

Northern Residential North Eastern Precinct is located in the north western area of the DCP, and forms the north eastern portion of the Northern Residential Precincts. The Precinct is comprised of Urban Residential Area land use elements. It is broadly bounded by the proposed Precinct 031 to the south, Tributary A to the west beyond which is the Northern Residential West Precinct (Plan No. 044) and linear Major Open Space (Tributary 1) is to the immediate east and beyond that Bridgehaven Residential Precinct (Plan No. 021). 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."

In relation to the land use element of Community Facilities, the DCP states the following general desired environmental outcomes:

"(a) to encourage the provision of an appropriate range of community facilities in convenient locations and in step with residents' needs, integrated with the overall development of the DCP area;

(b) to maximise the use and community benefits of community facilities through the provision of multi-purpose premises, the co-location of uses and establishing high levels of accessibility;

(c) to achieve an integrated network of pleasant, safe public places for cultural and social interaction."

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 location of a major Tributary (Trib A) west of the Precinct and the proximity of the district sporting fields, Major Open Space Areas and the North Lakes Golf Course, the nearby MIBA and the Local Community Facilities, 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 of the Precinct is proposed via the sub-arterial or trunk collector road being the MIBA Connection Road (Aurora Boulevard). Located along the southern Precinct boundary, this road will integrate with established sub-arterial roads including Bounty Boulevard and the North South Arterial.

5.1.2 This high connectivity will be further expanded as development of this Precinct includes connections with the North South Arterial Road which is located within the Precinct along the western boundary providing links with the future MIBA and town centre employment nodes.

5.1.3 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, Linear Parklands and district playing fields.

5.1.4 The major open space area running through the centre of the Precinct and 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.

5.1.5 The design of residential areas in the northern portion of the Precinct needs to be cognisant of the potential industrial development to the north of North Lakes through the provision of Open Space/park, roads and larger lot types/ or lower density.

5.1.6 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 Hilltop Local Community Facilities node and North Lakes Town Centre via the comprehensive road, cycleway and pathway system. Transitions and buffers to the Tributary A environmental corridor may also be warranted in response to Section 6.3.3.5 of the DCP in order to ensure a viable environmental corridor width along Tributary A.

5.2 Concept Overview

The Northern Residential North Eastern 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 low to medium density residential dwelling types with a range of active and passive recreational open spaces 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.
- 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 300 dwellings or some 720 residents;

- The design of residential areas in the northern portion of the Precinct needs to be cognisant of the potential industrial development to the west of North Lakes through the provision of Open Space/park, roads and larger lot types/ or lower density;

- Convenient access for residents to major open space areas both within the Precinct and in neighbouring Precincts, including Tributary A located in the west of the Precinct and the Northern District Playing Fields located south of the Precinct boundary.

- Convenient access for residents to the next level of open space in the form of a Village Park and Linear Parks. A Village Park will supplement the convenient access to district playing fields and will be located within easy walking distance (generally 400m) of all residents in the northern and southern portions of the Precinct. Residents will therefore be served by a range of conveniently located park types.

- 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 which is to be developed in the Hilltop Precinct to the south;
  (ii) the nearby Central Open Space Precinct to the south-east which has been developed as a golf course and incorporates east-west pedestrian/cyclist crossings between the Golf Course East 'B' Residential Precinct and future major open space area and urban residential areas in the western part of the DCP area;
  (iii) the future District Sporting Fields adjoining the Precinct to the east and the private and/or State schools to the south-east (integrated with the convenience centre in the north-eastern corner of the Hilltop Precinct);
  (iv) future MIBA development to the west; and
  (v) The North Lakes Town Park and Town Centre development to the south.

Most of the above facilities will be within a 15 to 30 minute walk (i.e. approximately 3.5km 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, transition areas, 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, transition areas and the various types of residential development.

6.0 Precinct Plan

6.1 Introduction

Figure 3, Northern Residential North Eastern 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 300 dwellings or some 720 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 Low, 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.

6.2.3 Open Space

The provision of open space in the Precinct is influenced by neighbouring elements of Major Open Space including Tributary A within the Precinct on the western boundary and elements external to the Precinct including Tributary A to the west, the future District Sporting Fields to the south-east. Buffer treatments and transitional areas may be incorporated into the development design pursuant to Section 6.3.3.5 of the DCP. 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. The following open space measures will be implemented to accord with Sections 9.1 and 9.2 of the DCP:

(i) Provision of landscaped buffers between incompatible uses within and bordering the DCP area;

(ii) Use the open space system as an effective means for maintaining high levels of environmental quality through water management, habitat protection, wildlife corridors and acoustic buffering;

(iii) Retention where practicable of continuous corridors of trees, shrubs and grasslands which is subject to minimal maintenance regimes for the purpose of permitting the movement of fauna through the area and providing natural outlooks for residents. Specifically the linear open space providing a link between the Bruce Highway and the northern boundary of the DCP area is to be retained as a wildlife corridor;

(iv) Screening of the effects of incompatible land uses from the DCP area; and

(v) The open space buffers are to be generally linked with, and are intended to be landscaped to reflect their function and complement other elements of the open space system.

