Source: AUSPACIFIC Engineers Pty Ltd 04 - 1600 November 2006

ERM

0 100m
Approximate Only

Figure 4.4 **Bulk Earth Works Plan**

The Glades Estate, Coffs Harbour

Proposed cut and fill works will avoid environmentally sensitive areas, including potential acid sulfate soils in the lower parts of the site and will negate the need for extensive use of retaining walls. The proposed earthworks will assist in stormwater drainage efficiency and avoid the need to import fill material from elsewhere, thereby avoiding unecessary impacts associated with additional truck movements, greenhouse emissions and use of fossil fuels. Earthworks will be carried out under the control of a suitably qualified geotechnical engineer and certified to Level 1 construction monitoring and testing as defined in *AS3798-1996 – Guidelines for Earthworks for Commercial and Residential Developments*.

4.5 HYDROLOGY AND WATER MANAGEMENT

4.5.1 Stormwater

Gilbert and Sutherland Pty Ltd have prepared a Stormwater Assessment and Stormwater Management Plan for the proposed residential development at Moonee. This assessment is provided in *Volume 3* with the key findings and recommendations summarised in this section.

It should be noted that runoff from the site is to be discharged towards Moonee Creek, which eventually discharges into the Pacific Ocean approximately two kilometres downstream of the site.

The Catchment Hydrology Model for Urban Stormwater Improvement Conceptualisation (MUSIC) Version 3.01 (April 2005) computer model was used to assess surface water quality. The MUSIC computer model is specifically designed for the analysis of the effects of planned land use changes and for the evaluation of best management practice stormwater quality improvement devices. The MUSIC model was used to form a basic model for the stormwater treatment system simulating the existing environment (base case) for comparison with models representing the anticipated environment subsequent to the change in land use (developed case after completion of the construction phase).

The scenarios modelled were as follows:

- base case;
- developed case WITHOUT treatment measures; and
- developed case WITH treatment measures.

The base case was modelled as a rural land use, as this most accurately represents the current use of the site. The developed case was modelled as primarily urban land use, with park areas being modelled as rural land use.

Table 4.1 shows the average annual runoff volumes and quantities of suspended sediment, nitrogen and phosphorous predicted to be exported from the proposed development site in its undeveloped state during the 10 year model simulation.

Table 4.1 Base Case Average Annual Loads

Runoff (ML/Year)	Suspended Sediment (ML/Year)	Total Nitrogen (kg/Year	Total Phosphorous (kg/Year)
361.8	77 919	653.9	80.10

The same areas were modelled under the same rainfall conditions in a developed state to allow comparison with the base case. The results are shown in *Table 4.2*. *Table 4.2* demonstrates the changes in runoff and pollutant loads that are likely to occur if the development was completed without any stormwater management or treatment measures.

Table 4.2 Developed Untreated Case Average Annual Loads

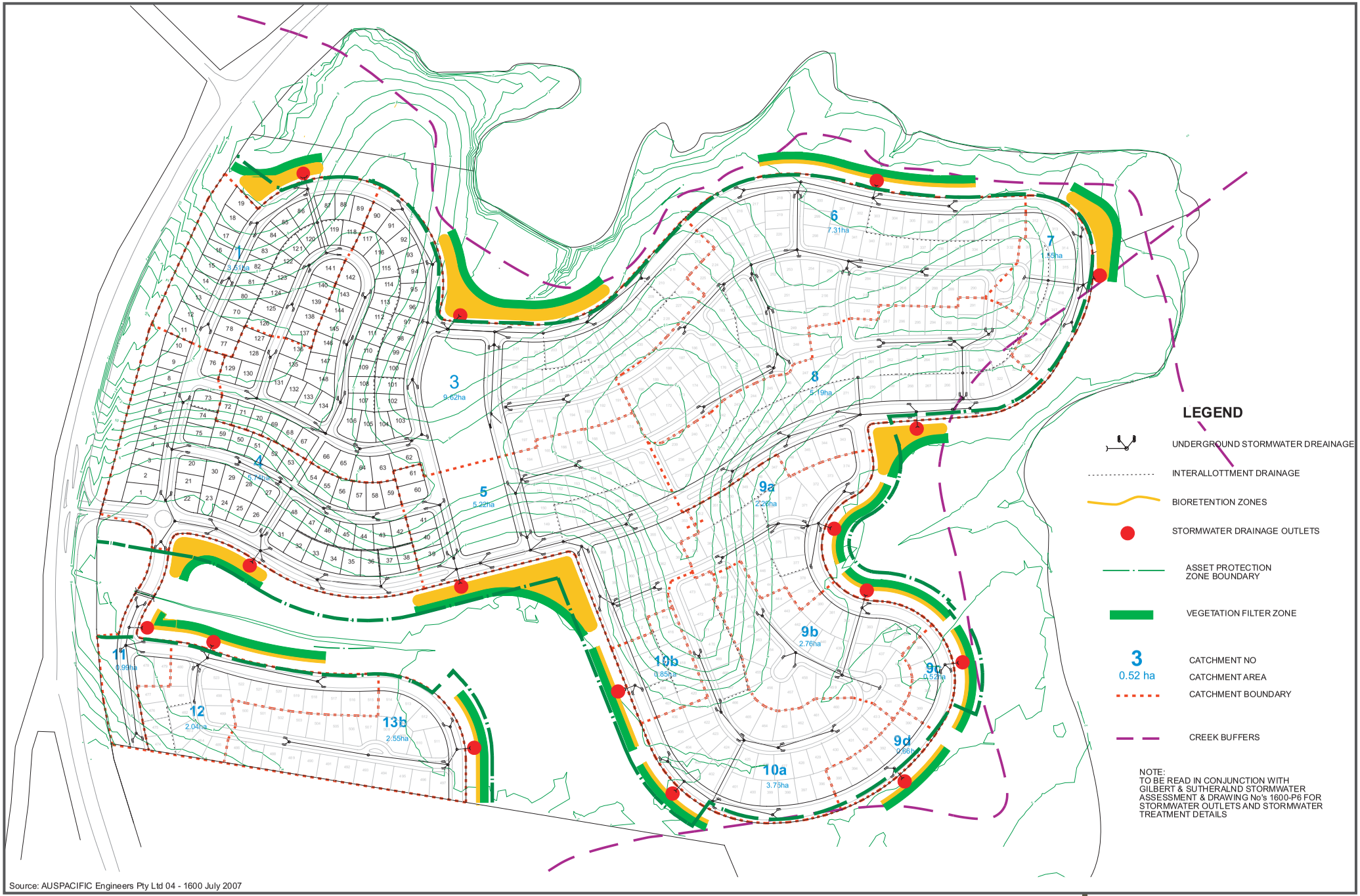
Runoff (ML/Year)	Suspended Sediment (ML/Year)	Total Nitrogen (kg/Year	Total Phosphorous (kg/Year)
125.4	77 445	850.9	156.45
Change from base case			
17.6%	-0.6%	30.1%	95.3%

The following stormwater treatment devices will be implemented to ensure pollutants leaving the site are minimised:

- runoff from all catchments would be directed through bioretention swales / basins that have been designed to treat flows up to and including those with a three month Average Recurrence Interval (ARI). These swales would be designed to overflow along their full length; and
- flows up to and greater than three months ARI will overtop the bioretention swales and pass through vegetated filter zones prior to being released into natural drainage lines.

The locations of proposed permanent stormwater treatment devices are shown *Figure 4.5* and a detailed description of proposed treatment devices is provided in the Stormwater Assessment report included in *Volume 3*.

The same areas as above were modelled under the same rainfall conditions in a developed state with the proposed water quality treatment measures included. Modelling results are shown in *Table 4.3* along with expected changes from the base case.



Source: AUSPACIFIC Engineers Pty Ltd 04 - 1600 July 2007

ERM

0 100m

Approximate Only

Figure 4.5 **Stormwater Drainage and Catchment Plan**

The Glades Estate, Coffs Harbour

Table 4.3 Developed Treated Case Average Annual Loads

Runoff (ML/Year)	Suspended Sediment (ML/Year)	Total Nitrogen (kg/Year	Total Phosphorous (kg/Year)
372.6	9292	461.3	37.26
Change from Developed Untreated Case			
12.4%	88.0%	45.8%	76.2%
Change from Base Case			
3.0%	-88.1%	-29.5%	-53.5%

The results of the developed treated scenario indicate that all pollutant parameters would be reduced to levels below that expected from the base case (undeveloped) scenario. Proposed stormwater treatment measures will be supplemented by the installation of rainwater tanks installed to meet the requirements of BASIX. The modelling results presented above are therefore conservative.

4.5.2 Hydrology

A Hydraulic Assessment was prepared by Cardno Lawson Treloar Pty Ltd, specialist hydrologic and hydraulic consultants, to assess flooding associated with the proposed residential subdivision. The Hydraulic Assessment report is provided in *Volume 3*. The report presents the details of the hydraulic modelling of the existing and developed site including proposed road crossings and outlines the impacts of the development on flooding in the area. A summary of the key findings and recommendations is provided in this section.

There are two high points within the site, the first adjacent to the Pacific Highway and the second in the centre of the site. The ground falls in all directions from these high points towards Skinners Creek, Moonee Creek and the drainage path in the southern part of the site. Existing ground levels range between 2mAHD and 16mAHD.

Several flood studies have been carried out in the area around the site. The most recent was the *Moonee Creek Flood Study* prepared for CHCC by Paterson Consultants in June 1998. A MIKE11 model of Moonee Creek and its tributaries was established to determine peak water surface levels throughout the catchment. The MIKE11 model was calibrated to recorded flood levels in Moonee Creek and several of its tributaries from a storm event in November 1996. It was found that the model was generally predicting within 0.1 metres of the recorded flood levels, and was therefore considered to be acceptable.

The MIKE 11 model constructed by Paterson Consultants was updated and additional cross sections added to more accurately model the proposed development. Figure 2 of the Hydraulic Assessment report shows the modelled cross sections and MIKE 11 branch names in the vicinity of the site.

Downstream boundary conditions in the model were updated from the previous modelling based on the procedure outlined in the Department of Infrastructure, Planning and Natural Resources (DIPNR) *Floodplain Management Guideline No. 5 – Ocean Boundary Conditions* (2004). This guideline recommends that the 1% AEP flood event is modelled by considering an envelope of the 1% AEP flood event flows with a normal tidal cycle and a high tide with a smaller flood event. This method will identify areas where flooding will occur primarily from backwater from elevated ocean levels.

Three simulations were considered to form the envelope curve for the 1% AEP event, namely:

- 1% AEP flood event flows with normal tides (0.6mAHD)
- 5% AEP flood event flows with 5% AEP tide (2.3mAHD)
- 20% AEP flood event flows with 1% AEP tide (2.6mAHD)

Although greenhouse effects on ocean water levels are predicted to be in the range of a 0.03 to 0.25m rise by the year 2040, no specific allowance has been included in the tide levels outlined above. As outlined in *Guideline No. 5 – Ocean Boundary Conditions* this is because elevated ocean levels recommended in the Guideline are already conservative and a freeboard of up to 0.5m is generally applied to flood level estimates.

