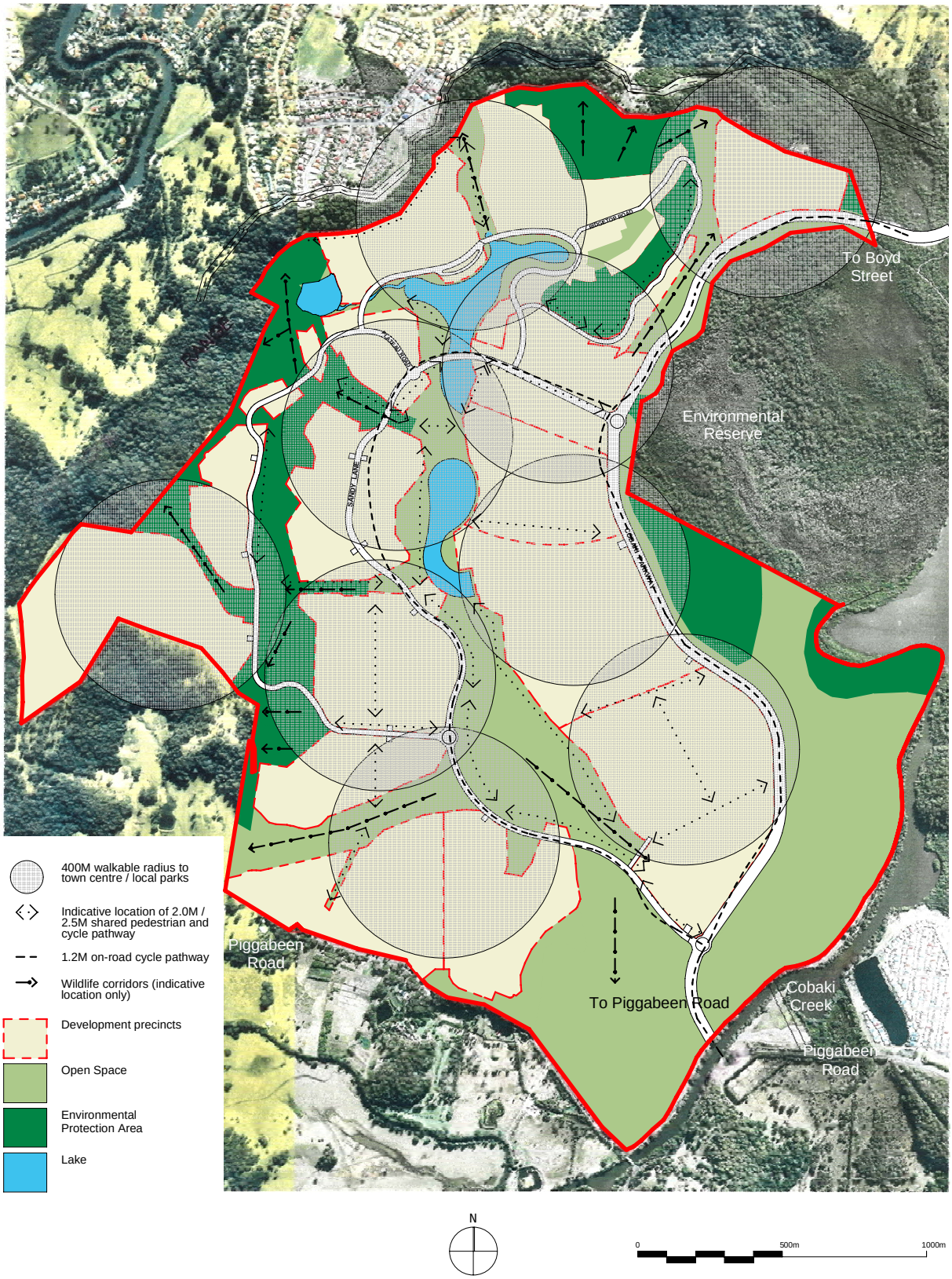

Figure 18 – Open Space Network Plan

4.6 Circulation, Access and Transport

The Concept Plan includes a subarterial distributor road, Cobaki Parkway, running through the site to connect the Cobaki Lakes Estate to Boyd Street and the Gold Coast Highway (and possibly a new Tugun Bypass interchange) to the north, and to Piggabeen Road, Kennedy Drive and Pacific Highway/Tugun Bypass to the south.

This Concept Plan proposes an internal road network hierarchy as shown in **Figure 19** below that comprises:

- Pedestrian and bicycle paths;
- Local roads and access streets;
- Collector roads; and
- Subarterial and distributor road of Cobaki Parkway.

The detailed design and construction of the paths and roads in the access network will be subject to future Design Guidelines and Development Applications in accordance with AUSTROADS Guide to Traffic Engineering Practice.

Public Transport

The Concept Plan supports the use of public transport on the site – in the form of a bus service along the collector roads and subarterial road. Bus stops are proposed to be provided and will be detailed in future Project Applications and Development Applications for the precincts.

Pedestrian and Cycle Access

As shown in **Figure 19** below, the proposal includes new pedestrian and cycle access routes in and around the site linking the precincts. In particular the new pedestrian and cycle access routes include:

- On-road cycle pathways on Cobaki Parkway.
- Shared pedestrian and cycle pathways through Precincts 1, 5, 6, 7, 8, 11, 12 and 17 and through the proposed Major Open Space Corridors, Major Environmental Protection Corridors (Bushland) and alongside the Freshwater Wetland areas.

Car Parking

The detailed design of provisions for car parking and service vehicles will be included as part of the subsequent Development Applications. They will however be provided in accordance with Tweed Shire Council's Site Access and Parking Code within the Tweed Shire Development Control Plan.

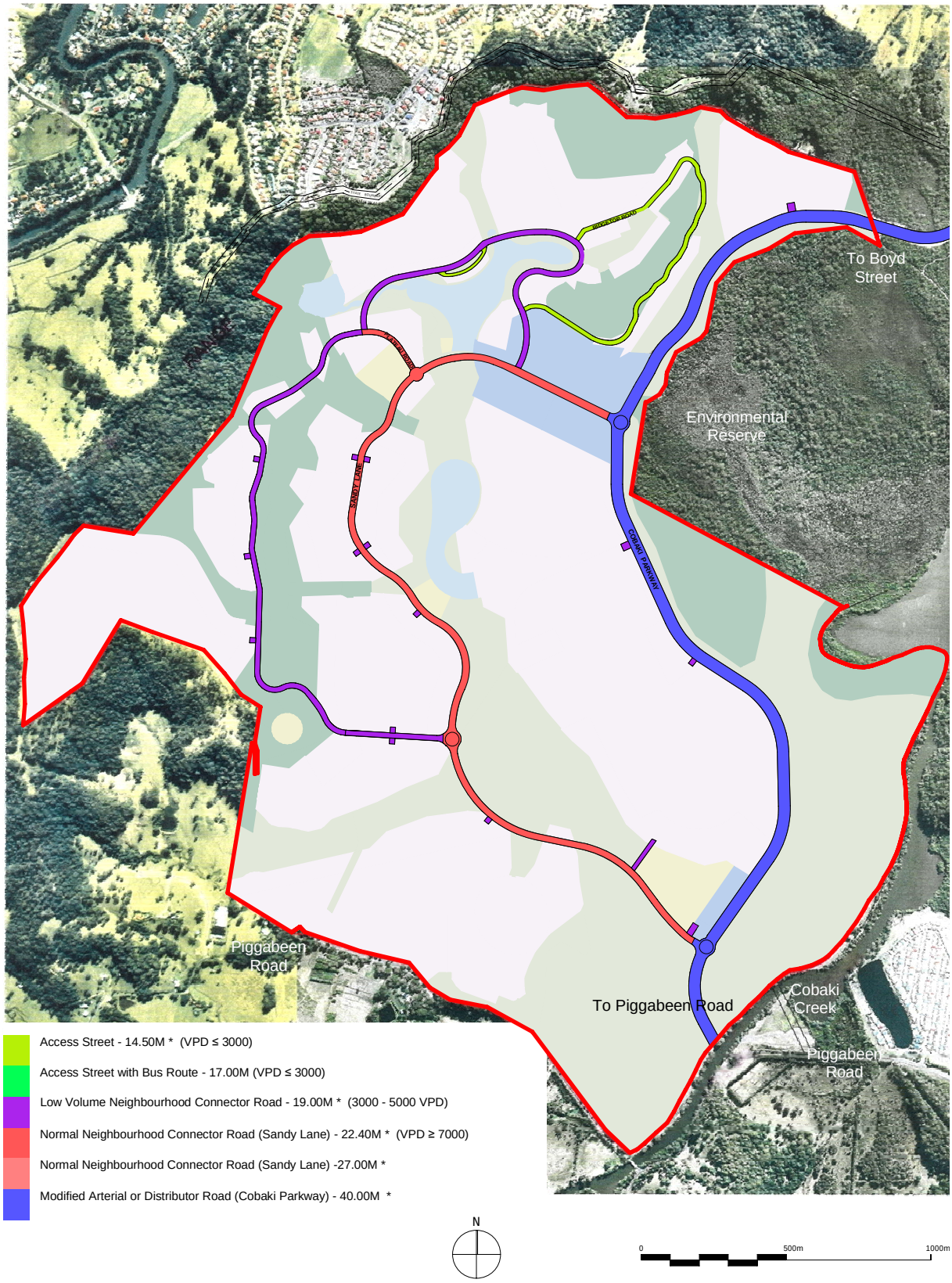

Figure 19 – Access Arrangements Concept

4.7 Water Management Concept

A Stormwater Concept Plan prepared by Gilbert + Sutherland is included at **Appendix E** and shown in **Figure 20** below. The stormwater concept is based on the principles of 'Water Sensitive Urban Design' and also includes an 'Integrated Water Cycle Management' concept.