Conceptual cross sections are provided in Figure 3 to this Precinct Plan in order to illustrate acceptable outcomes for the buffer / transition areas. Alternative solutions will be considered by Council where the alternative solution achieves the above desired outcomes.

Local open space will be provided in the form of notionally located Linear Parks and a Village Park serving adjacent housing in accordance with the residential planning principles established in the DCP. The Precinct will provide one Village Park centrally located to serve the northern and southern portions of the Precinct, along with linear park on the fringes of the Precinct. Neighbouring Precincts will also provide access to District, Village and Local Parks, being within 400 metres and 200 metres, respectively, of most residents.

The residents of the Precinct will therefore be well serviced by all levels of open space required by the DCP and associated infrastructure agreement.

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 Northern Residential North Eastern 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.	• 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 bus service will cater for residents of the DCP area and links to the regional public transport system will continue to be expanded.
Housing diversity is essential.	• A range of lot sizes and dwelling types, including detached houses, and possibly rear lane housing, duplex dwellings, townhouses and the like.

Community Service Needs	Development to Provide
Provision will need to be made for the child care needs of the population.	• A range of long day and occasional child care services provided in local community facilities nodes and in the town centre.
Local community facilities and services should be integrated within Urban Residential Areas.	• 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.	• Facilities which take account of the accessibility needs of people with disabilities.
Playgrounds	• Provide adventure play spaces for 7 - 11 year olds. • Provide meeting places for older children and the aged. • Create larger district parks (i.e. 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).	• Structured recreation facilities outside the Precinct towards the south west and east.

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. Additional vegetation mounding and screening may also be incorporated into the buffer in order to achieve the following sections of the DCP:

(i) Section 9.1.2: To provide landscaped buffers between incompatible uses within and bordering the DCP area; and

(ii) Section 9.2.6: The open space buffers generally are to be linked with, and are intended to be landscaped to reflect their function and complement other elements of the open space system.

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 to include loop roads so that through traffic is generally limited to the sub-arterial and arterial roads associated with the wider road network.

Vehicular road access into the Precinct from the southern boundary will be facilitated via Expedition Drive.

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

- Sub-arterial or trunk collector roads forming part of the works associated with surrounding residential Precincts including Hilltop 029 and Bridgehaven 021; and
- The future North-South Arterial Road, including a controlled intersection with Boundary Road. Other controlled intersections along the North-South Arterial Road at Endeavour Boulevard, Bounty Boulevard and Aurora Boulevard.

The local collector roads will be designed to link this precinct to adjacent major roads, , the Precinct 031 district playing fields, and ultimately the Town Centre and the MIBA. Traffic lights are under construction at the intersection of the North – South Arterial Road to ensure the safe and efficient movement of vehicular traffic along these two major roads. 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 Northern Residential North Eastern 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 and allows for linkages along loop roads along open space where safe travel environments offer casual surveillance of the pedestrian and bicycle paths. 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.

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:

- *Major Open Space:* Under the Structure Plan, Tributaries A and 1 are major open space areas and are to form the key community focal points for of the Precinct. The east-west connections through these tributaries will provide convenient pedestrian / cyclist connections between the adjacent residential areas.

- *Buffers and Transition Areas:* Buffers and transition areas will be established between the Precinct and incompatible land uses that are external to the site (in accordance with Section 9.1.2b of the DCP). These may incorporate loop roads or vegetated distances that utilise the open space system as an effective means for maintaining high levels of environmental quality through water management, habitat protection, wildlife corridor protection and acoustic buffering (in accordance with Section 9.1.2h of the DCP).

- *Village Park:* A Village Park is proposed with a minimum area of 5,000 square metres. This park will be placed at a central location and provide landscaped open space focus for nearby residents. In accordance with the MHIA, the Village Park will provide a range of recreational opportunities which could include play structures, picnic facilities, seating and drinking fountains. A Local Park will not be provided within the Precinct given the proximity of the district playing fields to the south, Local Park E056 to the east and the extent of Linear park to be provided adjacent to the eastern and western edges of the Precinct.

- *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 open-space, as well as ensuring a meaningful way of reinforcing different road types in the road hierarchy.
- *Linear park/s:* Will buffer the Tributary A environmental corridor in providing a continuous link between the Bruce Highway and the northern boundary of the DCP area for wildlife movement. Linear parks will accommodate recreational pedestrian/cyclist pathways and provide linkages throughout the precinct and surrounding precincts. They will also accommodate artificial wetlands and water bodies for water management and buffer the existing Tributary A corridor from this function.