The Hydraulic Assessment found that based on the results of the MIKE11 modelling, the proposed development will have no adverse impacts on flooding of adjacent properties, nor any detrimental impacts on the culvert or bridge structures under the Pacific Highway.

Areas of localised filling are required on the eastern and southern sides of the development. These are in areas classified as Medium Flood Risk and will not lead to any significant impacts on existing flood levels.

To avoid adverse impacts on flood levels at the Pacific Highway, the proposed Road 4 crossing on the southern drainage path (refer to Figure 2 of the Hydraulic Assessment report) will be comprised of four 1050mm diameter culverts or equivalent.

4.6 UTILITIES AND INFRASTRUCTURE

4.6.1 Sewerage

An appropriate sewerage servicing strategy for the site has been discussed with Council's engineers and a preliminary design of a conventional gravity sewer has been prepared. However, the system requires the construction of four pump stations and a significant amount of deep gravity sewer approaching four to five metres in some areas. A major pump station for the

523 lots proposed would pump sewage to the north-western corner of the site and then via a tunnel bore under the existing highway to the Bucca Road treatment works.

Council's sewerage treatment works for this catchment is approximately 600 metres west along Bucca Road from the Pacific Highway intersection, opposite the north-west corner of the site.

The proposed gravity system presents a range of environmental and economic issues including:

- infiltration of deep sewers in water charged ground;
- excavation of deep sewers in potential acid sulphate soils;
- maintenance of deep sewers in the allotments and road reserves;
- maintenance of four pump stations and the potential of overflow into the surrounding water courses and creeks; and
- construction costs, potential delays incurred by wet weather and the ongoing maintenance costs.

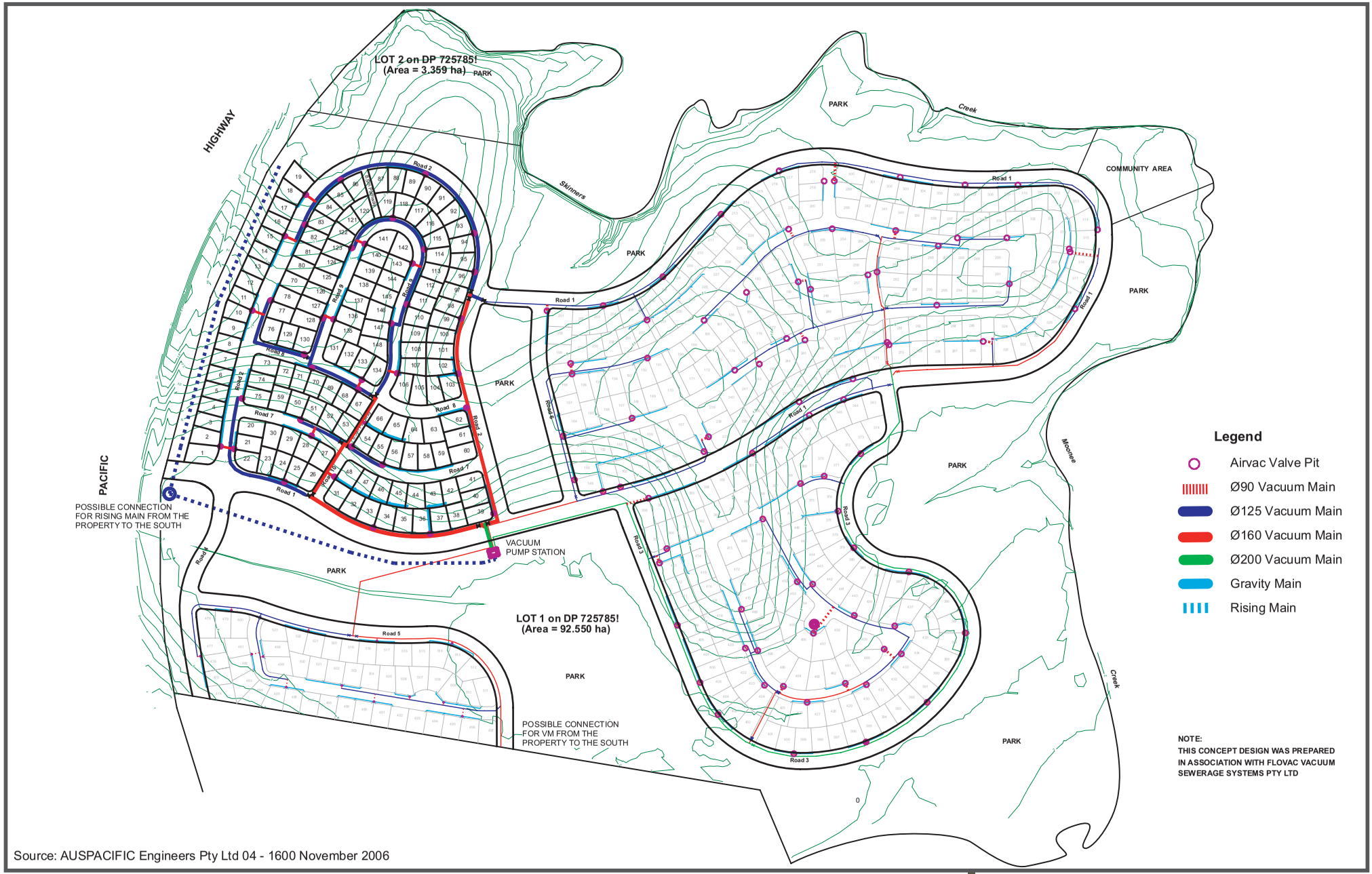
In light of the above, an alternative design for a vacuum sewer scheme has been devised by Airvac-RSM Pty Ltd, an international vacuum sewer company. Airvac has made submissions to Council and conducted inspections with Council's technical officers at sites with existing vacuum sewers. Council is generally supportive of the proposal. The proposed vacuum sewer scheme will require the construction of an above-ground vacuum pump station. Any disturbance of potential Acid Sulphate Soils will therefore be minimised. A copy of the proposed vacuum sewerage scheme is provided at *Figure 4.6.*

4.6.2 Water

Discussions have been held with Council regarding the provision of water reticulation for domestic and fire fighting purposes. A link water main will ultimately connect the development to the existing main in Moonee Beach Road and provide a suitable loop for the system. This work will be constructed with the future collector road connection. The water reticulation concept plan is shown at *Figure 4.7.*

4.6.3 Electricity

The distribution of electricity in the Coffs Harbour area is under the control of Country Energy. Country Energy has advised that electricity is available from the existing overhead supply along the Pacific Highway frontage. The development proposes an underground supply throughout the residential estate. Electrical engineers will be engaged to design underground electrical



Source: AUSPACIFIC Engineers Pty Ltd 04 - 1600 November 2006

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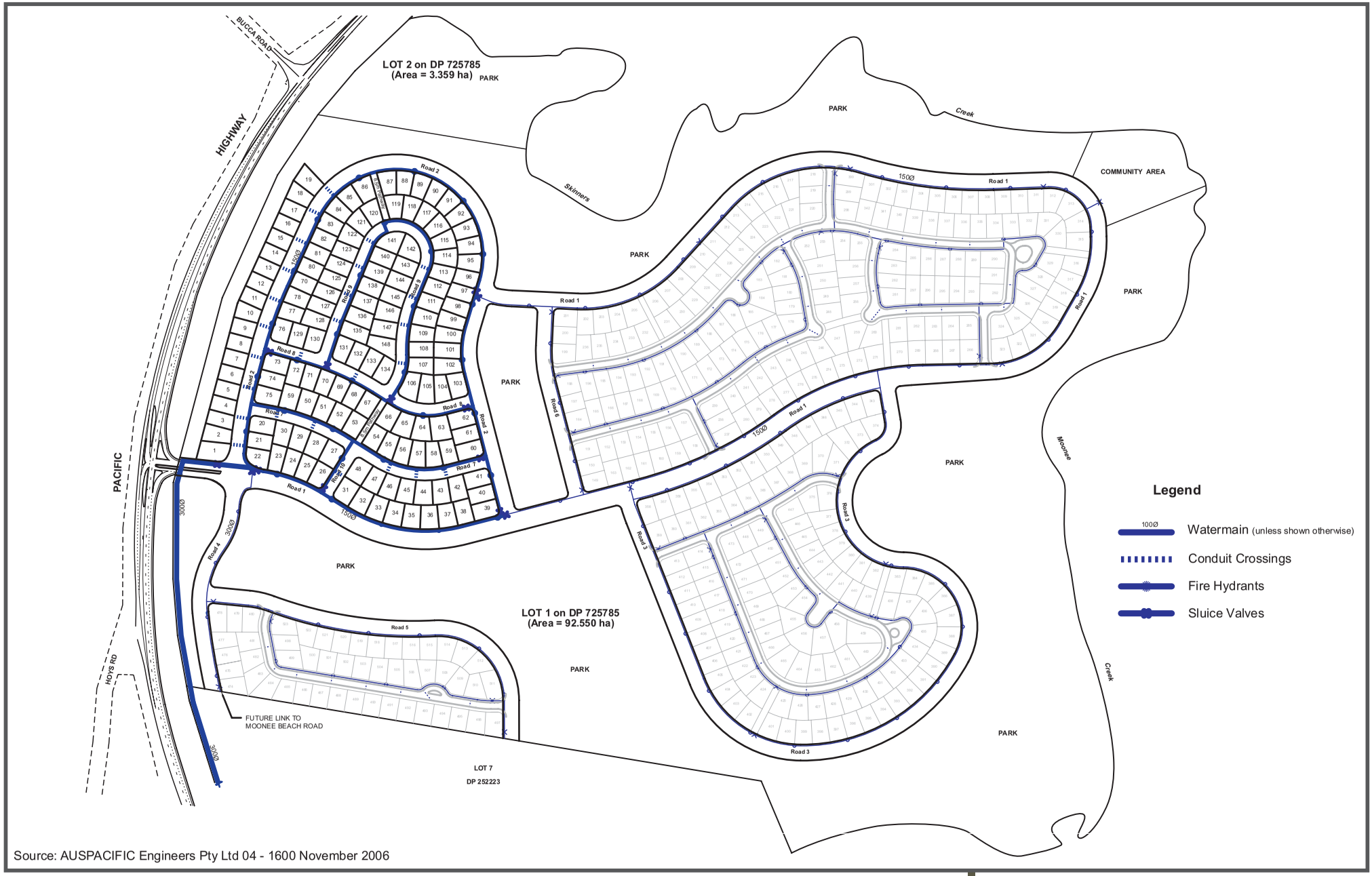
Figure 4.6

Vacuum Sewerage Reticulation Concept Plan

The Glades Estate, Coffs Harbour



Source: AUSPACIFIC Engineers Pty Ltd 04 - 1600 November 2006

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Figure 4.7 **Water Reticulation Concept Plan**

The Glades Estate, Coffs Harbour

services. Country Energy has recently completed an upgrade to 66kv of the overhead power along the Pacific Highway frontage. The new poles are located clear of the proposed highway access and on the new highway alignment.