The Stormwater concept includes a series of 4 different types of water 'treatment trains' that apply according to slope gradients and soil type. The stormwater management measures in the 'treatment trains' include the following:

- constructed wetlands;
- vegetated swales;
- bioretention trenches;
- gross pollutant traps;
- sedimentation basins at inlets to constructed wetlands
- infiltration systems;
- rainwater tanks;
- future compliance with BASIX;
- diffuse low-flow discharge and stormwater treatment;
- high flow bypass channels; and
- discharge of fully treated water to Cobaki Broadwater.

The 'Integrated Water Cycle Management' concept includes use of the following options:

- demand management with the use of water efficient appliances and devices;
- rainwater (roof runoff) collection and re-use (household or community scale);
- stormwater collection and reuse;
- aquifer storage and recovery;
- effluent recycling; and
- WSUD stormwater management measures.

The detailed design and construction of the stormwater management measures and IWCM measures will be the subject of future Project Applications to the Minister for Planning for the first stages including the lakes, and will be subject to future Development Applications to Tweed Shire Council for subsequent stages.

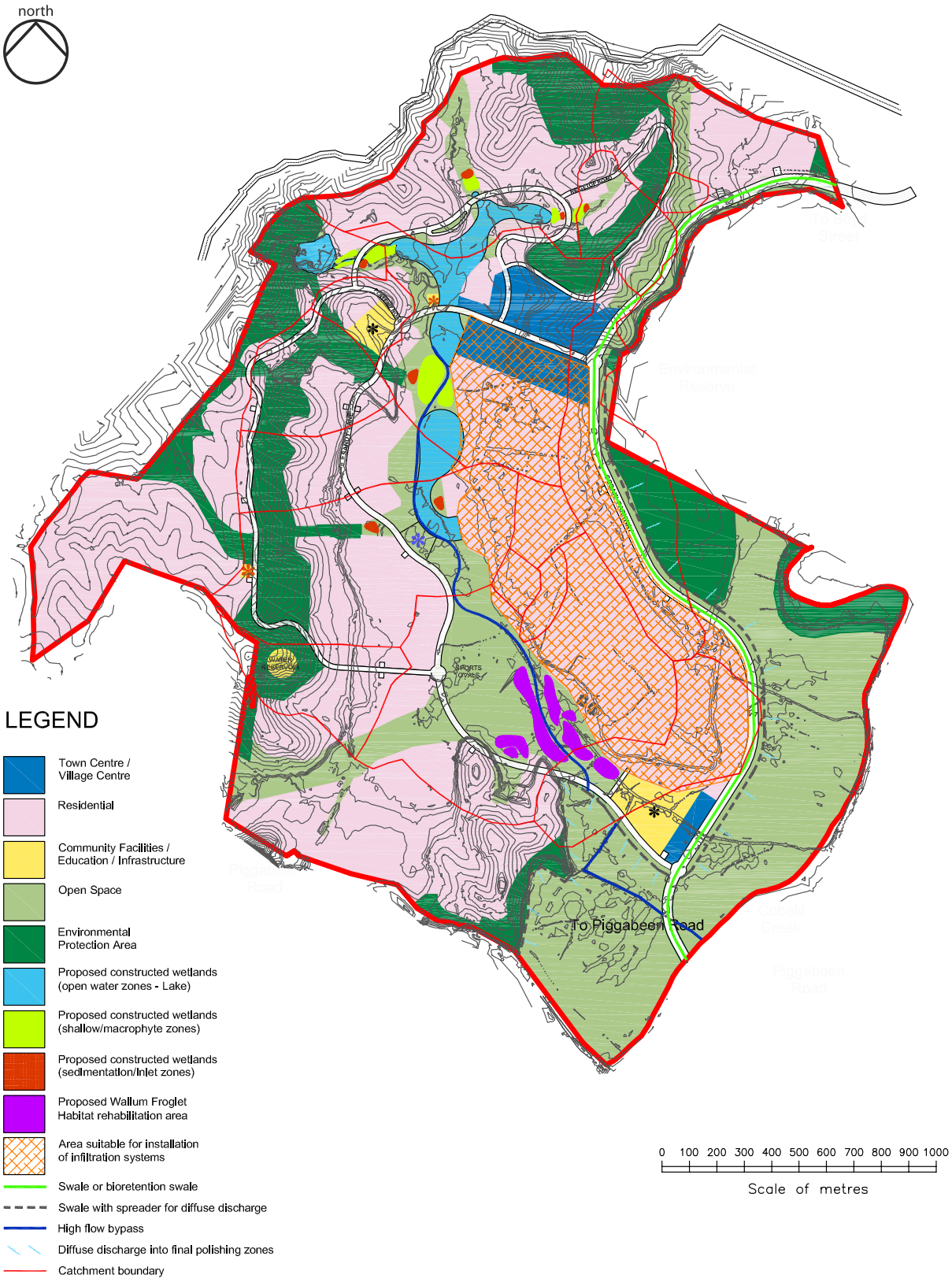

Figure 20 – Stormwater Management Concept

4.8 Utility Services Strategy

Brad Lees Consulting Civil Engineers and Development Consultants have provided the following statement on the utility services proposed for the Cobaki Lakes Estate.

> *"Based on information provided in Tweed Shire Council's, "Development Servicing Plan" and information provided by Country Energy and Telstra, all of these providers have planned for the expansion of their networks and associated infrastructure to cope with the future growth of the Cobaki Lakes development and surrounding area over the next 12 to 18 year period. There are no impediments from the utility infrastructure provision for the planned future population of 12,000 people in the Cobaki Lakes site.*
>
> *The Cobaki Lakes site has been identified for urban development since the late 1980's. The site has existing approvals for residential subdivision and bulk earthworks have been carried out on the urban footprint of the approved development. The development footprint now proposed will generally be exactly the same as that in which bulk earthworks has been carried out. Nevertheless the infrastructure requirements have been reassessed for this report. The relevant utility and service providers for this land are all cognisant of this urban release area and have planned for the expansion for their networks and associated infrastructure as development proceeds incrementally over a 12-18 year period for the Cobaki Lakes development."*

The staging of the provision of infrastructure is addressed further below in Section 4.9 of this report.

Water Supply Infrastructure

On 1st July 2005, Tweed Shire Council adopted a Development Servicing Plan (DSP) comprising a 30 year capital works program and a financial plan for all the water supply infrastructure to cope with the anticipated development in the Tweed Shire over this period. The Cobaki Lakes urban release area is a major component of this predicted future population and the bulk water supply and treatment facilities will be upgraded to cope with the future population growth including that from Cobaki Lakes. The DSP provides for the upgrading and new water infrastructure required for the future population in Cobaki Lakes. This includes increased dam storage capacity, pumping stations, treatment plant capacity, service reservoirs and trunk mains. The developer will negotiate with Tweed Shire Council regarding the application of Section 94 contributions for water infrastructure in accordance with Section 6.10 of this report. The developer has agreed to include the payment of these contributions in the Draft Statement of Commitments.

The Tweed Shire Council have nominated the water supply connection point for Cobaki Lakes at the intersection of Kennedy Drive and Gollan Drive. A new trunk main will need to be constructed to Cobaki Lakes with a booster pump station and a service reservoir within the Cobaki Lakes development. The location of this infrastructure has been planned and designs prepared for its construction.

In summary, the water supply infrastructure needed for future population within the Cobaki Lake development has been comprehensively planned and there is no impediment to the approval of an urban population of 12,000 people in the Cobaki Lakes site over a 12-18 year development period.

The location of the water reservoir is shown in **Figure 24** further below. This water reservoir is remote from any of the proposed development areas and will not be constructed in the initial stage of the development. The height of the reservoir will be below the tree level of the surrounding ridgeline. It is anticipated the water storage reservoir will be required when 1000 dwellings have been occupied.

Sewerage Infrastructure

On 1st July 2005, Tweed Shire Council adopted a Development Servicing Plan (DSP) with a 30 year capital works program and financial plan for all the sewerage infrastructure required to cope with all the additional wastewater from future population increases over this period. This increase in population, as well as from other areas of the Shire, has been comprehensively planned for in the DSP. The sewerage from Cobaki Lakes will be pumped to the Tweed Shire Council Wastewater Treatment Plant at Banora Point.

Tweed Shire Council have nominated a rising main connection point to the Councils existing sewerage pumping station at Gollan Drive. A new regional sewerage pumping system will be required on the southern side of Cobaki Creek. A common rising main will be constructed along Sandy Lane and the Cobaki Parkway with gravity main systems from the development areas within the site to a number of pump stations pumping into this common rising main system.