6.6 Environmental Protection

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 DCP's landscape environment will be sustained through:

(i) The protection of ecological processes and natural systems

(ii) Providing the means for the establishment or enhancement of habitat areas and wildlife corridors primarily along the linear parks through the DCP area connecting with the regional open space network;

(iii) Providing opportunities for wildlife movement through the DCP area, retain and rehabilitate areas of remnant vegetation and create buffers between areas of incompatible land use;

(iv) Within drainage corridors, retaining remnant vegetation within the open space to the greatest extent practicable;

(v) Retention of significant stands of vegetation in areas of open space, for habitat protection, to the greatest extent practicable and enhance these areas with supplementary plantings of a similar indigenous species; and

(vi) The establishment of potential wildlife corridors through supplementary plantings to form continuous links of sufficient sustainable width at all forest levels (eg understorey, mid-storey, canopy) and the creation of networks of open space to accommodate and buffer corridor vegetation; and

(vii) The creation of buffers between incompatible land uses.

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.

6.7 Engineering Services

6.7.1 Water Supply

A trunk water main is being constructed along the MIBA Connection Road and will service the Northern Residential East 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.

6.7.2 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 TM6, and gravity trunk sewer mains referenced as GTS5 and GTS6 on the Sewerage Headworks Plan (refer Figure 7).

6.7.3 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. 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.

6.7.4 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.

6.8 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 Tributaries A and 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. The stormwater management network will achieve the DCP objectives for drainage corridors and habitat protection through:

(i) The retention of remnant vegetation within the open space to the greatest extent practicable;

(ii) Supplementing drainage corridors with landscaping;

(iii) Retention of significant stands of vegetation in areas of open space, for habitat protection, to the greatest extent practicable; and

(iv) The creation of networks of open space to accommodate and buffer corridor vegetation.

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 A 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

(i) The protection of ecological processes and natural systems

(ii) Providing the means for the establishment or enhancement of habitat areas and wildlife corridors primarily along the linear parks through the DCP area connecting with the regional open space network;

(iii) Providing opportunities for wildlife movement through the DCP area, retain and rehabilitate areas of remnant vegetation (ie. weed removal and any reasonable/necessary erosion protection measures) and create buffers between areas of incompatible land use;

(iv) Within drainage corridors, retain remnant vegetation within the open space to the greatest extent practicable;

(v) Retention of significant stands of vegetation in areas of open space, for habitat protection, to the greatest extent practicable and enhance these areas with supplementary plantings of a similar indigenous species; and

(vi) Establishment of potential wildlife corridors through supplementary plantings to form continuous links of sufficient sustainable width at all forest levels (eg understorey, mid-storey, canopy) and the creation of networks of open space to accommodate and buffer corridor 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.

Retention and establishment of a viable environmental corridor width along Tributary A.

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.

8.3.1 Odour Nuisance Levels

Detailed reporting has been undertaken within the subject site with respect to odour levels stemming from industrial activities north of Boundary Road. These studies include the *Narangba Industrial Estate Health Impact Assessment,* by Queensland Health and dated May 2011; and the *Odour Amenity Assessment 'Northern Residential' Precincts North Lakes,* by MWA Environmental dated 5 July 2011.

The abovementioned reports identify that the impact of odour upon the land within the precinct area does not exceed the threshold for odour nuisance as specified in the Ecoaccess Guideline: Odour Impact Assessment from Development produced and adopted by the Department of Environment and Resource Management (i.e. Odour concentrations are not predicted to exceed the 2.5 odour units in the 99.5^{th} percentile, one hour average).

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. Council may choose to provide lighting for sporting activities in the district playing fields. Surrounding development should acknowledge the use of the district playing fields which may include lighting in the future.

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 Northern Residential North Eastern 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 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.

.3 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.

.4 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 gravity trunk sewer main GTS6 from the connection point with the internal sewerage system to the proposed GTS5 as shown on ***Figure 7 – Sewerage Headworks***;

.2 Construct the trunk gravity main TM6 from the connection point with the internal sewerage system to the proposed gravity trunk sewer main GTS6.

.3 Construct an Interim Sewerage Discharge Scheme to cater for sewerage discharge until scheme in points 2 and 4 above is completed, if required.

10.1.4 Stormwater

.1 Construct stormwater management works progressively in accordance with the Stormwater Management Plans for Tributaries A and 1 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 Facilitate adjacent Major Open Space Areas, buffer and transition areas, linear parks and a Village Park, generally as shown on the precinct figures and described above;

.2 Provide access to the district playing fields that are generally as shown on Figure 3;

.3 Provide the necessary 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 December 2011. 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.