4.6.4 Waste Disposal

Coffs Harbour City Council has confirmed that further residential development at Moonee Beach could be supported with the extension of the existing contracted waste removal / recycling services.

Coffs Harbour City Council, Bellingen and Nambucca Shire Councils and Handybin Waste Services have formed a regional partnership known as Coffs Coast Waste Services (CCWS) for the collection of household waste. Handybin Waste Services provides a three-bin kerbside waste collection service for organics, recyclables and mixed waste for homes across the region covered by the three councils. The company also provides kitchen tidy bins for organic waste.

Green waste / foodscraps are collected on a weekly basis and are processed through a Biomass Facility located at the Coffs Coast Resource Recovery facility. Mixed waste is collected on a fortnightly basis and is also processed at the Biomass Facility, where it is treated and refined in a separate process to recover glass, metals, plastics and organic pulp and fibre for beneficial reuse. Recyclables are collected on a fortnightly basis and taken to a Materials Recovery Facility, located alongside the biomass facility at the Coffs Coast Resource Recovery facility. Here, recyclable goods and materials are sorted into a form suitable for transport to reprocessing facilities.

4.6.5 Natural Gas and Telecommunications

Reticulated gas is not available in the Moonee Beach area, however, Liquefied Petroleum Gas (LPG) is readily available from a number of major suppliers who have large-scale, on-site storage facilities in the Coffs Harbour area.

An extensive fibre optic cable network and advanced switching technology is provided in the area. Telstra and Optus currently provide Broadband Internet access and mobile phone network coverage in the Moonee Beach area.

4.7 TRAFFIC AND ACCESS

4.7.1 Coffs Harbour Pacific Highway Planning Strategy

The NSW Roads and Traffic Authority (RTA) is currently investigating an upgrade of the Pacific Highway between Sapphire and Woolgoolga. The project is jointly funded by the NSW and Federal Governments.

The preferred option for the Coffs Harbour Highway Planning Strategy was announced in December 2004. The Coffs Harbour Highway Planning Strategy includes a northern section (the Sapphire to Woolgoolga upgrade) and the southern section (Coffs Harbour Highway Planning).

The application for the upgrade of the Pacific Highway from Sapphire to Woolgoolga was lodged with the Department of Planning under the provisions of 75E of Part 3A of the *Environmental Planning and Assessment Act 1979* (EP & A Act). The project application is currently under assessment by the Department of Planning (title No 06_0293).

4.7.2 Road Network Capacity

It is proposed to provide arterial road links to and from the Pacific Highway in the location where the RTA has previously approved the construction of an intersection to service the ten lot community title subdivision Council approved in 1994. It has been designed to comply with Council's road hierarchy standards and all the requirements of the RTA. The streets include collector roads to and from the Highway, with local links throughout. Links are also provided to development to the south to disperse traffic flows and reduce any potential congestion.

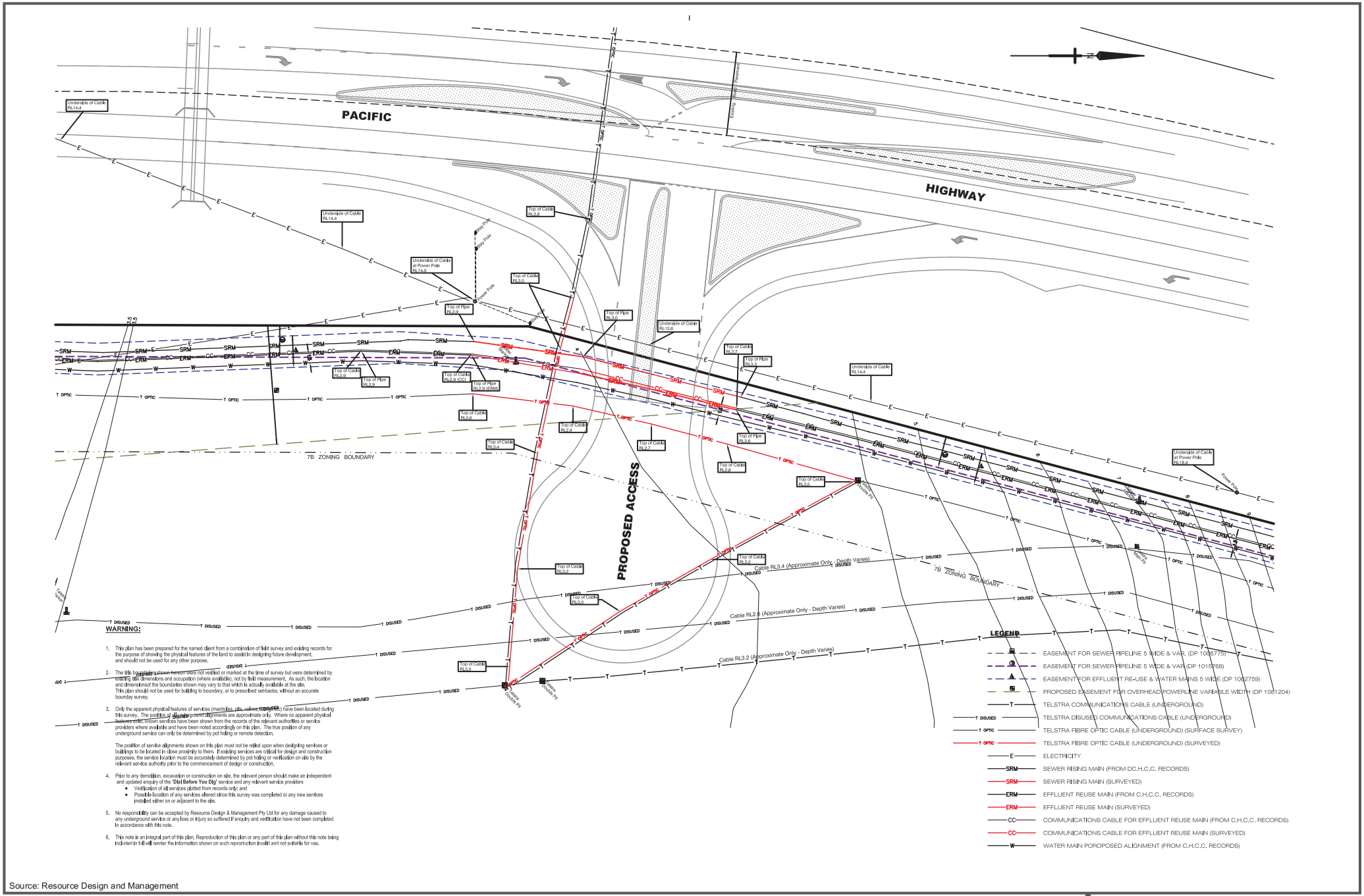
The capacity of the urban road network is primarily dependant upon intersection operation. The key intersections were assessed by Cardno Eppell Olsen Pty Ltd, and demonstrated to contain sufficient capacity for a ten year planning horizon (see *Section 4.7.3* below).

4.7.3 Impacts on Pacific Highway Intersections

Cardno Eppell Olsen Pty Ltd has prepared a design note to address traffic engineering matters relevant to the residential development at Moonee. The design note is included in *Volume 3*.

Vehicle access to the site will be achieved by way of a new temporary unsignalised intersection on the Pacific Highway. The proposed unsignalised intersection will be constructed to provide interim access to the development. Detailed design drawings for the construction of the intersection were formally approved by the RTA on 9th January 2007. A copy of the letter of approval is included as *Annex B*

The proposed intersection will be a priority-controlled AUSTROADS Type C seagull intersection. A copy of the proposed intersection plan is provided as *Figure 4.8*. A works authorisation deed (WAD) has been prepared to cover the infrastructure works. The proposed intersection has been analysed using the aaSIDRA modelling suite to test the operating life of the proposed intersection form. The modelling results indicate that the intersection as proposed would operate well within normal operating thresholds for a ten year design horizon.



Source: Resource Design and Management

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Approximate Only

Figure 4.8 **Proposed Intersection Plan**

The Glades Estate, Coffs Harbour

The Moonee DCP identifies a series of collector roads north and south of Moonee Beach Road. It is understood that Council has initiated discussions with local stakeholders regarding the necessary land acquisitions for the section of the collector route between the site and Moonee Beach Road, however the timing of its completion is unclear as a result of the dependence on adjacent landowners and allocation of necessary funding. It is envisaged that the proposed interim access arrangement will operate until such time as the collector route to Moonee Beach Road has been constructed and upgrading of the Moonee Beach Road/Pacific Highway is undertaken to a standard that provides sufficient capacity to cater for the entire catchment. At this time the interim access will be decommissioned and the area appropriately landscaped.

4.7.4 Public Transport

Bus services in the area are currently operated by Busways Coffs Harbour. Busways Coffs Harbour services a route along the Pacific Highway from Coffs Harbour to Woolgoolga, which detours into the existing residential area south of the proposed site. This service has a daytime frequency of approximately one bus per hour.

The proposed development has the potential to improve the viability of public transport services in the area and with increasing population densities, the frequency of the service is likely to increase. However, it is important that bus use is promoted as early as possible in the development's progress to encourage public transport use. The design of the estate makes provision for a bus route via the main collector roads through the estate, as well as bus stops located at regular intervals so that all residences within the estate will be within five minutes walk of a bus stop (refer to Plan 6 of the Landscape Concept Plan and Open Space Management Plan included in *Volume 3*).

4.7.5 Pedestrians and Cyclists

The proposed pedestrian and cycle path network is illustrated on Plan 6 of the Landscape Concept Plan and Open Space Management Plan included in *Volume 3* and includes:

- a shared pedestrian/cycle link to Council's Coastal Walk, connecting the site to Moonee village and beaches to the south of the site and Moonee Beach Nature Reserve (via a footbridge to be constructed across Skinners Creek) to the north;
- a network of pedestrian paths providing north-south and east-west connections through the estate;
- a shared pedestrian/cycle route following the main collector (loop) roads within the estate; and

- a shared pedestrian / cycle boulevard connecting to the district cycle way and Coffs Harbour.