The existing treatment plant at Banora Point has been planned to be upgraded as development occurs in the Tweed heads catchments. This includes development of Cobaki Lakes. The developer will negotiate with Tweed Shire Council the application of Section 64 developer contributions for sewer infrastructure in accordance with Section 6.10 of this report. The developer has agreed to include the payment of these contributions in the Statement of Commitments as part of the Concept Plan.

In summary, the sewerage infrastructure needed to service the future population in the Cobaki Lakes site has been planned for and included in the Tweed Shire Councils Development Servicing Plan. There is no impediment to the future population of 1200 people being provided with sewerage reticulation and treatment capacity in the Tweed Shire Councils sewerage system.

The location of the major pump station (sewerage) is shown in **Figure 26** further below. A number of sewerage pump stations will be required for the various precincts, however these will be much smaller than the main sewerage pump station. There will be no impacts on residential development from the location of the major sewerage pump station as the closest residential area is more than 300 metres away from this major infrastructure.

Electricity Supply

Country Energy has advised that it planned for a long term future peak load of 150-200 Mega-Watts in the Tweed Region. The future development of the Cobaki Lakes site will require 25-30 Mega-Watts to service approximately 5,500 dwellings. The electricity network associated infrastructure will be progressively upgraded as population growth and energy demands increase over time in the Tweed Region. This population growth and electricity demand includes that from the Cobaki Lakes development based on 5,500 dwellings with supporting retail and commercial facilities.

The main power lines in the locality have been relocated to minimise impacts on the urban development footprint and a site has been planned for a new substation to service the Cobaki Lakes development. In summary, there is planning in place to progressively upgrade the electricity network and associated infrastructure for the Tweed region including that from demands created by the development of Cobaki Lakes for 5,500 dwellings. There are no constraints to the proposed development of Cobaki Lakes from electricity supply and infrastructure.

The location of the major electricity subsation is shown in **Figure 26** further below. There will be small electricity substations scattered throughout the development but the main power substation will be external to the site. There will be no impacts on residential development from the location of the main electricity substation as the closest residential area is more than 300 metres away from this major infrastructure.

Telecommunications Infrastructure

Currently there is not sufficient telecommunications to meet the future demands from the development of Cobaki Lakes, however Telstra has advised that it will progressively rollout upgrades in telecommunications infrastructure as growth occurs in the Tweed. There are existing development approvals in place for Cobaki Lakes for a similar population to that being proposed in the Concept Plan. The location of the Cobaki Lakes development is adjacent to the NSW and Queensland State border. There is a major existing infrastructure within 4km of Cobaki Lakes i.e. The Gold Coast Airport and the John Flynn Hospital. It is likely that the Cobaki Lakes development will be seen as an extension of South East Queensland development in relation to telecommunications infrastructure.

The technology and telecommunication services provided in Cobaki Lakes will be determined progressively depending upon Telstra policy changes, innovations and further negotiations based on a commercial agreement with the developer of Cobaki Lakes. There is existing telecommunications infrastructure and a significant population base in close proximity to Cobaki Lakes which will ensure that changes in technology and the relevant infrastructure will be provided progressively in the future. There is no impediment to the future development of Cobaki Lakes with regard to telecommunications infrastructure, and planning is in place to service future population of Cobaki Lakes.

4.9 Indicative Staging of Development

The Cobaki Lakes development will be delivered over seven major release areas as illustrated in **Figure 21**. Each release area is further divided into a series of precincts, as shown in **Figure 22**. While residential sales are significantly affected by the property cycle, it is expected that residential sales will initially be achieved at an average rate of 300 per year growing to 400 per year as the project matures. On this basis completion would take approximately 15 years.

Development will commence in Release Area A, at the northern end of the site, for the following reasons:

- Its range of topography will complement the delivery of different residential product types, important to reaching as wide a market as possible in the early stages. The attraction of a range of market segments will underpin the beginning of a diverse community.
- The area is near to the Town Centre zone, a State school site and a proposed Tweed Shire Council community centre site. These facilities will enable the area to develop self-sufficiency.
- Given that major access infrastructure has to be provided from the Gold Coast to the north, and major sewer and water infrastructure has to be constructed in Tweed shire to the south, no particular part of Cobaki Lakes offers advantage as a first stage of development from a servicing standpoint.

It is envisaged that the build-out and marketing of residential product in Release Area A will be substantially progressed before commencement in Release Area B, and so on for the subsequent areas (C, D, E. F and G). Construction of Release Area A is planned to commence in 2009 with the first dwellings to be available by the middle of the year.

The roll-out will be broadly as follows with sequencing entirely dependent on market conditions:

- **Release Area A** involves the development of the northern lake-side precinct and includes the establishment of the main entry road from the Gold Coast, including construction of the signalised intersection at Boyd Street and the Gold Coast Highway and the extension of Boyd Street to the NSW border. Key elements to be commenced with Release Area A include establishment of the proposed Town Centre and a mix of medium and low density housing. Land for community and education facilities has been identified, with development of these facilities to be undertaken progressively. Development of higher density living will occur as the amenities within Cobaki Lakes are delivered.
- **Release Area B** involves the medium density residential precinct at the eastern entry of the site.
- **Release Area C** comprises the further development of the Town Centre and surrounding mixed uses, and the development of a mix of low and medium density housing at the north end of the sand ridge extending southward along the length of Cobaki Parkway, with the central parkland area to its west. Retirement living is likely to be an additional component of the product mix here. Planned also in Release Area C is medium density residential development along and below the ridge to the north of the Town Centre.
- **Release Area D** comprises mixed residential development in the central and southern parts of the sand ridge and includes a State primary school site, neighbourhood shopping and other amenities at the southern intersection of Cobaki Parkway and Sandy Lane.
- **Release Area E** consists of mixed residential development of the land to the west of the central parkland area. A site for the first State primary school is provided at its northern end, close to Release Area A and the Town Centre.
- **Release Area F** consists of mixed residential development of the land in the south.
- **Release Area G** will comprise mixed residential development of the plateau area to the west.