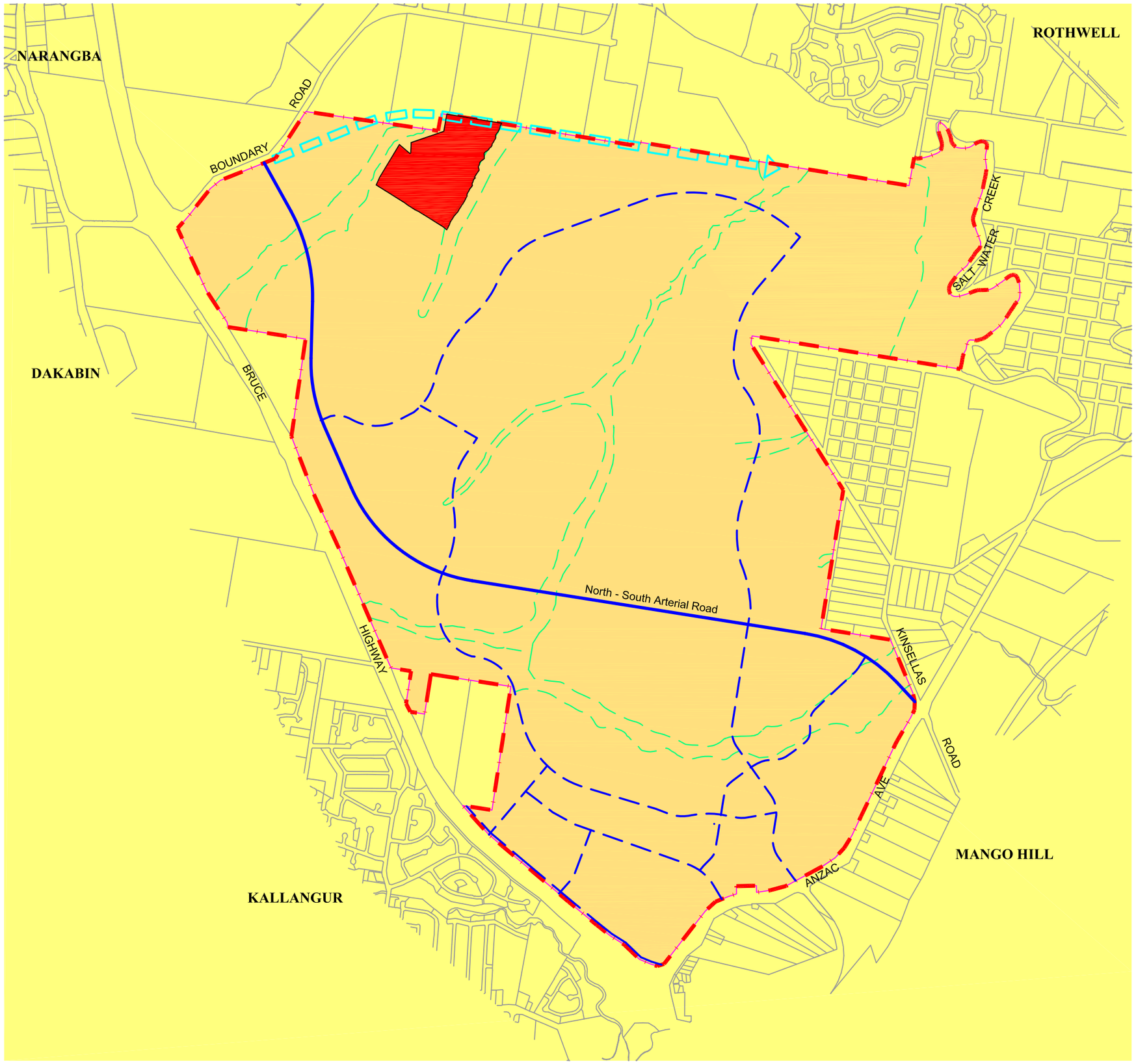
10.5.3 Council is to use its best endeavours, including its powers of resumption if lawful, to obtain all necessary rights to permit the construction of water and sewerage infrastructure if such infrastructure is constructed on land external to the DCP area over which Council does not have such rights.

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 255 ET;

.2 For the purpose of assessing sewerage capacity, the estimated number of Equivalent Persons for this Precinct is 510 EP.



NORTH LAKES®

LEGEND

- DCP Area
- Northern Residential Precinct
- Major Open Spaces
- North–South Arterial Road
- Major Roads
- Possible Boundary Road Deviation