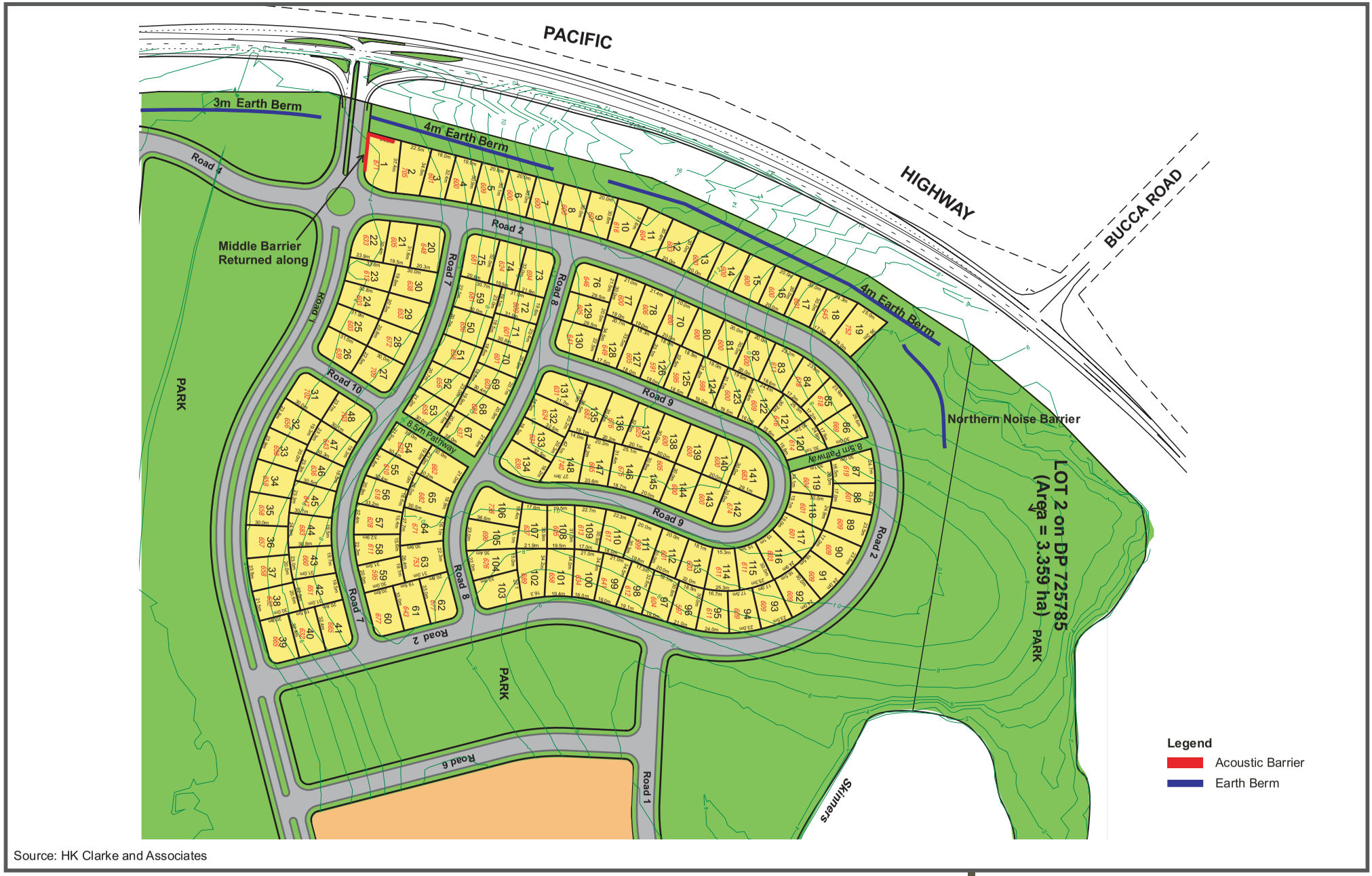
Pedestrian and cycle routes have been located to provide easy movement from the residential precincts to major recreation nodes and passive recreation areas within the estate. The proposed network of paths compliments Council's traffic and transport strategy for the Moonee area and is consistent with in the Moonee DCP.

4.8 NOISE ASSESSMENT

A Noise Impact Statement (NIS) has been prepared by H.K. Clarke & Associates Pty Limited and is included in *Volume 3*. The NIS investigated the likely road traffic noise impacts on the proposed residential development. *ERM* provided a technical review of the NIS. Comments from this review are provided as an addendum to the NIS in *Volume 3*. The NIS was prepared having regard to the EPA's *'Environmental Criteria for Road Traffic Noise'* (1999) and included measuring existing traffic noise levels and noise modelling using Environmental Noise Model (ENM) software, version 3.06.

Noise modelling was undertaken for the years 2005 and 2015. For the year 2005 the results of the modelling indicated that both the day and night criteria of 55dB(A) and 50 dB(A) respectively would be exceeded by up to approximately 5dB(A) at residences along the highway side of the development. To ameliorate noise impacts, earth berms were designed to act as noise barriers and the model was re-run. The result of modelling including noise barriers indicated that the noise barriers would reduce noise impacts to acceptable levels.

For the year 2015, modelling of noise impacts including noise barriers shows that while noise barriers significantly reduce the predicted day road traffic noise impacts some residential lots will be subject to exceedances of the criteria by less than 5dB(A). A significant portion of the residential lots along the highway side of the development will be subject to exceedances of the night criteria by less than 5dB(A) (14 affected lots). This impact can be further ameliorated by acoustically treating affected residences and by designing dwellings so that noise sensitive rooms face away from the Pacific Highway (such as bedrooms). The location of proposed acoustic barriers is illustrated in *Figure 4.9*. It is anticipated that with both the acoustic barriers and acoustic treatments to affected dwellings, that noise levels will not exceed EPA night time criteria.



Source: HK Clarke and Associates

ERM

0 100m

Figure 4.9 **Road Traffic Noise Barriers**

The Glades Estate, Coffs Harbour

4.9 FLORA AND FAUNA

James Warren and Associates (JWA) have assessed the potential impacts of the entire proposed development on threatened species and ecological communities listed under State and Commonwealth legislation. A copy of the assessment report is provided in *Volume 2*. A summary of the key issues and recommendations is provided in this section.

4.9.1 Survey Results

Flora

The site supports six broad vegetation types and 17 distinct vegetation communities. These vegetation communities are shown on *Figure 4.10*.

A total of 167 species of flora were recorded on the site, none of which are listed as threatened or ROTAP (Briggs and Leigh 1995) species. Two regionally significant flora species were recorded on the site - White stringybark (*Eucalyptus globoidea*) and Christmas bells (*Blandfordia grandiflora*).

Three endangered ecological communities (EECs) occur on the site:

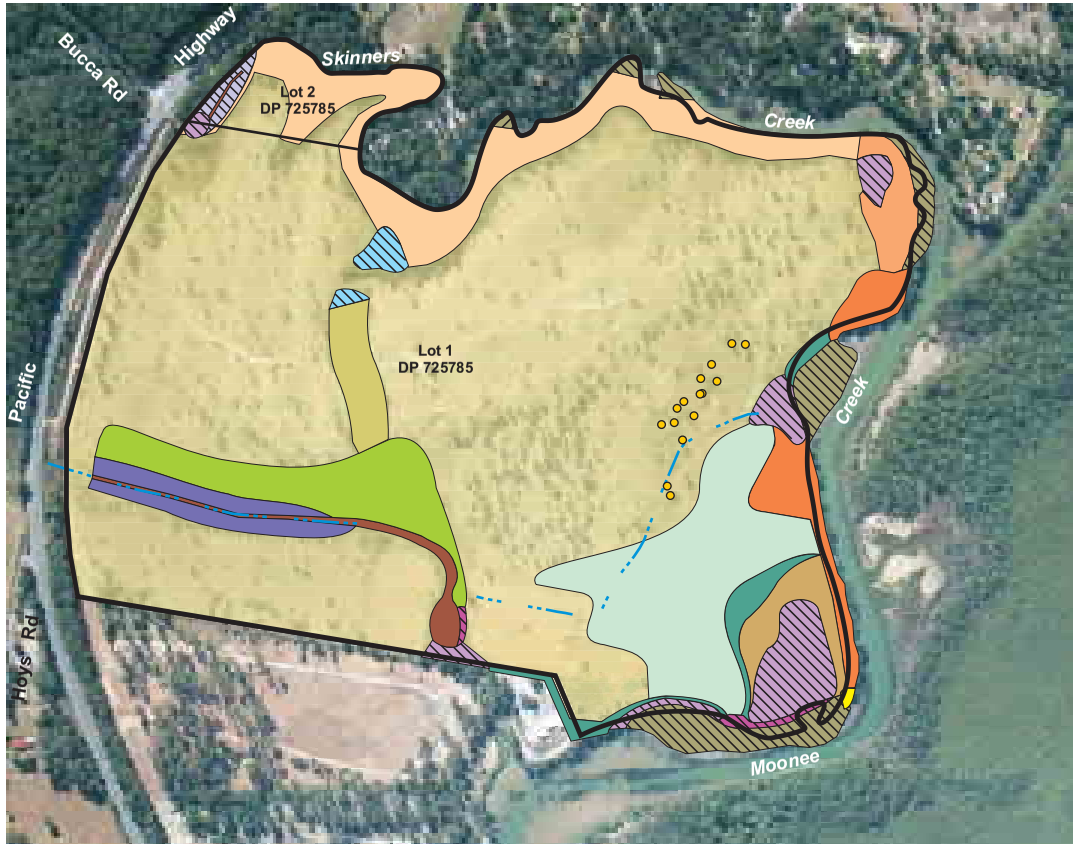
- Coastal saltmarsh;
- Swamp oak floodplain forest; and
- Swamp sclerophyll forest on coastal plain.

A number of forest ecosystems (CRA Unit 1999) occur on the site with conservation values ranging from moderate to high. Additionally, several of the vegetation communities on the site are considered regionally significant, locally significant or of ecological significance (communities which comprise tree species utilised by Koalas) under vegetation mapping undertaken for the Coffs Harbour LGA (Fisher, Body and Gill 1996).

The vegetation communities with the highest conservation value occur primarily on the eastern side of the site flanking Moonee Creek, although some pockets of Mangrove community occur along Skinners Creek to the north of the site. These vegetation communities are not included in the part of the site proposed for residential subdivision.