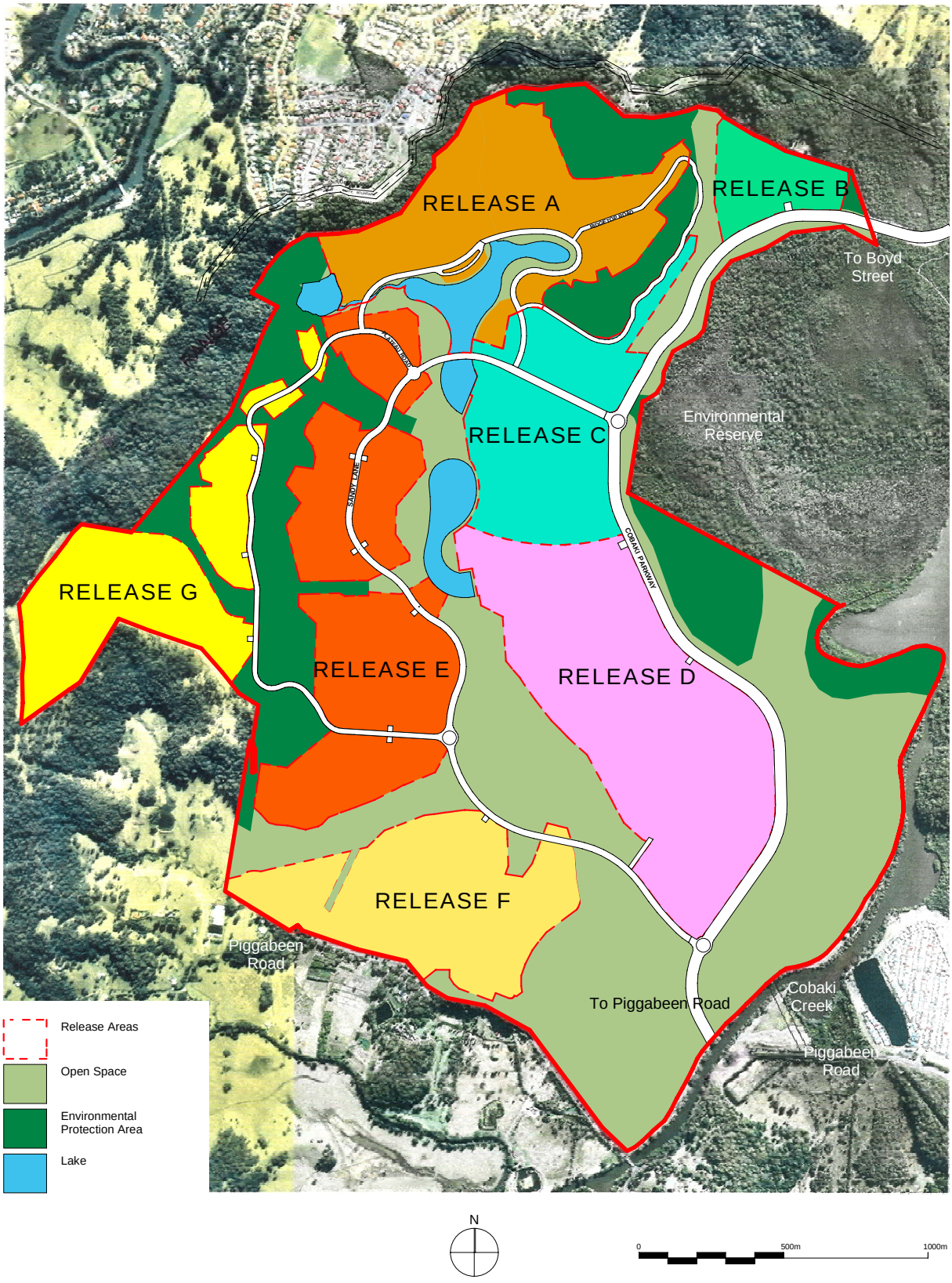

Figure 21 – Release Areas

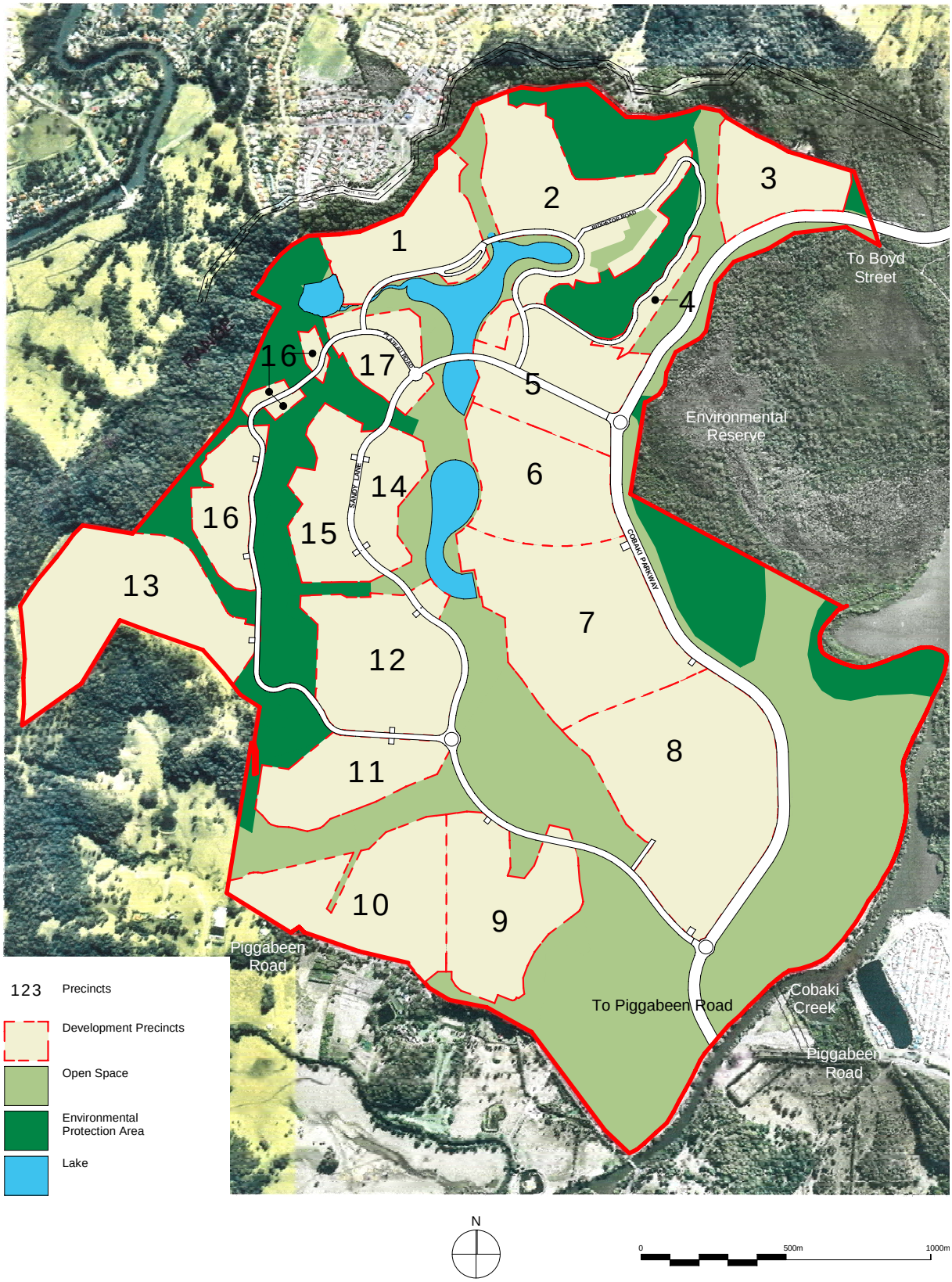

Figure 22 – Precinct Plan

4.9.1 Staging of Infrastructure

Water

The water supply infrastructure will be constructed initially as shown on **Figure 23**. This water infrastructure will be sufficient for Release Areas A & B. A water reservoir will be required for further release areas which will entail a main extension up Sandy Lane to the reservoir site between precincts 12 and 13. The layout of the water infrastructure for release areas C D E F & G is shown on **Figure 24**. The external main supply has been designed for the ultimate demand from the Cobaki development and will not need to be augmented.

Sewer

The development will be serviced with different timings for major infrastructure. The initial sewerage infrastructure will be sufficient for half of the total development providing peak flows can be achieved at a maximum of 5 x ADWF through reduced infiltration sewer design and construction. The location of the initial trunk mains are shown on **Figure 25**. This rising main will have sufficient capacity for release areas ABCD. When development occurs in the remaining release areas E F & G a further rising main will be required as shown on **Figure 26** and the external rising main will need to be duplicated. At or near that time (approx 8-10 years) a larger main may be installed to cater for both the release areas E F & G as well as the Bilambil Heights development.

Electricity

A major electricity supply will be constructed along Cobaki Parkway. Country Energy has advised they are negotiating a major linkage between the SEQEB substation in the Tugun Desalinisation Plant and the new substation on the north eastern corner of the Piggabeen Road and Cobaki Parkway shown on **Figures 25 and 26**. A smaller substation will be situated within the town centre site and substations will be scattered throughout each release area when detailed subdivision design plans are prepared and submitted for the release areas.

Roads

The road access to the site will initially be along Boyd Street from the QLD border in Tugun to the town centre. Cobaki Parkway will be constructed down to the intersection of Sandy Lane at the town centre. Sandy Lane will be constructed from there up to the intersection of Plateau Road. These roads will service release areas A B and C and the northern parcel of E. The Cobaki Parkway and Sandy Lane will be extended towards Piggabeen Road as development occurs in release areas E and D. Plateau Road will be constructed down to Sandy Lane and Sandy Lane extended to Cobaki Parkway for release areas F and G. The extension of Cobaki Parkway into Piggabeen Road will be constructed in the final stages of the development. Leda Manorstead Pty Ltd will dedicate the whole of the Cobaki Parkway road reserve with the approval of release areas A & B. The timing of construction of the Cobaki Creek Bridge and the Cobaki Parkway by Tweed Shire Council may occur earlier depending on other developments within the Shire. This means that Tweed Shire Council will be able itself to progress Cobaki Parkway depending upon other traffic needs and the amount of development which occurs over the next 10 years particularly in the Bilambil Heights area.