NORTHERN RESIDENTIAL EAST PRECINCT

PLANNING CONTEXT

0 200 400 600 800 1000 metres

Scale 1:20 000 at A3

N

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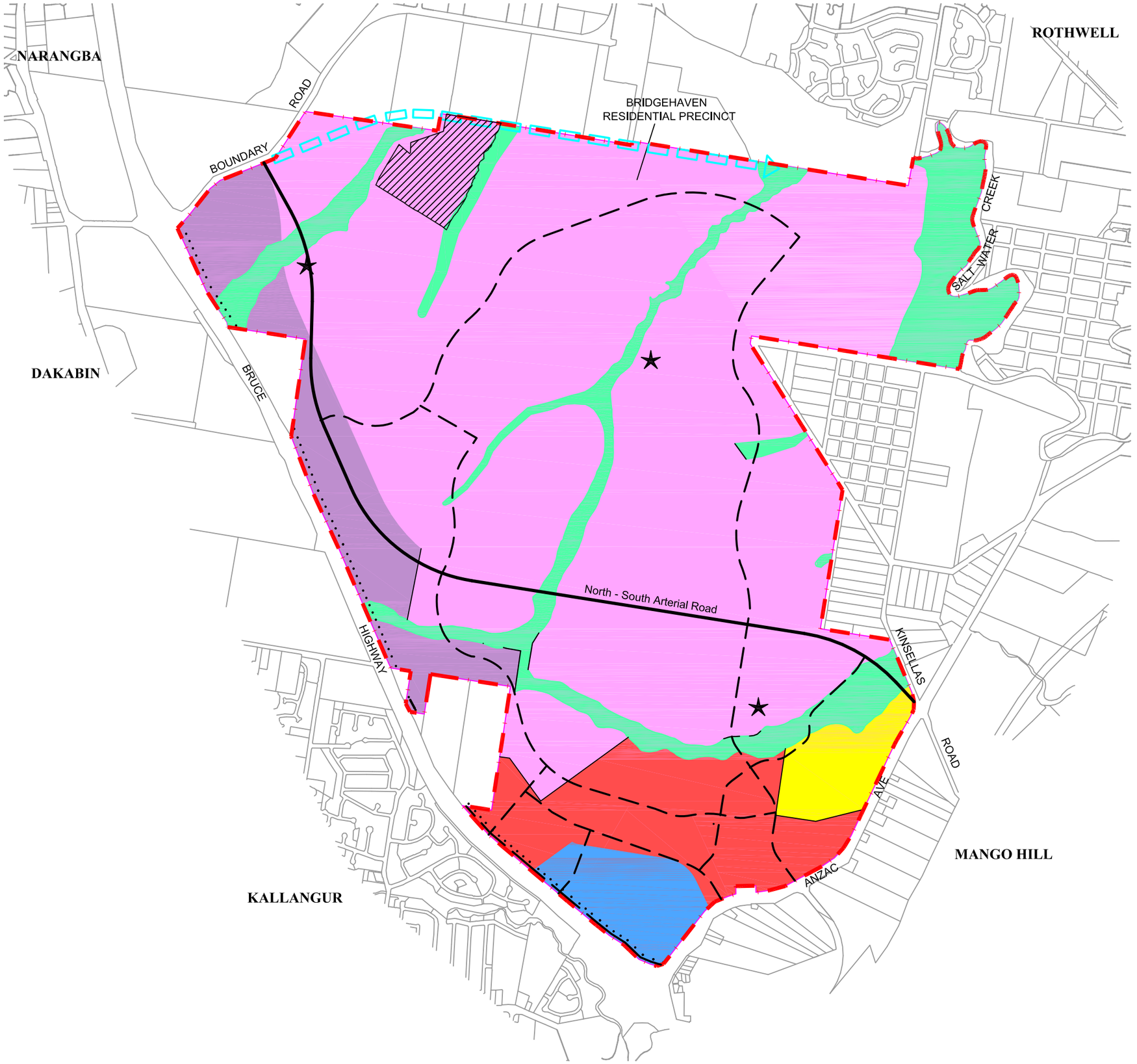
FIGURE 1



NORTH LAKES®

LEGEND

- DCP Boundary
- Major Open Spaces
- North–South Arterial Road
- Major Roads
- Highway Corridor
- Possible Boundary Road Deviation
- Generalised Precinct Area
- Town Centre – Core
- Town centre – Frame
- Major Community Facilities
- Urban Residential Area
- Mixed Industry & Business Area
- ★ Local Community Facilities

NORTHERN RESIDENTIAL EAST PRECINCT

STRUCTURE PLAN CONTEXT

0 200 400 600 800 1000 metres

Scale 1:20 000 at A3

N

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FIGURE 2

Future Industry

Future Urban/
Residential
Potential MIBA

A
TRANSITION AREA 1
REFER: SECTION AA
A

B
B
TRANSITION AREA 2
REFER: SECTION BB

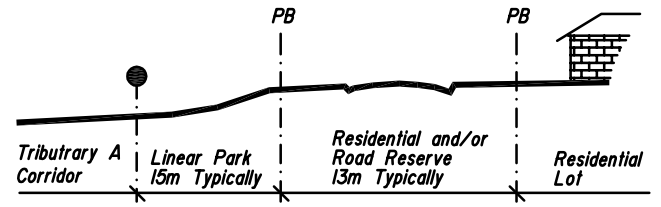
Northern Residential
Precinct 031

MAJOR OPEN
SPACE
(TRIB 1)