Fauna

A detailed fauna survey was carried out by JWA over five days between the 10th and 14th May 2004. A second survey was undertaken over three nights in September 2004, targeting the Grass owl. Additional targeted surveys for the Wallum froglet (*crinia tinnula*) were carried out over two nights in September 2005, by JWA and on 25th and 26th July 2006, by Dr Arthur White (Biosphere



Legend

Dry sclerophyll forest/woodland communities
Community 1a - Tall closed forest
(Eucalyptus pilularis +/- mixed species)

Community 1b - Tall mid-dense forest
(Eucalyptus planchoniana, Syncarpia glomulifera, Corymbia intermedia)

Community 1c - Tall mid-dense forest
(Syncarpia glomulifera, Eucalyptus robusta)

Community 1d - Tall mid-dense forest
(Eucalyptus planchoniana, Eucalyptus tindaliae, Eucalyptus pilularis, Syncarpia glommulifera)

Community 1e - Tall open forest
(Eucalyptus siderophloia)

Community 1f - Tall closed forest
(Eucalyptus planchoniana, Syncarpia glomulifera, Eucalyptus pilularis)

Swamp sclerophyll communities
Community 2a - Tall mid-dense forest
(Eucalyptus robusta, Lophostemon suaveolens, Melaleuca quinquenervia, Syncarpia glomulifera)

Community 2b - Mid-high swamp sclerophyll forest
(Melaleuca quinquenervia)

Community 2c - Mid-high swamp sclerophyll forest
(Melaleuca sieberi)

Community 2d - Mid-high swamp sclerophyll woodland
(Melaleuca quinquenervia, M. linariifolia)

Community 2e - Mid-high swamp she-oak woodland
(Casuarina glauca)

Heathland/sedgeland/fernland communities
Community 3a - Tall closed heath
(Ochrosperma leneare, Leptospermum polygalifolium, Leucopogon parviflorus)

Community 3b - Slashed heath
(Mixed species)

Grassland communities
Community 4a - Low closed grassland
(Andropogon virginicus, Themeda triandra) with scattered trees.

Community 4b - Low closed grassland
(Themeda triandra, Juncus sp.*)*

Intertidal communities
Community 5a - Low open mangrove forest/Saltmarsh
(Aegicerus corniculatum, Juncus kraussii, Sporobolus virginicus)

Wetland communities
Community 6a - Wetland
(Nymphaea sp., *Eleocharis* sp., *Philydrum lanuginosum)*

Individual *Melaleuca sieberi*

Endangered Ecological Community

Drainage line

Source: James Warren & Associates P/L - November 2004

ERM

0 200m
Approximate Only

Figure 4.10 **Vegetation Communities**

The Glades Estate, Coffs Harbour

Consulting). The results of these surveys are detailed in the Flora and Fauna Assessment report provided in *Volume 2*.

The surveys recorded five reptile species, six amphibian species (including one threatened species: the Wallum froglet), 59 bird species (including three threatened species: the Glossy black cockatoo, Osprey and Black-necked stork) and 29 mammal species including six threatened species:

- squirrel glider (Petaurus norfolcensis);
- little bent-wing bat (*Miniopterus australis*);
- common bent-wing bat (*Miniopterus schreibersii*);
- large-footed myotis (*Myotis macropus*);
- koala (*Phascolarctos cinereus*); and
- grey-headed flying-fox (*Pteropus poliocephalus*).

In total, ten threatened species were recorded. The locations of threatened fauna and significant habitat features recorded on the site are shown in *Figure 4.11*.

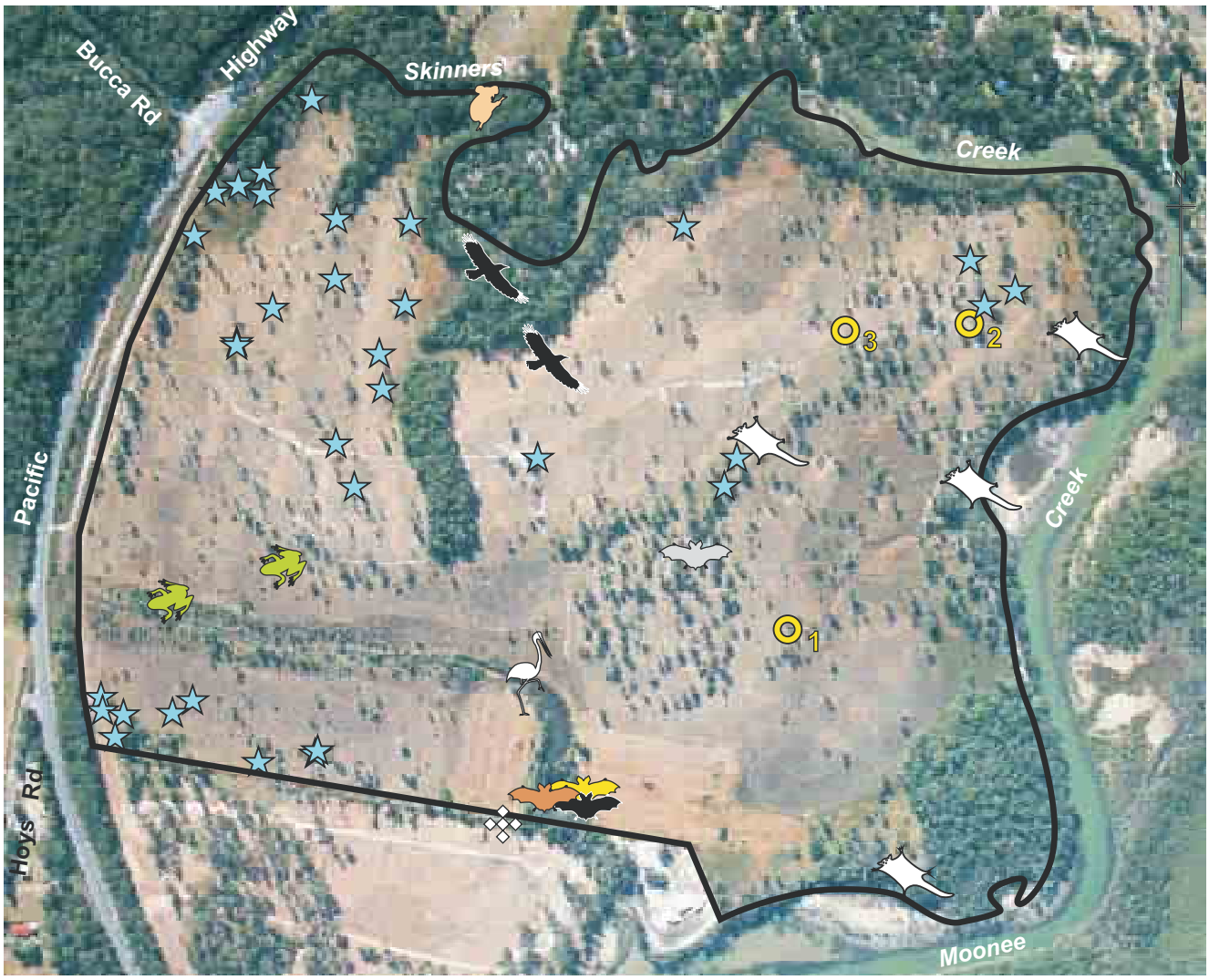
It should be noted that no Wallum froglets were recorded on the site during the main survey period in May 2004 (JWA) or during the targeted surveys undertaken in September 2005 (JWA) and July 2006 (White). The species was, however, purportedly recorded during earlier surveys of the site by JWA. According to White (2006), Wallum froglets are not permanent residents on the site and inhabit the site only after particular events (eg. flooding of Moonee Creek) which render conditions suitable for the species. White also suggests that some records of Wallum froglets on the site may have been mis-identified Beeping froglets (*crinia parinsignifera*).

4.9.2 Impact Assessment

Flora

The proposed development will result in the loss of some vegetation for the construction of houses, access roads, driveways and associated infrastructure. However, development will be mainly confined to those parts of the site comprising grassland with scattered trees and major areas of vegetation occurring along the northern and eastern boundaries of the site (mostly dry sclerophyll forest) are to be retained.

In total, approximately 54 hectares of vegetation will be lost to the development, of which the vast majority is grasslands with scattered trees (including 33 primary koala feed trees). Approximately 4.4 hectares of slashed heath, located in the south-eastern portion of the site, will be lost. However, the conservation value of this community has been greatly reduced by



LEGEND

- Squirrel glider
- Glossy black cockatoo
- Southern myotis
- Little bent-wing bat
- Common bent-wing bat
- Grey headed flying fox
- Osprey nest location (approximate)
- Black-necked stork
- Wallum froglet
- Koala (scat)
- Koala feed tree (within development area only)
- Hollow bearing tree (within development area only) Refer to Section 3.3.3.5

Note: Koala feed trees and hollow bearing trees have been located by GPS survey which may contain an error of up to 4 metres.

Source: James Warren & Associates P/L July 2006

Figure 4.11 **Threatened Fauna and Significant Habitat**

The Glades Estate, Coffs Harbour

ERM

0 200m

Approximate Only

Jobs/2005/0037659/RevEA - Fg4.11 Threatened Fauna & Significant Habitat.cdr 22 02 2007 JD Environmental Resources Management Australia Pty Ltd

slashing and grazing activities. In addition, approximately 0.4 hectares of Swamp Sclerophyll forest in the north of the site will be lost.

Fauna

The proposed development will result in minor loss of foraging, sheltering and breeding habitat for native fauna occurring in the locality. This loss may have a range of impacts including:

- loss of foraging habitat for nectarivorous and insectivorous fauna species, including the loss of autumn / winter flowering plants;
- minor decrease in the size of local fauna populations and increased susceptibility to threatening processes acting in the locality;
- minor decrease in the size of the prey base for carnivorous species;
- some increased fragmentation of habitat in the locality;
- minor decrease in the genetic base for local fauna populations;
- minor loss of sheltering and breeding habitat for native fauna;
- reduction in opportunities for movement through the site;
- loss of three hollow-bearing trees, representing a minor loss of shelter habitat for hollow-dependent fauna. Loss of sub-mature eucalypts representing a minor decrease in the future recruitment of hollows;
- some loss of eucalypts, paperbarks, banksias and flowering shrubs representing a minor decrease the food supply for nectarivores;
- animals may be killed or injured during the clearance of vegetation;
- domestic dogs and cats prey on native fauna and may have significant impacts on the populations of native species;
- development of the site may favour native and introduced disturbance adapted competitors eg Cane Toads may out-compete other amphibians and reptiles, aggressive open country bird species (eg Noisy miner, Crow, Pied Currawong) may out-compete other birds, and non-native mammals (eg Black Rat and House Mouse) may out-compete other native small mammals);
- increased light, noise and activity may cause reclusive species to move away from habitat edges;
- the proposed development will result in an increase in traffic, increasing the likelihood of animals being killed or injured by vehicles; and

- alterations to site hydrology and land use may alter the water quality or hydrological regime in paperbark communities or neighbouring areas of Moonee Creek.

Threatened Species

Potential impacts of the proposed development on the Osprey, Glossy black cockatoo, Black-necked stork, Grey-headed flying fox, Little bent-wing bat and Common bent-wing bat recorded on the site are not considered to be significant. Potential impacts on the Wallum froglet, Koala and Squirrel Glider are discussed below.

Wallum froglet – The Wallum froglet habitat on the site comprises foraging habitat only. No breeding habitat occurs on the site. The proposed development will result in the loss of 0.29 hectares of Wallum froglet foraging habitat (as mapped by White, 2006), which represents a loss of 4.5% of foraging habitat on the site. The areas to be lost occur at the peripheries of suitable habitat for the species and their loss is considered likely to place negligible limits on available forage habitat for the species.