Figure 23 – Initial Water Network

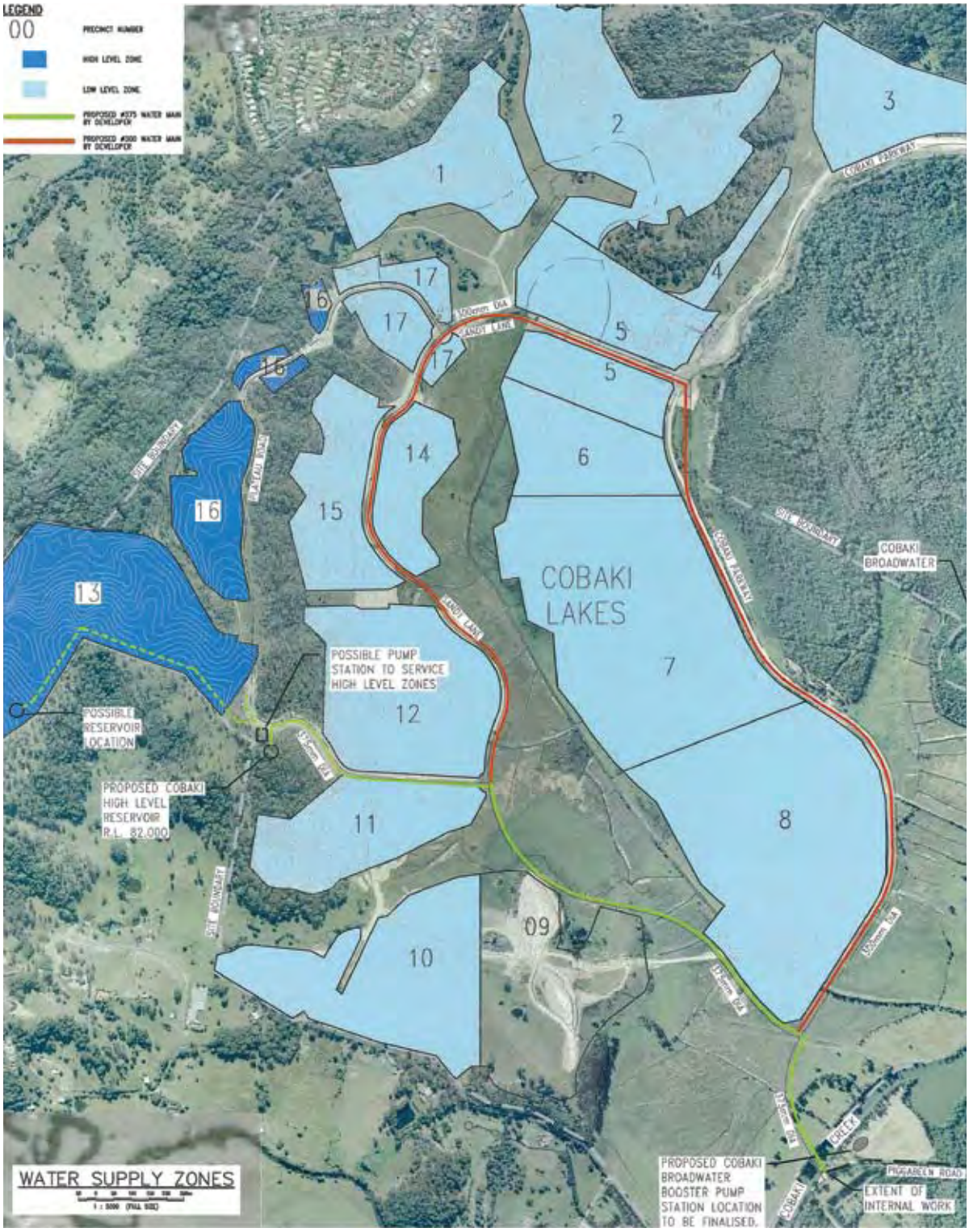

Figure 24 – Final Water Network

Figure 25 – Initial Sewer Network and Main Electricity Substation

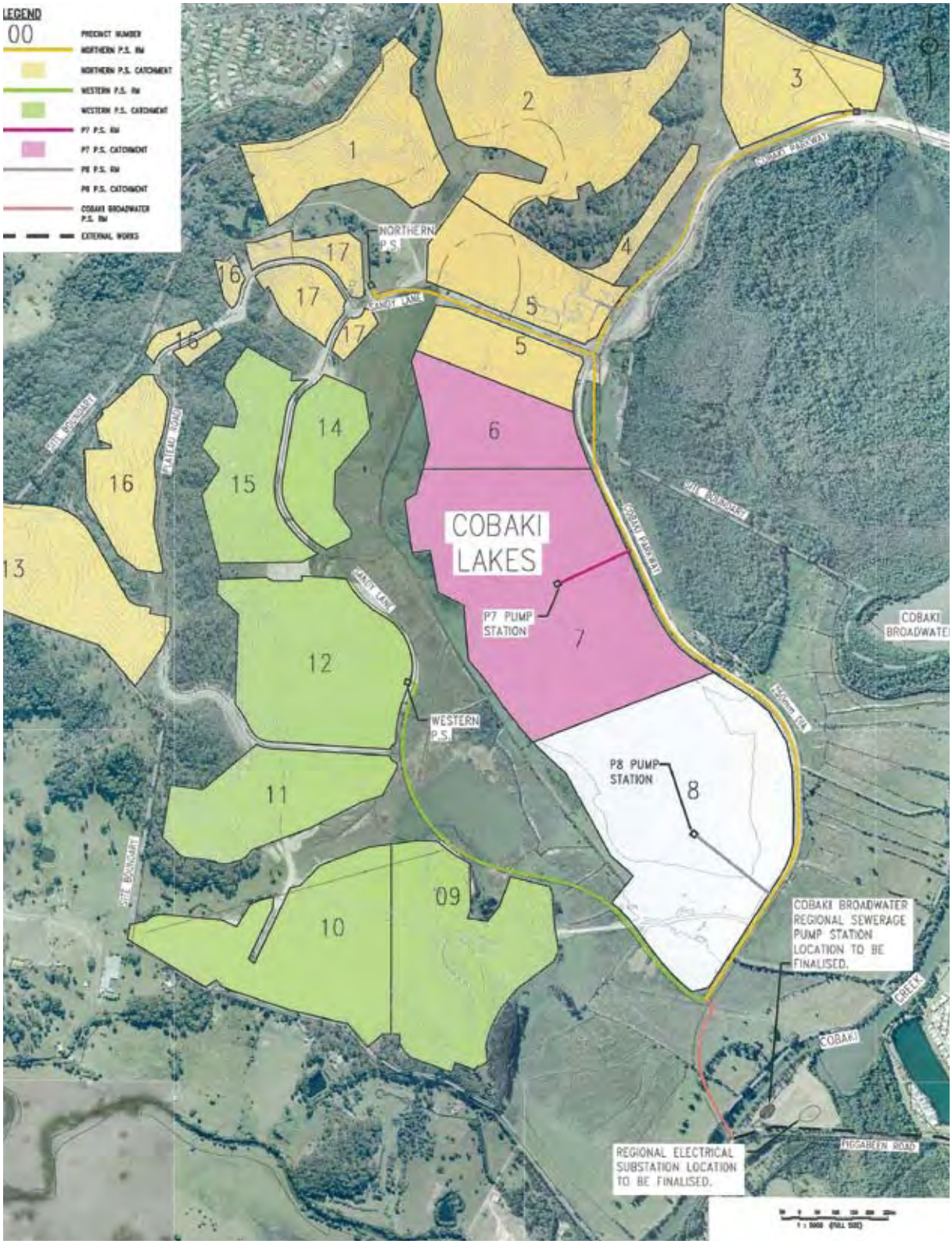

Figure 26 – Final Sewer Network and Main Electricity Substation

4.10 Future Stage Applications for Development Approval

The subdivision, rehabilitation and construction of the central open space area shown hatched in **Figure 27** is proposed to be the subject of a future Part 3A Project Application for the approval by the Minister for Planning.

The subdivision, detailed design, and construction of development on all other areas shown unhatched in **Figure 27** including the residential neighbourhoods, town centre, and community and educational facilities are proposed to be the subject of future Development Applications for the consent of Tweed Shire Council under Part 4 of the EP&A Act.

The detailed design and construction of lower density forms of housing are proposed to be subject to complying development certification and exempt development provisions under Part 4 of the EP & A Act.

4.11 Design Guidelines and Codes for Subdivision and Housing

Design guidelines and codes for subdivision and housing are proposed to be prepared and incorporated into the Concept Plan at a later stage. This will be achieved via either an amendment to the Concept Plan Application, or a modification to the Concept Plan Approval. The guidelines and codes will include documentation on the following:

- Subdivision Guidelines for Residential Neighbourhoods – visual landscape, orientation of streets and lots, open space and landscaping, access, water management, utility services, ecological and rural buffers, bushfire protection, geotechnical conditions and earthworks, acid sulphate soils, heritage conservation.
- Housing Design Guidelines for Residential Neighbourhoods – building heights, setbacks and siting, internal amenity, streetscape, private open space and landscaping, access and car parking, fencing, water management, utility services, earthworks, visual and acoustic privacy, safety and security, site facilities, sustainable design, construction management.
- Housing – Exempt and Complying Development Code in which dwellings and associated structures can be constructed without approval or with certification.
- Town Centre Design Guidelines – land uses, building heights, building setbacks and forms, street frontage and pedestrian amenity, access and car parking, public domain, signage, water management, waste management, sustainability.

Indicative examples of housing and land product types

Indicative examples of housing and land product types proposed for Cobaki Lakes are included at **Appendix F**.