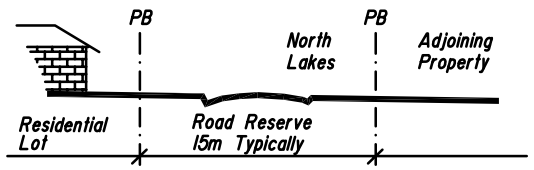
NORTH LAKES®

LEGEND

- URBAN RESIDENTIAL–STANDARD AND/OR MEDIUM DENSITY
- VILLAGE PARK (Indicative locations)
- TRANSITION AREA
- INDICATIVE ROAD RESERVE
- INDICATIVE ROAD ACCESS POINTS
- PRECINCT BOUNDARY
- BIOFILTRATION LOCATION
- MAJOR OPEN SPACE – DISTRICT AND LOCAL PLAYING FIELDS
- RETAINED OR REHABILITATED ENVIRONMENTAL CORRIDOR



Section BB



Section AA

NOTE:
The boundaries of the precinct and the layout and areas of uses are shown in notional terms only. The final boundaries of all land use elements within the precinct area will be fixed upon approval of subsequent sector plans.

Sections are not to scale.

LATM devices to be located on proposed collector road at the southern end of precinct to control through traffic.

NORTHERN RESIDENTIAL EAST PRECINCT

PRECINCT PLAN MAP

0 25 50 75 100 125 metres

Scale 1:2500 at A3

N

File No 2836-NRE
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FIGURE 3

Future Industry

Future Urban/
Residential
Potential MIBA

200M Radius to Park E056

400m

MAJOR OPEN
SPACE
(TRIB 1)

Northern Residential
Precinct 031

NORTH LAKES®

LEGEND

- URBAN RESIDENTIAL–STANDARD AND/OR MEDIUM DENSITY
- VILLAGE PARK
- INDICATIVE ROAD RESERVE
- INDICATIVE ROAD ACCESS POINTS
- PRECINCT BOUNDARY
- BIOFILTRATION LOCATION
- MAJOR OPEN SPACE – DISTRICT AND LOCAL PLAYING FIELDS

NOTE:
The boundaries of the precinct and the layout and areas of uses are shown in notional terms only. The final boundaries of all land use elements within the precinct area will be fixed upon approval of subsequent sector plans.

LATM devices to be located on proposed collector road at the southern end of precinct to control through traffic.

NORTHERN RESIDENTIAL EAST PRECINCT

PRINCIPLES PLAN

0 25 50 75 100 125 metres

Scale 1:2500 at A3

N

File No 2836-NRE
Dwg NREFig4_Precinct
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FIGURE 4

Future Industry

Future Urban/
Residential
Potential MIBA

Northern Residential
Precinct 031

MAJOR OPEN
SPACE
(TRIB 1)

NORTH LAKES®

LEGEND

- VILLAGE PARK
- PRECINCT BOUNDARY
- BIOFILTRATION LOCATION
- MAJOR OPEN SPACE – DISTRICT AND LOCAL PLAYING FIELDS

NOTE:
The boundaries of the precinct and the layout and areas of uses are shown in notional terms only. The final boundaries of all land use elements within the precinct area will be fixed upon approval of subsequent sector plans.

LATM devices to be located on proposed collector road at the southern end of precinct to control through traffic.

NORTHERN RESIDENTIAL EAST PRECINCT

PRECINCT LANDSCAPE PLAN

0 25 50 75 100 125 metres

Scale 1:2500 at A3

N

File No 2836-NRE
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FIGURE 5

NOTE

1 THE INTERNAL ROAD LAYOUT SHOWN ON THIS PLAN IS INDICATIVE ONLY. COLLECTOR AND ACCESS ROADS ARE NOT SHOWN.

NORTH LAKES®

LEGEND

- DCP Area Boundary
- Generalised Precinct Area
- EXTERNAL PEDESTRIAN/ BIKEWAY CONNECTIONS