Development of the site may potentially impact on the foraging habitat of the Wallum froglet in the following ways:

- alteration of water quality in drainage lines due to soil runoff from the construction site, runoff from chemicals, fertilisers, etc;
- introduction of weed species;
- direct mortality due to increased vehicular traffic and construction works;
- introduction of non-endemic species to the site; and
- alteration of micro-habitats due to loss of vegetation.

It should be noted that the species are only likely to utilise the site when conditions are appropriate and it is unlikely to persist on the site as a resident population due to fluctuating water quality. The retention of approximately 95% of foraging habitat for the species in the south of the site and adoption of amelioration measures is considered to adequately provide for the ongoing potential intermittent use of the site by the Wallum froglet.

Koala – the proposed development will result in the loss of some Secondary Koala habitat (scattered trees in the north-east of the site). In total, 33 primary Koala feed trees will be lost, most of which are Tallowood (*Eucalyptus microcorys*). In addition, the proposed development is likely to limit opportunities for Koala movement over the site. There is also potential for Koalas to be injured or killed during clearing of vegetation on the site or from vehicle strike within the urban areas. Urban development also has the potential to increase risks to Koalas from straying dogs and drowning in swimming pools.

Squirrel Glider - loss of scattered trees within grasslands will result in a reduction of forage habitat for the Squirrel glider and diminish movement corridors. There are three (3) hollow-bearing trees scattered throughout grasslands on the site which provide suitable denning habitat for this species. These trees will be removed, resulting in a minor reduction in denning opportunities for this species on the site. There is potential for increased disturbance to Squirrel gliders feeding and denning in vegetated areas proximate to the development, and the further possibility of predation from cats. There is also the potential for direct mortality during construction.

Corridors

The proposed development may contribute towards a reduction in the overall effectiveness of the site as a corridor due to habitat loss and fragmentation and a reduction in the width and length of the corridor value of the site due to edge effects. However, significant areas which lie outside the creek buffers and which are currently unprotected will be protected.

Other Impacts

The proposed development has the potential to result in impacts on habitats within Moonee Beach Nature Reserve as a result of increased visitation to the reserve. Impacts associated with increased visitation may include trampling of vegetation, picking of wildflowers, increased disturbance of fauna, increased risk of fire, increased potential for dumping of rubbish and increased potential for invasion of exotic flora and fauna.

The proposed development has the potential to result in impacts on habitats within Moonee Creek and Skinners Creek related to:

- impacts on water quality and hydrology as a result of stormwater runoff from the proposed development;
- increased visitation, with potential for trampling of intertidal vegetation, dumping of rubbish or refuse in creek habitats (particularly discarded fishing line, bait bags etc.), disturbance of fauna; and
- erosion of topsoil and disturbance to creek bank vegetation from construction of walkways, bridges and fishing platforms.

4.9.3 Mitigation Measures

A number of amelioration measures will be implemented to minimise potential impacts on flora, fauna, threatened species, the Moonee Beach Nature Reserve and Moonee and Skinners Creeks. These measures are summarised below.

Flora

The flora assessment concluded that there would be no significant impact on vegetation communities within the site, with vegetation loss largely restricted to individual trees within grazing land. However, as there will be some minor vegetation loss, a number of amelioration measures have been proposed including the preparation of a Landscape Management Plan and Vegetation Management Plan (refer to the Landscape Concept Plan and Open Space Management Plan in *Volume 3*).

Under the Vegetation Management Plan much of the slashed heathland on the site will be allowed to regenerate, while other vegetation communities will be enhanced from rehabilitation and revegetation works. This will result in an overall net gain of heathland community on the site, retention of mature trees within landscaped and open space areas and provision of appropriate buffer areas to Wallum froglet foraging habitat within the southern drainage line. It is proposed that seed sources from the site be utilised in revegetation to maintain the genetic and species integrity of flora on the site.

Fauna

While vegetation clearance for the proposed development will result in some loss of habitat for fauna utilising the site, this will be relatively minimal, with the best quality habitat on the site being retained. General amelioration measures for the protection of fauna include:

- landscape and landfill materials are to be sourced from areas that do not have cane toads;
- stormwater management to achieve no significant net change in runoff into wetland areas on the site, and into Moonee and Skinners Creeks;
- mature habitat trees will be retained where possible;
- compensatory koala habitat trees will be planted near Skinners Creek in the northern part of the site outside the development footprint; and
- planting of suitable feed trees for Glossy black-cockatoos outside the development areas within areas to be regenerated.

Threatened Species

Amelioration measures to minimise potential impacts on threatened species (including the Wallum froglet, Koala and Squirrel Glider) will include the following:

- areas of native vegetation around Wallum froglet foraging habitat to be retained and protected;
- a 50 metre buffer to be provided around the Osprey nest to the south of the site to limit disturbance to the nest site;

- dogs to be strictly controlled within the development i.e.: contained within an appropriately fenced yard and on a leash at all times when outside of a fenced enclosure;

- swimming pools to be fenced to restrict access by Koalas;

- cats to be banned under the *Companion Animals Act (1998)* to reduce likely impacts on Squirrel Gliders; and

- a qualified fauna handler to be on site when clearing occurs.

General Amelioration Measures

Amelioration measures to reduce impacts on Moonee and Skinners Creeks and Moonee Beach Nature Reserve will include erosion control techniques (eg hay bales, siltation fencing) to prevent erosion of topsoil into Moonee and Skinners Creeks during construction of walkways, fishing platforms, canoe jetties and bridges.

4.10 MOONEE CREEK ESTUARY MANAGEMENT STUDY & PLAN

The draft *Moonee Creek Estuary Management Study & Plan* has been prepared by Council (in collaboration with the Department of Natural Resources) to help guide local future land use and natural resource management to achieve long-term environmental sustainability for Moonee Creek. The plan has been prepared to fulfil the requirements of the NSW Estuary Management Policy (1992) and the NSW Coastal Policy (1997).

At present, Moonee Creek estuary remains in relatively pristine condition. However, major developments within the Moonee Creek catchment are likely to significantly impact on the creek. The plan provides direction to Council and landholders regarding future development constraints and opportunities within the catchment and details strategies to be implemented to achieve the greatest benefits to the estuary, whilst balancing existing and future human demands on the system.

The plan identifies fourteen specific management objectives covering a wide range of issues under the broad topics of water quality, bank erosion / sedimentation, ecology / biodiversity, future catchment development, estuarine usage, heritage and estuary management mechanisms. Twenty four management strategies have been developed to address all of the management objectives and these strategies are set out in the plan in priority order, with immediate tasks to commence before June 2007, short-term tasks to commence before June 2009 and medium-term tasks to commence before June 2011.

A number of management strategies for Moonee Creek are relevant to the proposed development and are discussed below.

Immediate Priority (to commence before June 2007)

- *revegetation of foreshores and other degraded areas; and*
- *identification and protection of cultural heritage sites.*

There are two locations within the site that are identified in the plan for foreshore revegetation i.e. a small section on the eastern boundary with Moonee Creek and an area on the south-eastern boundary. Rehabilitation works are proposed for these areas as outlined in the Landscape Concept Plan and Open Space Management Plan prepared for the site (refer to *Figure 2.7*).

The Aboriginal Cultural Heritage Assessment undertaken for the site identifies areas of archaeological potential and an area of cultural significance and makes recommendations regarding the protection of identified sites outside the development footprint. The development footprint is mostly confined to areas of the site that have been disturbed by past land uses (clearing and grazing). However, three sites containing artefact scatters are located within the proposed development area. A surface collection of artefacts will be undertaken by representatives of the local Aboriginal community and an archaeologist prior to any ground disturbance works in these areas.

Short Term Priority (to commence before June 2009)

- *protect existing habitats, vegetation stands and foreshore buffers;*
- *ensure future urban developments are compassionate to the environment;*
- *adopt WSUD and integrated total water cycle management for new development;*
- *establish vegetated buffers, not to be used for urban stormwater or fire management;*
- *ensure wildlife corridors are catered for within plans and future proposals; and*
- *stabilise eroding foreshores using physical structures, where necessary.*

The proposal includes provisions to protect existing habitats within the open space areas, including buffers to the identified Osprey nest and to Moonee and Skinners Creeks, generally in accordance with the Moonee DCP.

Water sensitive urban design (WSUD) principles have been employed in the design of the proposed subdivision. Runoff from all catchments will be directed through bioretention swales designed to treat flows up to and including those with a three month Average Recurrence Interval (ARI). Flows greater than three months ARI will overtop the bioretention swales and pass through vegetated filter zones prior to being released into natural drainage lines. These stormwater treatment measures will be supplemented by installation of rainwater tanks to supply water for toilet flushing, car washing, and garden watering.

The plan recommends that a vegetated buffer between the development and the estuary be provided to ensure that the development does not impact on the estuary values and to achieve long term sustainability of the development and the environment. The suggested buffer is based on the four metre AHD contour (with a minimum offset of 100 metres from the estuary and all tributaries). This contour was chosen to reflect the area that is influenced by estuarine processes, including infrequent flooding and is generally characterised by a change in vegetation communities. The 100 metre offset was chosen to allow for a substantial habitat corridor and suitable utilisation of the foreshore buffer by native wildlife. The plan recommends that these buffers should not be used for urban stormwater management or bushfire risk mitigation purposes.

Parts of the proposed development footprint encroach into the recommended buffer areas. The most significant encroachment occurs in the north-east of the site, where a number of residential lots (or parts of lots) and a section of the proposed perimeter road (approximately 200 metres) are proposed to be located within the recommended 100 metre offset from Moonee Creek. A further encroachment occurs in the south-east of the site, where a small section of the perimeter road encroaches into the recommended 100 metre buffer to Moonee Creek.

The encroachments described above are considered justified for the following reasons:

- the proposed development generally avoids areas likely to be affected by flooding. In areas where development may be affected by flooding, some minor site filling will be undertaken to minimise impacts. Overall, the proposal will not result in any significant impacts on existing flood levels;

- the results of the Stormwater Assessment provided in *Volume 3* suggest that the stormwater treatment measures proposed to be implemented as part of the proposed development are likely to significantly reduce existing suspended sediment and nutrient loads from the site, ensuring that post-development water quality from the site will be of an acceptable standard. The proposed development will therefore satisfy a number of the management objectives of the plan;

- The proposed development footprint generally complies with the buffer areas as specified (with the exception of a small area in the north-east of the site that lies within the 100m buffer to Moonee Creek and a very minor encroachment in the south-east of the site - *Figure 3.3* shows the extent of these encroachments) and in other areas, a setback to the creek of up to 245 metres is proposed; and

- The applicants have had the proposed development footprint pegged out and have walked the boundary with Council officers. On-site meetings have also been held with officers from relevant government departments including NSW Fisheries, the Department of Environment and Conservation, etc to identify potential issues. At no point during these on-

site meetings have any objections been raised to the proposed development footprint, as the proposed encroachments into the recommended buffers will avoid sensitive areas and will not impact on significant vegetation.