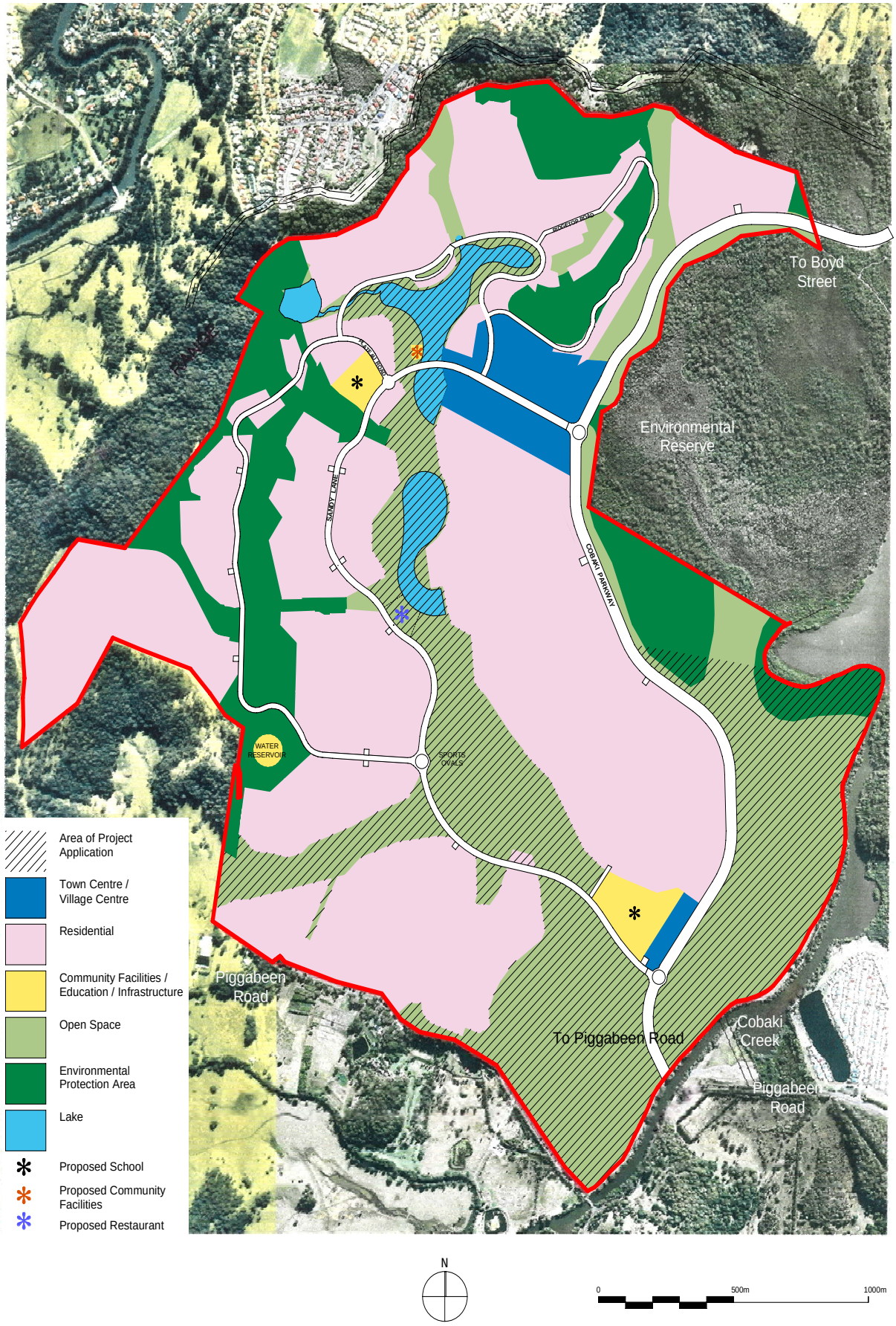

Figure 27 – Future Application Stages

5.0 Consultation

In accordance with the requirements of the Environmental Assessment Requirements issued by the Director General for this proposal, consultation must be undertaken with relevant public authorities and the broader community.

This section of the report summarises the consultation undertaken by the proponent during preparation of the proposal. It also sets out proposed further consultation with the community and interest groups during the public exhibition of the Concept Plan.

5.1 Previous Consultation

Cobaki Lakes was recognised as a potential urban release area in the late 1980's. In the ensuing 20 year period, various proposals for rezoning and development have been subjected to considerable review, public scrutiny and comment.

The proposed Concept Plan accords with the established zonings, except for the proposed minor refinements to zone boundaries, as described in Section 3.4.2. Access to the site and the general road layout remains unchanged and accord with exhibited Tweed Shire Council planning proposals. Moreover, the population which the Concept Plan anticipates is of the order that has been projected by Tweed Shire Council for many years.

5.2 Public Authorities and Agencies

The following public authorities have been consulted by the proponent in relation to the Concept Plan:

- Tweed Shire Council;
- Department of Environment and Climate Change – Northern Region;
- Roads and Traffic Authority;
- Department of Water and Energy; and
- NSW Rural Fire Service;
- Department of Education & Training; and
- Gold Coast Airport Pty Ltd;
- Country Energy;
- Telstra.

Table 10 summarises the key issues from the consultation.

In addition, the following agencies and authorities have been consulted:

- Local Aboriginal Land Council and relevant local aboriginal organisations; and
- Utility and Infrastructure Providers.

The consultation comments with these agencies/ authorities are included within Sections 6.9 and 4.13 respectively.

Table 11 – Key Issues from Authority Consultation

Issues / Discussion	Proponent's comment / response
Tweed Shire Council	
Access via Cobaki Parkway to South	Tweed Shire Council to allow unrestricted access subject to dedication of road reserve for Cobaki Parkway in conjunction with registration of first subdivision, and to LEDA seeking to indemnify Tweed Shire Council from any obligations connected with Boyd Street (Queensland) upgrade in terms of the existing Deed of Agreement.
Cobaki Parkway design specifications	Specifications adopted in design.
Internal road specifications	Roads to be designed to Council standards.
Proposed changes to the zoning plan	Tweed Shire Council agreement in principle obtained.
Urban design, housing choice & complying development	Proponent will prepare site specific development controls including complying development controls for dwellings. This matter forms part of the draft Statement of Commitments.
Proposed parkland/ lakes development, stormwater management, environmental remediation and mosquito control measures associated with central open space area and Cobaki Creek zone	Tweed Shire Council agreement in principle obtained with endorsement of proposed mosquito control measures.
Identification of a site at Cobaki Lakes for a Tweed Shire Council community facility serving the broader locality	Location of site agreed with Tweed Shire Council and site provided in the Concept Plan.
Proportional split in provision of active and passive public open space	Concept Plan incorporates active and passive open space in accordance with Tweed Shire Council standards.
Sewer and water strategy	Essential elements of strategy settled providing for sewerage to be conveyed to Gollan Drive pump state and provision of 3000L rainwater tank to each lot for roof areas in excess of 160m^2.
Department of Environment and Climate Change	
Proposed parkland/ lakes development, stormwater management, environmental remediation and mosquito control measures associated with central open space area and Cobaki Creek zone	DECC support in principle obtained.
Proposed changes to zoning plan - areas 16	DECC support in principle obtained.
Roads and Traffic Authority	
Traffic report and planned road network submitted	No issues raised now the Tugun Bypass is in operation. Noted access and internal major road network remain unchanged from arrangements provided for in current development consents.
Department of Water and Energy	
Stormwater Concept Plan and Flood Report	The stormwater Concept Plan and the Flooding Report has been sent to DWE for comment
NSW Rural Fire Service	
Application of Planning for Bushfire Regulations	Required asset protection zones, fire trails and other measures to be adopted in the urban design of the Concept Plan
Department of Education and Training	
Provision of public schools	Two sites for public schools are provided in the Concept Plan in accordance with departmental requirements.

Issues / Discussion	Proponent's comment / response
NSW Department of Health	
Mosquitoes on the site	NSW Department of Health expects future development to incorporate management outcomes that are acceptable to the Community and mitigate any increase in mosquito-bourne disease to a minimum. Control of mosquitoes is the paramount objective of the proponent.
Department of Primary Industries	
Fisheries management	The proponent has consulted with the DPI- Fisheries Management at Wollongbar who advised that they will comment after lodgement of the Part 3A Application during the exhibition and notification period.
Gold Coast Airport Pty Ltd	
Airport Lighting Zone	Gold Coast Airport confirmed that the development site is outside of the Airport Lighting Zone and ANEF Zones.
Country Energy	
Provision of Power	Planning is in place to progressively upgrade the network and associated infrastructure to service the future population of Cobaki Lakes.
Telstra	
Provision of telecommunications and broadband	There is sufficient capacity in the existing network to upgrade infrastructure to service the future growth of Cobaki Lakes.

5.3 Proposed Community Consultation

The proponent, LEDA Manorstead Pty Ltd, will co-ordinate with the Department of Planning to implement a program of public engagement to coincide with the commencement of the exhibition of the Concept Plan and EAR. The consultation is proposed to consist of the following elements:

- The exhibition of the Concept Plan and EAR will, as a minimum, be announced through successive advertisements in the local press (Tweed Daily News and Tweed Sun); and TSC's journal – Tweed Link.
- The announcements will provide information about the proposal and the exhibition, as well as details of the DoP website, and invite comment and questions.
- Respondents will be able to contact LEDA Manorstead Pty Ltd either by mail, email or an 1800 Freecall number and these details will be provided.
- LEDA Manorstead Pty Ltd will, to the full extent practical, respond within 5 working days to all calls, emails or letters and, and meet with interested parties should this be required.
- LEDA Manorstead Pty Ltd will also write to, amongst others, the following local interest groups and organisations, providing the same information as above and inviting a response:
  - ratepayer associations;
  - resident associations/ action groups;
  - Chambers of Commerce;
  - sporting clubs;
  - environmental groups; and
  - property owners and/or residents within the area surrounding Cobaki Lakes.
- LEDA Manorstead Pty Ltd will arrange a media conference to which local print, radio and television media will be invited, and will respond to any media enquiries.
- LEDA Manorstead Pty Ltd will use an independent consultant to collate and record all enquiries and report LEDA's response to them. A report on the above consultation will be provided to the Department of Planning.

6.0 Environmental Assessment

This section of the report provides an assessment of the environmental planning issues associated with the proposed Concept Plan in accordance with the Director-General's Environmental Assessment Requirements (DGRs).

The draft Statement of Commitments included in Section 7 of this report complements the findings of this section.