STATE CONTROLLED ROADS

- PROPOSED NORTH–SOUTH ARTERIAL ROAD
- EXISTING ARTERIAL ROADS

OTHER MAJOR ROADS

- ARTERIAL ROADS
- SUB–ARTERIAL OR TRUNK COLLECTOR ROADS

NORTHERN RESIDENTIAL EAST PRECINCT

ROAD LAYOUT

0 300 600 900 1200 1500 metres

Scale 1:30 000 at A3

N

File No 2836-NRE
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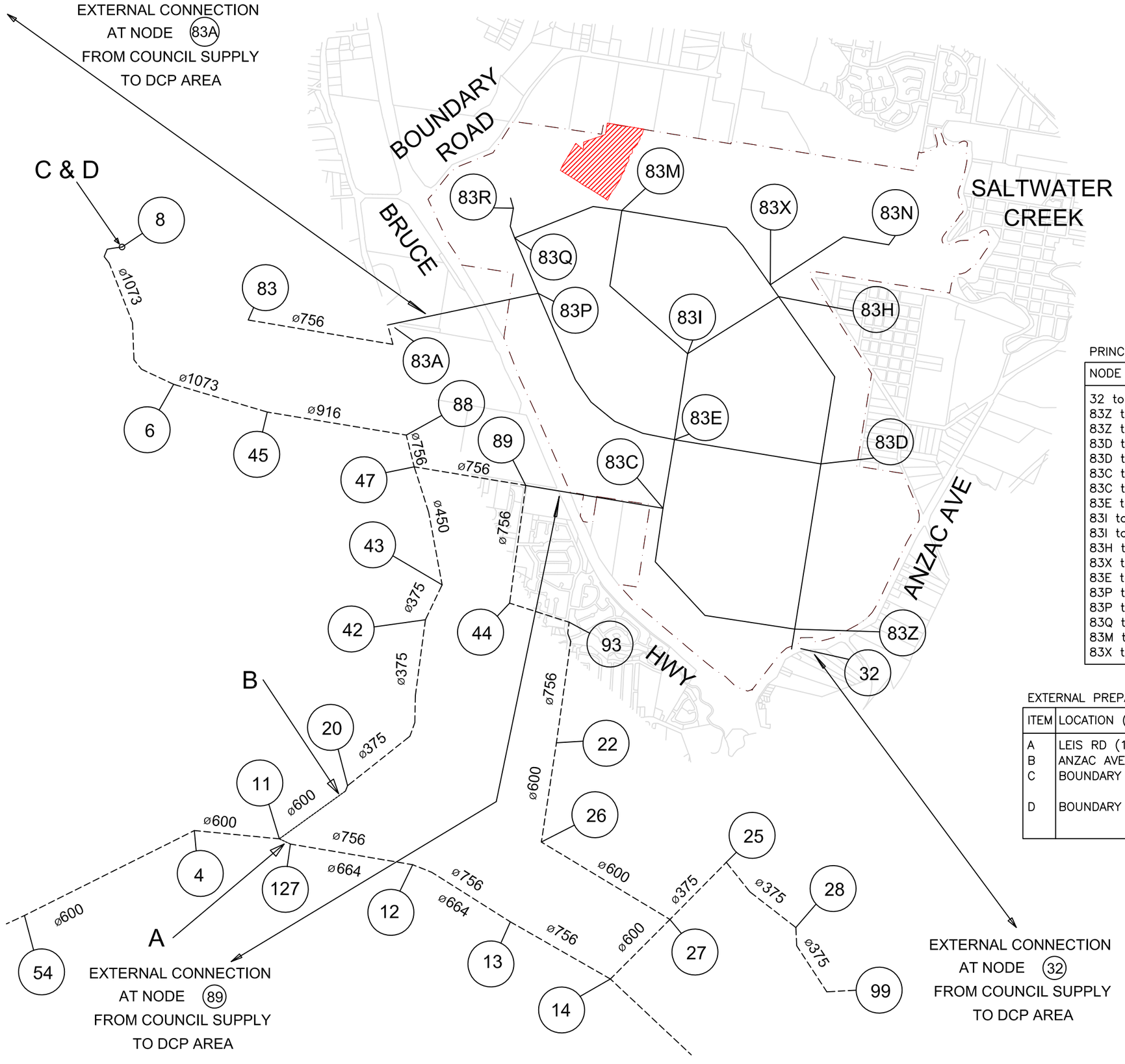
FIGURE 6



NORTH LAKES®

LEGEND

- Water Main – Works by Principal Developer
- Water Main – External Prepayment Works
- Water Main – Works by others or existing
- (32) Node Number
- DCP Area Boundary
- Generalised Precinct Area

PRINCIPAL DEVELOPER WORKS

NODE	DIAMETER (mm)
32 to 83Z	300
83Z to 83D	300
83Z to 83C	375
83D to 83H	375
83D to 83E	750
83C to 89	916
83C to 83E	750
83E to 83I	375
83I to 83H	300
83I to 83M	300
83H to 83X	300
83X to 83N	300
83E to 83P	450
83P to 83A	664
83P to 83Q	500
83Q to 83R	300
83M to 83Q	450
83X to 83M	300

EXTERNAL PREPAYMENT WORKS

ITEM	LOCATION (Node)	DESCRIPTION
A	LEIS RD (11–127)	664mm MAIN
B	ANZAC AVE (127–20)	600mm MAIN
C	BOUNDARY RD (8)	RESERVIOR 32MI – STAGE 1
D	BOUNDARY RD (8)	RESERVIOR 32MI – STAGE 2