The Flora and Fauna assessment provided in *Volume 2* acknowledges that the proposed development may contribute towards a reduction in the overall effectiveness of the site as a corridor due to habitat loss and fragmentation. However, in the northern and eastern parts of the site, habitat is being retained to consolidate the link between Moonee Beach Nature Reserve and habitats on the southern side of Skinners Creek. Retention of the central ridge of vegetation on the site will also allow for movement between vegetated areas of the site. In addition, movement along the drainage line in the south of the site will not be adversely affected, due to retention of this area.

The Landscape Concept Plan & Open Space Management Plan provided in *Volume 3* describes structures such as board walks and elevated decks to be used in areas that are directly exposed to the estuarine environment. Their construction will assist in protecting the foreshore from erosion as a result of human usage. Appropriate erosion and sedimentation control measures will be undertaken during the construction of the proposed subdivision.

Medium Term Priority (to commence before June 2011)

- *provide limited formal access points to the estuary*.

The Landscape Concept Plan & Open Space Management Plan in *Volume 3* provides details of the small number of formal access points to Skinners and Moonee Creeks. Various structures, such as boardwalks, cantilevered decks and suspended footbridges are proposed as they will protect the sensitive foreshore while still allowing limited public access.

5 SOCIAL AND ECONOMIC IMPACT ASSESSMENT

This chapter assesses the potential social and economic impacts associated with the proposed development.

5.1 EXISTING COMMUNITY PROFILE

5.1.1 Coffs Harbour LGA

The Coffs Harbour City Population Profile 2004 (CHPP) is a document that has been prepared using the 2001 ABS Census Basic Profile data. At the last Census, the estimated population of Coffs Harbour local government area (LGA) was 61 770 with an annual growth rate of 1.6 per cent. It is projected that by 2030 the population of Coffs Harbour LGA will reach 100 000.

Counter urbanisation is a population trend that describes the influx of people moving form metropolitan areas to coastal areas in search of a better lifestyle, part time work and/or self employment. This trend is generally being observed in the Coffs Harbour LGA where significant growth (53 per cent) of the "baby boomers" generation has occurred over the last 10 years. This is coupled with a decline of the 25 to 29 age group as they leave in search of educational and employment opportunities.

As is apparent in national trends, the average household size has continually declined in Coffs Harbour. This has implications for the provision of housing stock over time.

5.1.2 Moonee/Sapphire District

In 2001 the Moonee/Sapphire district has a population of 3456 (5.5 per cent of the LGA population) with a total of 1192 occupied dwellings. Assuming that residential land is developed to its capability, it is estimated that the development potential of the area is 3093 dwellings with a population of 9305.

The families in the Moonee/Sapphire district are slightly older than the LGA average with 82.6 per cent of homes being family homes. Lone person homes and group homes make up 17.4 per cent of the household type mix compared with the 28 percent average across the LGA. The proportion of those aged over 60 is approximately 16% which is similar to the LGA average.

The Moonee/Sapphire area is in close proximity to central Coffs Harbour which is an important educational, health, retail and employment hub for the Moonee/Sapphire district.

The number of trained vocational people living in the Moonee/Sapphire district is slightly higher than that of the larger LGA with significantly more mangers, professionals and associate professionals in the area.

At the 2001 ABS Census 61 per cent of the people living in the district were in the labour force with unemployment being 3 per cent below the LGA average. Incomes were approximately 10 per cent higher than the LGA average.

In 2001 the majority of dwellings (73.4 per cent) within the Moonee / Sapphire area consisted of single detached houses. A great proportion of these homes are modern brick and tile.

5.2 FUTURE ESTATE RESIDENTS AND INVESTORS

Those people that are likely to purchase properties within the Glades Estate and will be targeted through marketing campaigns are existing owner-occupiers and investors. The majority of owners are therefore likely to be:

- educated (having a diploma or degree);
- older families with teenage children;
- largely between 40 and 60 years of age;
- currently paying off their home; and
- high income households.

5.3 SOCIO-ECONOMIC IMPACTS

5.3.1 Additional Residential Lots

Council's strategic direction for future urban development within the Coffs Harbour LGA is provided in the draft document titled "Our Living City: A Settlement Strategy for Coffs City to 2031" that is to replace the existing Urban Settlement Strategy. The draft strategy identifies Moonee as an area to be developed as a Coastal Town to help meet the population growth expected in the next 25 years.

Once the Moonee site is developed, it will increase the available land stock by 523 lots. This will assist in meeting some of the increasing demand for residential land within the Coffs Harbour LGA.

The area of the Glades Estate that is to be developed is zoned Residential 2A Low Density. In keeping with the existing housing in the Moonee area, the dwellings contained in the estate will be largely single dwelling homes. Lot sizes in the estate are large and will accommodate some villas and dual-occupancy dwellings.

5.3.2 Social Infrastructure, Recreation and Community Facilities

The proposed subdivision will result in an increase in demand for certain facilities, service and infrastructure. This will include an increased demand for recreational facilities, schools, health infrastructure, emergency services, public transport, open space and community facilities.

Some of these facilities will be provided on site, including open space areas, pedestrian trails and boardwalks, picnic shelters and BBQ areas, a basketball court, children's play equipment, fitness equipment and a canoe launch jetty. The developers of the estate will also pay section 94 contributions towards the provision of public facilities and services in accordance with Council's applicable Developer Contributions Plans.

5.3.3 Impact on the Surrounding Areas

The proposed development incorporates design controls to ensure that the visual amenity of Moonee is maintained and enhanced. These are documented in the Landscape Concept Plan and Open Space Management Plan provided in *Volume 3*.

5.3.4 Other Benefits

The proposed development will provide short-term employment during the civil works and housing construction phases and longer-term employment arising from the demands generated by additional people settling in the area. This will result in greater retail expenditure and support for local retail and community facilities in the immediate Moonee area and the larger LGA.

The Australian Bureau of Statistics (ABS) and the Indicative Planning Council for the Housing Industry have established economic multiplier effects for residential development in Australia (refer to HIA Economics Group Research Note: *The Economic Multiplier Effects of Housing, December 2006*). In basic terms, for every $1 million of housing construction output, tens of thousands of dollars are spent on primary materials, transport and property services.

The total civil construction cost for the development is expected to be in the order of $70 million, whilst the total housing construction cost is expected to be approximately $120 million.

According to the Indicative Planning Council, every $1 million of construction generates seven direct construction jobs, four jobs in material manufacturing and two jobs in industries that supply industries that supply construction. Therefore, in job terms, the $120 million to be spent on housing construction will generate 840 direct construction jobs, 480 jobs in building manufacturing and 240 jobs in industries that supply construction. In addition, the civil construction works will also generate employment opportunities and result in a significant short term increase in employment.

In output terms, every $1 million injected into housing construction generates demand for:

- $10 200 worth of mining products;
- $38 200 worth of wood and wood products;
- $80 040 worth of non-metallic mineral products;
- $56 800 worth of fabricated metal products;
- $49 400 worth of other machinery and equipment;
- $88 500 worth of property and business services; and
- $22 500 worth of transport and storage services.

Therefore, based on the above figures, the proposed development will generate the following additional output:

$1 224 000 worth of mining products;

$4 584 000 worth of wood and wood products;

$9 604 800 worth of non-metallic mineral products;

$6 816 000 worth of fabricated metal products;

$ 5 928 000 worth of other machinery and equipment;

$ 10 620 000 worth of property and business services; and

$ 2 700 000 worth of transport and storage services.

In addition, for every $1 million increase in housing construction output, output is increased elsewhere in the economy by $1.87 million (HIA Economics Group Research Note: *The Economic Multiplier Effects of Housing, December 2006*). Likewise, for every $1 million injected into the economy as a result of the civil construction works, a similar multiplier effect can be expected.

Post construction, the impacts on the wider economy will be felt in the retail sector, education and health, transport, recreation and finance. The 2003-04 ABS Household Expenditure Survey found that the average Australian weekly household expenditure was $883 and for NSW it was $937. Based on the NSW figure, the annual household expenditure generated from future households in the estate is likely to be in the order of $25.5 million based on 523 dwellings. This will clearly provide positive economic benefits to the local economy.

The proposed development will also have a very significant positive socio-economic impact on the local and regional community through the supply of additional residential land and the provision of a variety of housing stock, which will assist in meeting some of the increasing demand for housing in the area. The project will also provide additional infrastructure and community facilities (either directly or via section 94 contributions), which will benefit the wider community. The proposal is therefore likely to have a significant impact in terms of boosting the local economy through the creation of jobs both during the construction phase and post construction. A total of 1560 jobs will be created as a result of the housing construction activity alone.

6 CONSULTATION

This chapter describes the consultation undertaken with key stakeholders to identify relevant issues associated with the proposed future use of the site.

6.1 AGENCIES AND OTHER AUTHORITIES

During preparation of the Director General Requirements, the Department of Planning has consulted the following organisations:

- Coffs Harbour City Council;
- Department of Natural Resources;
- Department of Environment and Conservation;
- Department of Lands;
- Department of Primary Industries / Fisheries;
- Roads and Traffic Authority;
- NSW Rural Fire Service;
- Solitary islands Marine Park Authority;
- Country Energy;
- Telstra; and
- Local Aboriginal Lands Council / s.

The issues raised by various agencies have been taken into account by the Department of Planning in formulating the DGRs for this EA. A summary of key issues raised in the DGRs, as well as the relevant section of the EA where they are addressed, is provided in *Chapter 1*. It is understood that this EA will be referred to the above agencies for comment during the public exhibition period.

Planning investigations and consultation into the preparation of a Master Plan (that was initially being prepared under the provisions of SEPP 71) for the future development of the land commenced in early 2003. Consultation with Council has been ongoing since the inception of the project. Meetings with Council officers have covered such matters as:

- provision of the collector road and possible forward funding;
- intersection construction;
- land acquisition for the collector road by Coffs Harbour City Council;

- flooding;
- site ecology;
- section 94 contributions;
- infrastructure provision;
- buffer zones;
- development layout and design; and
- appropriate zoning of open space and buffer areas.

Consultation with Council will be ongoing, particularly in regards to the provision of the collector road.

Extensive consultation with the Roads and Traffic Authority (RTA) concerning the interim access to the Pacific Highway has also been undertaken. Detailed design drawings for the construction of the intersection were submitted to the RTA in February 2006. These drawings were approved by the RTA on 9th January 2007 (refer to *Annex C*). A Works Authorisation Deed (WAD) was executed by the RTA on 23rd August 2006 for the infrastructure works proposed in the Pacific Highway road reservation.

6.2 COMMUNITY

Extensive community consultation was undertaken by Council during the preparation of Moonee DCP. Amongst the stakeholders consulted were key community groups, adjoining land holders and government agencies. Public consultation meetings were held in December 2003 and April 2004. The consultation process allowed interested parties the opportunity to express any concerns they may have had with regards to the development of the site. The process provided useful inputs into the design of the Glades Estate.