6.1 Director General's Environmental Assessment Requirements

The following table shows where the DGRs are addressed in this Environmental Assessment Report.

Table 12 – Director General's Environmental Assessment Requirements

Director General's requirements		Location in Report
General Requirements		
1.	Executive summary	Exec. Summary
2.	Outline of scope of the project	Sections 4 and 6
3.	Site analysis and description of existing environment	Sections 2 and 6
4.	Consideration of relevant statutory/ non-statutory provisions	Section 3
5.	Consideration of impacts on matters of national environmental significance	Sections 3 & 6.4
6.	Assessment of potential impacts	Section 6
	Draft statement of commitments	Section 7
7.	Plans and documents	Section 4 & Appendices
8.	Statement of validity	Statement of Validity
9.	Assessment of the key issues and table outlining how these are addressed	Section 6
Key issues		
1	Structure Plan	
1.1	Structure Plan	Section 4
a	Site context, topography, opportunities and constraints	Section 2
b	Identification of more intensive land uses on the site	Sections 3.4 & 4
c	Consideration of provision of employment land	Section 4
d	Identification of inconsistencies with key planning controls	Section 3.4
e	Consideration of Far North Coast Regional Strategy	Section 3
1.2	Integration of land uses	Section 4
1.3	Land use conflict assessment	Section 6.11
1.4	Consistency with State, Regional and Local guidelines and controls	Section 3
2	Visual Impact	
2.1	Visual impact of the proposal	Section 6.2 & Appendix G
3	**Traffic Management and Access**	
3.1	Prepare a Traffic Concept Plan	Section 6.3 & Appendix H
4	Flora and Fauna	
4.1	Impact of development on native Flora and Fauna	Section 6.4 & Appendix I
4.2	Description of proposed treatment	Appendix I (Management Plans)

Director General's requirements		Location in Report
4.3	Impact of native vegetation	Section 6.4.1
4.4	Maintenance of Public Open Space	Section 4.5
4.5	Assessment against SEPP 14	Section 6.4.5
4.6	Biting Midge and Mosquito Control	Section 6.4.8 & Appendix J
5	**Water Management**	
5.1	Requirements of relevant flooding data	Section 6.5 & Appendix E
5.3	Impact of climate change and sea level rise	Section 6.5 & Appendix E
5.4	Impacts on hydrology, hydrogeology & groundwater	Section 6.6 & Appendix K
5.5	Assessment against the framework for coastal lake sustainability	Appendix K
5.6	Drainage and stormwater concept	Section 6.5 & Appendix E
6	Contamination and Acid Sulphate Soils	
6.1	Assessment of contamination and acid sulphate soils	Section 6.6
7	Noise Impacts	
7.1	Assessment of noise impact	Section 6.7
7.2	Consideration of Aircraft Noise Impact	Section 6.7
8	**Bushfire Risk**	
8.1	Demonstration of compliance with Planning for Bushfire Protection	Section 6.8
9	Heritage	
9.1	Aboriginal cultural heritage significance	Section 6.9.2
9.2	European heritage significance	Section 6.9.1
10	Utilities Infrastructure	
10.1	Utility and Infrastructure report	Section 4.12
a	Existing and future utility and infrastructure servicing the site	
b	New utility and services for the site	
c	Augmentation works	
11	Future Demographics	Section 6.10
11.1	Future demographics report	Section 6.10 & Appendix Q
12	Planning Agreements and / or Developer Contributions	Section 6.10
13	Development Staging	Section 4.14
14	Off-site Impacts	Section 6.11
Consultation		
	Agencies or other authorities	Section 5
	Public	Section 5

6.2 Visual Impact

Existing Environment

The Cobaki Lakes site is situated within the visual landscape setting of the vegetated mountains and hills of the McPherson Ranges rising to the west and the lower flat coastal plain and Cobaki Broadwater wetlands to the east. The visual landscape of the site is characterised as a topographical amphitheatre comprising a low and level central plain surrounded by the steep rising hillsides on the northern, western and southern sides of the site, and the Cobaki Creek and Broadwater on the eastern edge.

The northern and western slopes of the amphitheatre are covered with remnant bushland comprising tall open eucalypt forest primarily on the mid-slope with thinned and cleared areas on the ridge top. The lower slopes and central low level plain are largely cleared of vegetation. The eastern edge of the site on the Cobaki Creek and Broadwater is characterised by native vegetation including littoral rainforest, mangrove forest and wetlands.

Views of the Cobaki site from the surrounding land is screened by the topography and vegetation around the site on all sides other than distant views from higher elevations on land over 3km to the south east at Terranora Heights and south of Bilambil Heights, and distant views of the ridge tops on the site from high rise buildings and headlands at higher elevations over 3km away to the east on the coast.

Views from the west and north are screened by the ridge along the western and northern parts of the site, and views from the east are screened by the forest on the Cobaki Broadwater.

The main characteristics of the visual landscape are shown in **Figure 28** below.

Figure 28 – Visual Landscape Attributes on the Site

Potential Impacts

A View Analysis prepared by Design Forum Architects is included at **Appendix G**.

Impacts on views from surrounding land

Views of the site from surrounding land are currently limited to distant views at higher elevations from the following areas:

- distant views from over 3km to the south east at Terranora Heights and south of Bilambil Heights; and
- more distant views of the ridge top on the site from high rise buildings and headlands to the east on the coast.

Views from all other surrounding land will not be impacted by the proposed development in the Concept Plan for Cobaki Lakes as the site is screened from view by the topography and vegetation around the site.

Impact on views from Terranora Heights and Bilambil Heights

The impact on views from the south east at Terranora Heights and Bilambil Heights will show the development of a new residential suburb including neighborhood centre, schools, open space and the retention and embellishment of the key attributes of the natural visual landscape. This includes the retention of the topographical amphitheatre and remnant band of bushland along the western and northern slopes of the site, the Cobaki Broadwater forest and wetland vegetation on the eastern part of the site, and the creation of a freshwater wetland/ open space/lakes system through the centre of the site. Given the distance of these views from Terranora Heights and Bilambil Heights within the broader visual setting of the McPherson Ranges, the residential scale of development, and the retention of the key attributes of the visual landscape on the site, the impact on these views is relatively moderate and reasonable. The residential scale of development will fit into the landscape, and is generally consistent with the existing zoning of the site.

The impact on views from the residential areas in the distance to the south is shown in the photomontages in **Figure 29**.

Impacts on views from the coast

The impact on distant views from higher elevations on the coast is limited to the dwelling houses proposed on the ridge top across the western and northern parts of the site. Given the distance of these views, the broader visual setting with the backdrop of the McPherson Ranges, and the low density form of housing proposed on the ridge top amongst woodland, the impact on these views from higher elevations on the coast is relatively minor and reasonable.

Impact on views from within the site

The Concept Plan seeks to retain the following key visual landscape elements in views from future development on the site:

- Views from the western and northern slopes and ridges on the site to the freshwater lakes, open space and wetlands proposed through the centre of the site, the Cobaki Broadwater forest and wetlands, and to the coast further to the east of the site; and
- Views from the central, northern, eastern and southern parts of the site across the topographical amphitheatre and remnant band of bushland (eucalypt forest) along the western and northern slopes of the site, and across the central open space in the concept plan as shown in the photomontages in the View Analysis at **Appendix G**.

Figure 29a – Detailed Map of Individual Photo Locations on Strott Street

Figure 29b – Overall Map of Panoramic Photo Locations (Composed of Combined Photos above)

Figure 29c – Panoramic View of Cobaki from Strott Street

Figure 29d – Panoramic View of Cobaki from Strott Street showing Potential Development Envelopes

Figure 29e – Detailed Map of Photo Location on Karingal Avenue

Figure 29f – Overall Map of Panoramic Photo Location on Karingal Avenue

Figure 29g – Panoramic View of Cobaki from Karingal Avenue

Figure 29h – Panoramic View of Cobaki from Karingal Avenue showing Potential Development Envelopes

Management

The future development proposed in the Concept Plan including subdivision and housing will be subject to detailed Design Guidelines and Codes to apply to future Development Applications and Complying Development Certificates.

Design Guidelines will seek to maintain the key attributes of the visual landscape on the site and include provisions for the following:

- Guidelines to minimise visual impacts of ridge top housing around the western and northern perimeter of the site; and
- Guidelines to retain view corridors from within the site including:
  - from the ridge top and slopes on the western and northern sides of the site across the lakes/open space/freshwater wetland proposed through the centre of the site, the Cobaki Broadwater forest and wetlands, and the coast to the east; and
  - from the northern, central, eastern, and southern parts of the site across the topographical amphitheatre and remnant band of bushland along the western and northern slopes of the site.

Conclusion

The proposed Concept Plan for Cobaki Lakes retains and embellishes the key attributes of the natural landscape on the site including the topographical amphitheatre, remnant band of eucalypt forest, Cobaki Broadwater forest and wetland vegetation, and proposed new lakes/ open space/wetland system.

Views from most areas surrounding the site will not be impacted by development proposed in the Concept Plan for Cobaki Lakes as the site is screened from view by the topography and vegetation surrounding the site.