NORTHERN RESIDENTIAL EAST PRECINCT

WATER SUPPLY HEADWORKS

0 300 600 900 1200 1500 metres

Scale 1:30 000 at A3

N

File No 2836-NRE
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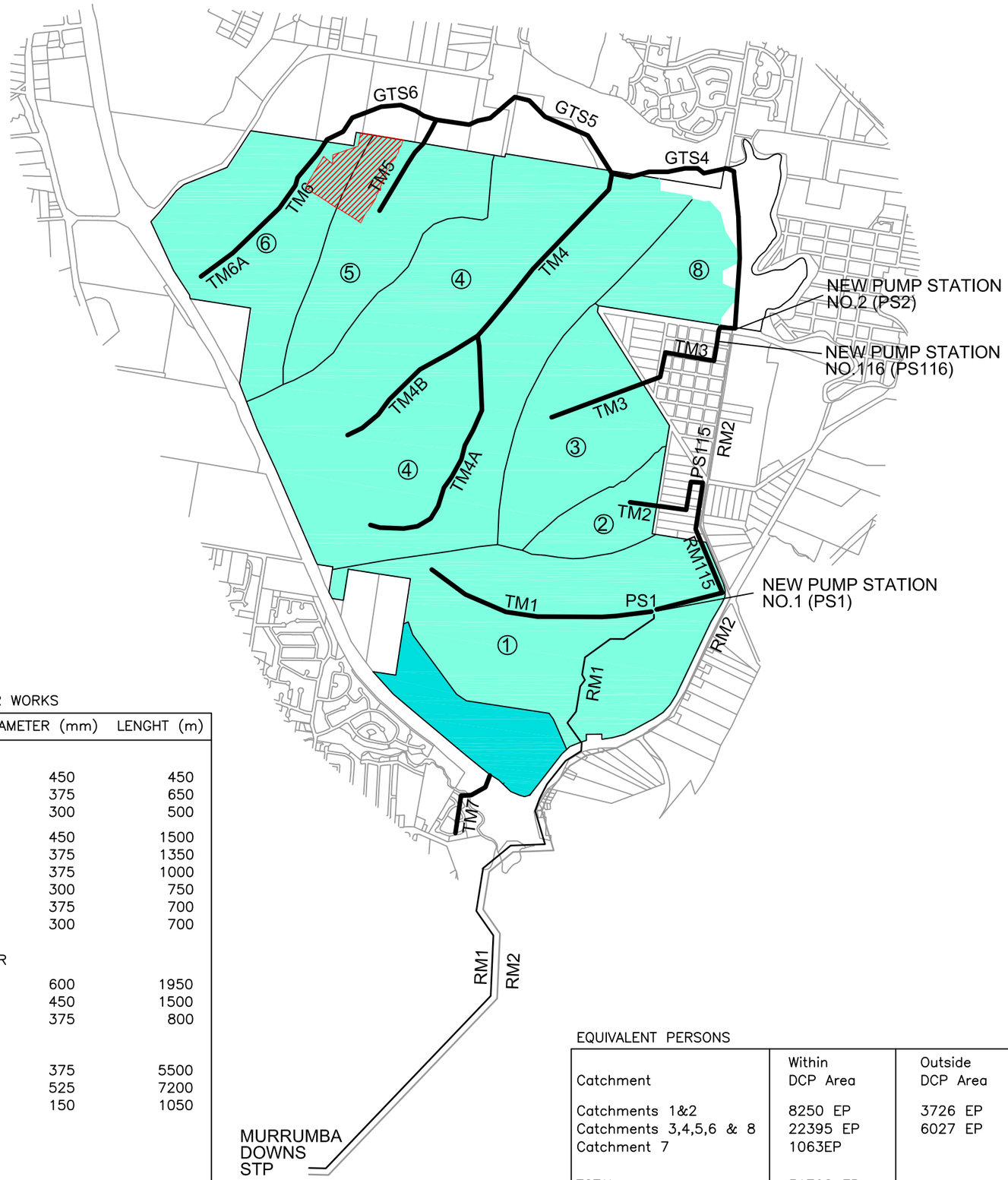
FIGURE 7



PRINCIPAL DEVELOPER WORKS

WORKS	DIAMETER (mm)	LENGHT (m)
TRUNK MAINS		
TM1	450	450
	375	650
	300	500
TM4	450	1500
TM4A	375	1350
TM4B	375	1000
TM5	300	750
TM6	375	700
TM6A	300	700
GRAVITY TRUNK SEWER		
GTS4	600	1950
GTS5	450	1500
GTS6	375	800
RISING MAINS		
RM1	375	5500
RM2	525	7200
RM115	150	1050
PUMP STATIONS		
PS1		
PS2		

EQUIVALENT PERSONS

Catchment	Within DCP Area	Outside DCP Area	Total
Catchments 1&2	8250 EP	3726 EP	11976 EP
Catchments 3,4,5,6 & 8	22395 EP	6027 EP	28422 EP
Catchment 7	1063EP		
TOTAL	31708 EP		

NORTH LAKES®

LEGEND

PS1	Pump Station
TM	Trunk Gravity Main
RM	Rising Main
③	Catchment Number
	Freshwater Creek Catchment (Part)
	Saltwater Creek Catchment (Part)
	Catchment Boundary
	DCP Area Boundary
	Generalised Precinct Area

NORTHERN RESIDENTIAL EAST PRECINCT

SEWERAGE HEADWORKS

0 300 600 900 1200 1500 metres

Scale 1:30 000 at A3

N

File No 2836-NRE
Dwg NREFig8_precinct
August 2011

FIGURE 8