Views of the site from surrounding areas are limited to distant views from higher elevations at Terranora Heights, south of Bilambil Heights and on the coast. The impact on views from these areas is relatively moderate given the distant views, wider landscape setting of the McPherson Ranges, retention of key landscape attributes in the Concept Plan, and residential scale of development fitting into the landscape.

The visual impact of development proposed in the Concept Plan is largely consistent with development allowed under the current zoning in the Tweed LEP.

Design Guidelines will be prepared to maintain the key attributes of the visual landscape on the site that must be considered in any future Development Application for the detailed design of subdivisions and buildings for each precinct. This is included in the Draft Statement of Commitments in Section 7 of this report.

6.2.1 Gold Coast Airport Lighting Zone Map and Commonwealth Airports (Protection of Airspace) Regulations

Existing Environment

Gold Coast Airport is located over 1km to the east of the Cobaki Lakes site. The direction of the runway and aircraft movements at the airport is in a northerly and southerly direction. Aircraft do not fly over the site to use the airport runway in either landing approaches or take-off departures.

Potential Impacts

Lighting and reflection

The Gold Coast Airport has advised the applicant that the Cobaki Lakes site is outside the Airport Lighting Zone Map. Therefore lighting from development proposed in the Concept Plan will not impact upon the operational airspace for the Gold Coast Airport.

Building Heights

The maximum height of buildings in the Cobaki Lakes Concept Plan is 3 storeys above ground level which is well below the upper ridge lines and tree levels on and around the site which are being retained. Given the relatively low building heights and the location of the site over 1km directly to the west of the north-south runway at the airport, outside the Masterplan 2006 Prescribed Airspace 2858 OLS the building heights proposed in the Concept Plan will not impact upon the operational airspace for the Gold Coast Airport.

Conclusion

The Concept Plan will not impact upon the operational airspace for the Gold Coast Airport.

6.3 Traffic Management and Access

An Access and Traffic Management Report prepared by Cardno Eppell Olsen is included at **Appendix H**.

Existing Environment

The Cobaki Lakes Estate has road access to the northeast and southeast as follows:

- Boyd Street to the northeast which links indirectly with the Gold Coast Highway in QLD (via Coolangatta Road – a service road running parallel to the Highway); and
- Piggabeen Road to the southeast which links with Kennedy Drive and then the Pacific Highway (Tugun Baypass) in NSW.

The main road network is shown in **Figure 30** below.

Existing traffic studies and road development strategies referred to in the report by Cardno Eppell Olsen at **Appendix H** include the following recommended improvements to the road network around the Cobaki Lakes Estate site in order to accommodate increased traffic growth in the area:

- *Gold Coast Highway and Boyd Street Intersection:* The indirect road access currently operating between Boyd Street, Coolangatta Road and the Gold Coast Highway is operating at or near practical capacity limits during peak hours. The Queensland Department of Main Roads is currently rationalising the number of intersections in this locality and a new direct intersection between Boyd Street and the Gold Coast Highway is to be constructed.
- *Pacific Motorway (Tugan Bypass) and Cobaki Interchange:* The Tugun Bypass section of the Pacific Motorway is operational and runs to the east of the site. It is a 4 lane bypass, with provision to expand to six lanes in parts in 2021. The Tweed Shire Council, Gold Coast City Council and the relevant State road authorities have agreed to review sub-arterial and collector road connections with the Tugun Bypass including an interchange at Boyd Street (Cobaki Interchange) to the immediate northeast of the site.
- *Cobaki Creek Bridge:* A new bridge across Cobaki Creek is proposed to link Piggabeen Road to the southeast of the site directly with the subarterial Cobaki Parkway running through the site.
- *Kennedy Drive:* Widening of the western section of Kennedy Drive to 4 lanes.

Figure 30 – Wider Road Network Surrounding the Site

Potential Impacts and Management (External)

The Concept Plan includes Cobaki Parkway as the main road through the site linking Boyd Street to the northeast and Piggabeen Road to the southeast. Cardno Eppell Olsen's traffic report finds that traffic growth in the area and from the proposed development in the Concept Plan will give rise to impacts upon the following roads:

- Boyd Street and Gold Coast Highway connections;
- Tugun Bypass; and
- Kennedy Drive.

Gold Coast Highway and Boyd Street Intersection

A new direct signalised intersection between Boyd Street and the Gold Coast Highway, and a widening of Boyd Street from two lanes to four lanes are needed to increase road capacity and accommodate traffic growth in the area including traffic generated from residential development proposed on the Cobaki Lakes Estate.

These road works are embodied in Deeds of Agreement between the proponent, Queensland Department of Main Roads (DMR) and Gold Coast City Council (GCCC) which include staging as initial, interim, and ultimate intersection layouts.

Pacific Motorway (Tugun Bypass) and Cobaki Interchange

The Tugun Bypass has been built as a 4 lane road, with capacity to increase to 6 lanes. A daily traffic volume of 60,000 vpd has been adopted as an appropriate trigger for upgrading of the bypass north of Boyd Street from 4 to 6 lanes.

Cardno Eppell Olsen consider that the construction of the Cobaki interchange with traffic flows from the Tweed including the Cobaki Lakes development will result in the need to upgrade the bypass north of Boyd Street approximately 3-4 years before the envisaged date of 2021.

Kennedy Drive

Kennedy Drive currently provides the main interchange access to the Pacific Highway Motorway for traffic in southwest Tweed. The proposed development in the Concept Plan will generate approximately 2,600 vpd using Piggabeen Road and Kennedy Drive.

The construction of the Cobaki Lakes Estate and Cobaki Creek Bridge will connect Kennedy Drive and Piggabeen Road with the Cobaki Parkway running through the site, and effectively produce a net reduction in traffic volumes on Kennedy Drive.

Potential Impacts and Management (Internal)

The proposed development in the Concept Plan raises issues associated with traffic impacts inside the Cobaki Lakes Estate. These issues include traffic congestion, safety, and potential conflicts between vehicles and pedestrians. These traffic issues are to be managed by the following measures:

Road hierarchy

The Concept Plan includes a hierarchy of roads comprising pedestrian/bicycle paths, local access roads, collector roads and subarterial distributor road. These roads essentially comprise a hierarchy of traffic flows, road widths and design treatments which provide for efficient and safe traffic flows, and an appropriate level of environmental amenity according to the type of road in the hierarchy.

Access to town centre and community land uses

The proposed town and community education centres are located in the Concept Plan at key nodal points addressing the collector road of Sandy Lane. The town centres address Sandy Lane at its intersection with the sub-arterial Cobaki Parkway.

The location of these town and community centres on the main collector road provides for efficient traffic management at Cobaki Lakes. The detailed design of access arrangements for properties is to be included in Design Guidelines and future Development Applications for Cobaki Lakes, and will include controlled access along the main collector and subarterial roads.

Road and intersection design standards

The Design Guidelines to be prepared for Cobaki Lakes are to include provisions to ensure future Development Applications for the detailed design and construction of roads and intersections are to be in accordance with the AUSTROADS Guide to Traffic Engineering Practice which provide for safe and efficient road design.

At this time it is envisaged that conventional intersection treatments will be used including roundabouts at key intersections with higher traffic volumes, and unsignalised priority intersections at lower volume intersections.

Car parking and loading / servicing facilities

The Design Guidelines and Codes to be prepared for Cobaki Lakes are to include provisions to ensure that future Development Applications provide for off-street car parking and loading/servicing facilities consistent with the Tweed DCP. Provisions for off-street parking and servicing assist in managing traffic on the road network.

Pedestrian and bicycle paths

Pedestrian and bicycle paths are included in the Concept Plan throughout the Cobaki Lakes Estate. These paths will assist in providing a good level of accessibility, choice in modes of travel, and reduce travel demand by car on the roads at Cobaki.

Public transport

The Concept Plan accommodates bus routes along Cobaki Parkway and Sandy Lane. The bus routes will assist in providing a good level of accessibility, choice in modes of travel, and potentially reduce travel demand by car at Cobaki.

Conclusion

The Concept Plan includes an internal access network and hierarchy comprisinng pedestrian/ bicycle paths, local roads, collector roads and sub arterial road. It proposes to connect the Cobaki Parkway subarterial through the site with:

- Boyd Street to the north giving access to the Gold Coast Highway and possible future Pacific Motorway interchange; and
- Piggabeen Road via a new bridge over Cobaki Creek to the south giving access to Kennedy Drive and the Pacific Highway.

The traffic generated by the proposed development in the Concept Plan can be accommodated with acceptable performance on the external road network subject to the construction of the following road improvements:

- new intersection between Boyd Street and Gold Coast Highway;
- widening of Boyd Street to 4 lanes when a specific threshold of traffic volumes is reached; and
- new Cobaki Creek Bridge to Pigabben Road at a time to be agreed with Tweed Shire Council.

These external road works are all subject to Deeds between the applicant and relevant roads authorities.

The internal road and traffic network includes the following measures that provide for safe and efficient traffic management:

- internal access road hierarchy;
- location of town and community centres on collector road;
- road and intersection design standards of the AUSTROADS Guide;
- off-street parking and servicing requirements;
- pedestrian and bicycle paths; and
- bus routes.

These internal and external traffic management measures are included in the Draft Statement of Commitments in Section 7 of this report.