6.3 PUBLIC EXHIBITION

Part 3A of the *EP&A Act* requires that this EA be submitted to the Department of Planning who will advertise and exhibit the EA for a period of no less than 30 days. Further consultation with the public and relevant government authorities and agencies will be undertaken during this period.

Project Applications for Stage 2, Stage 3 and Stage 4 will also undergo a public consultation period in accordance with Part 3A of the *EP&A Act*.

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7 PROJECT APPLICATION

This chapter addresses the key issues that relate specifically to the Project Application for Stages 1- 3 of the estate.

7.1 INTRODUCTION

The Project Application relates to Stages 1 to 3 of the subdivision which involves the construction of 148 residential lots ranging in area from 591m^2 to 871m^2 and associated earthworks, infrastructure and access roads, as shown on the Project Plan at *Figure 1.9*.

The DGRs for the Project Application require that the EA demonstrate consistency with all the requirements for the Concept Plan, as well as the following additional matters:

- subdivision design and layout;
    - demonstrate that the subdivision design and layout can provide for energy efficiency, safety, accessibility and housing diversity; and
    - outline possible building envelope, built form and design quality controls, and the means of implementing them;
- proposed conservation areas and Moonee Creek / Estuary Buffer Zones;
    - outline the means for the long-term management of these areas, including: their ownership and control; public access; revegetation and rehabilitation works; weed management; and measures to control access by domestic animals.
- Watercycle Management and Impact on Watercourses, including Moonee Creek and estuary;
    - provide a concept plan for Integrated Water Cycle Management (including stormwater concept plan / s) based upon Water Sensitive Urban Design Principles, and including consideration of impacts on the surrounding environment, use of treated grey water, and ongoing monitoring and maintenance.
- hazard management and mitigation;
    - submit a geotechnical assessment report that details appropriate geotechnical investigations to establish certainty in terms of site stability and suitability for the proposal.
- traffic management and access;

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- address impacts of additional intersection/s and access to the Pacific Highway, and address their closure upon the establishment of access via the local/collector road system set out in Council's Moonee DCP 2004.

- earthworks and filling;

  - address impacts of earthworks and filling on the existing hydrology and water quality, the conservation of animals, plants and habitat, and the management of ASS and any contamination of the site; and
  - provide details of the source of fill including types of material and soils, and details of suitable revegetation planting.

7.2 SUBDIVISION LAYOUT AND DESIGN

7.2.1 Subdivision Design

The proposed subdivision layout for stages 1 to 3 of the development is illustrated in *Figure 1.6*. The layout promotes a compact development footprint designed to maintain a buffer between the residential precincts and surrounding environmentally sensitive areas.

The subdivision has been carefully designed to provide adequate solar access to all lots. The orientation of the lots is predominantly north-south. The Moonee DCP requires that 75 per cent of lots comply with the orientation as specified by the DCP. In Stages 1 -3 of the development over 85 per cent of the lots are orientated to facilitate adequate solar access and meet this provision.

The subdivision has been designed to allow for a diversity of lot and housing types, to create variety and consumer choice within the estate. Lots will vary in size from 590 m^2 to 870m^2. The diversity in housing types will provide affordability in the housing market and give rise to a community comprising a variety of age groups and household sizes. In accordance with the Moonee DCP, all proposed buildings will be low density, detached or semi-detached and restricted to maximum height of 9 metres. Proposed building design controls, combined with proposed streetscape planting, will create a low rise, natural coastal living environment.

The proposed road network for the estate utilises an efficient pattern which provides motorists with a variety of route selection options and promotes dispersed traffic flows. The road design has also considered the existing contours of the land to minimise earthworks/ disturbance to the landscape.

7.2.2 Circulation Principles

The following key circulation principles have influenced the design of the subdivision:

- provide a street network that is hierarchical, interconnected, permeable, legible, responds to the topography and creates view corridors;
- provide an opportunity for street landscaping that reflects the existing character of the area;
- provide convenient and safe access for pedestrians and cyclists; and
- ensure that the street network can accommodate an efficient public transport system.

7.2.3 Design Principles

The Department of Planning's Safer by Design Guidelines state that would-be offenders are often deterred from committing crime in areas with high levels of surveillance. From a design perspective, 'deterrence' can be achieved by:

- effective lighting of public places; and
- clear sightlines between public and private places.

The proposed development complies with the above guidelines with respect to size, form, appearance and design. In addition, the proposed subdivision will have suitable lighting to enhance pedestrian safety.

7.2.4 Building Envelopes and Built Form Controls

The following key urban design principles will be incorporated into the design, construction and siting of buildings within the estate:

- the scale, height, form and design of buildings will be distinctively coastal to complement the natural setting. Buildings will be appropriately located on the lots;
- buildings will be of high quality design and provide access to natural daylight, utilise natural ventilation and secure visual and acoustic privacy;
- buildings will be designed and located to ensure amenity is maintained on public land;
- buildings will be located so as to maintain consistent street setbacks, street edge configuration and view corridors;
- buildings will address the street by providing direct and on-grade entries;

- development will have well designed, appropriately located and sized private open space areas which serve to minimise urban runoff; and

- development will incorporate water sensitive urban design (WSUD) principles.

Indicative building envelopes for lots are shown in *Figure 7.1*. These design principles will be incorporated into design guidelines to promote the desired character and built form within the estate and ensure that the proposed development provides a high standard of residential amenity. These design guidelines will encourage a high quality residential development that is compatible with the surrounding environment. The design guidelines will be issued at point of sale for each individual lot Compliance will be enforced with Covenants contained in sales contracts.

7.3 MANAGEMENT OF PROPOSED CONSERVATION AREAS AND MOONEE CREEK/ESTUARY BUFFER ZONES

The Landscape Concept Plan and Open Space Management Plan included in *Volume 3* provides a Landscape Staging and Dedication Plan setting out a process of landscape enhancement and program of management for all open space areas within the development, including proposed conservation areas and the Moonee Creek / Estuary Buffer zones. The Plan seeks to ensure that the natural assets of the site are successfully established and managed before dedication of these areas to Council.

Landscape works will be undertaken in stages to coincide with the staged release of building lots. The proposed staging is shown in *Figure 2.8* and on Plan 8 of the Landscape Concept Plan and Open Space Management Plan included in *Volume 3*. Stage 1 will involve the development and management of natural areas. These areas will undergo bush regeneration and weed suppression activities. Management actions will include the following:

- install permanent farm style fencing as shown on the staging plan;

- place gates and bollards where access is desired;

- install temporary fencing to minimise disturbance to these areas during construction;

- plant rehabilitation and weed suppression to begin as soon as fencing is in place;

- remove any unnecessary existing fencing that may hinder plant rehabilitation or future pedestrian movement through the site;

- arrange for interpretative signs to be installed at pedestrian entry points to the creek buffer areas once occupancy occurs; and

Buildings will be designed and located to ensure amenity is maintained on public land.

Buildings will address the street by providing direct and on-grade entries.

Buildings will be of high quality design and provide access to natural daylight, access to natural ventilation, and visual and acoustic privacy.

Buildings will be of a scale, height, form and design that is distinctively coastal, that will complement the natural setting, and will be appropriately located on the lot.

Urban development will incorporate the use of water sensitive urban design.

Buildings will be located so as to maintain consistent street setbacks, street edge configuration and view corridors.

Urban development will have well designed, appropriately located and sized private open space which serves to minimise urban runoff.

ERM

0 50m
Approximate Only

Figure 7.1 **Indicative Building Envelopes and Built Form**

The Glades Estate, Coffs Harbour

- efficiency of bush regeneration to be monitored and if necessary, chicken wire to be placed on fencing to stop grazing by swamp wallabies.

Bush regeneration and vegetation management within these conservation areas will have a management regime during civil construction and for a period of two years following dedication of these lands to Council.

7.4 WATER CYCLE MANAGEMENT AND IMPACT ON WATERCOURSES INCLUDING MOONEE CREEK AND ESTUARY

Gilbert and Sutherland Pty Ltd have prepared a Stormwater Assessment and Stormwater Management Plan (SWMP) for the proposed development. The following stormwater treatment devices will be implemented to ensure that pollutants leaving the site are minimised;

- runoff from all catchments would be directed through bioretention swales that have been designed to treat flows up to and including those with a three month Average Recurrence Interval (ARI). These swales would be designed to overflow along their full length; and
- flows up to and greater than three months ARI would overtop the bioretention swales and pass through vegetated filter zones prior to being released into natural drainage lines.

The proposed stormwater drainage and catchment plan is illustrated in *Figure 4.5*. The treatment measures will be supplemented by the installation of rainwater tanks from which water could be used for washing machines, toilet flushing, car washing and garden watering.

The potential for grey water reuse exists as Council's sewerage treatment plant is in close proximity to the site and the rising main carrying grey water to the ocean outfall near the Coffs Harbour Jetty passes along the frontage of the site. Whilst grey water / dual pipe schemes have not been included in the detailed design of Stages 1 to 3 of the development, Rothwell Boys Pty Ltd are investigating the possibility of grey water reuse with Council. Until such time as Council confirms what its overall grey water reuse strategy comprises, the potential for grey water reuse on site cannot be determined.

7.5 HAZARD MANAGEMENT AND MITIGATION

Coffey Geosciences Pty Ltd has conducted a geotechnical assessment of the site. A copy of the report is included in *Volume 3* and the findings of the assessment are summarised below.

The subsurface conditions can be separated into two geological zones as shown on *Figure 4.2*. The Zone 1 subsurface conditions can be summarised as comprising sand and clay topsoil and colluvial soils, overlying very stiff to hard, high plasticity residual clay, grading to extremely weathered Claystone.

The Zone 2 subsurface conditions can be summarised as comprising sand and clay topsoil, overlying alluvial soils of variable depth, with residual soils underlying the alluvial soils in some test pits.

Groundwater inflow was observed in one of the test pits located within the project application area at a depth of 0.4m.

Based on the geotechnical investigations carried out to date, the site is considered to be generally suitable for residential development. However a more detailed geotechnical assessment to address site specific issues will be carried out prior to subdivision works commencing. It is anticipated that most of the proposed residential allotments will be located in areas of residual soils and weathered rock. High level footings designed in accordance with AS2870-1996 are likely to be suitable for dwellings. Assessment of the site classification for individual lots will be carried out prior to housing construction commencing.

7.6 TRAFFIC MANAGEMENT AND ACCESS

Vehicle access to the site will be achieved by way of a new temporary unsignalised intersection on the Pacific Highway. This intersection was approved by the RTA and Council in 1994 in association with a community title subdivision. The proposed unsignalised intersection will be constructed to provide interim access to the development. Detailed design drawings for the construction of the intersection were formally approved by the RTA on 9th January 2007. A copy of the letter of approval is included as *Annex B.*

The proposed intersection will be a priority-controlled AUSTROADS Type C seagull intersection. A copy of the proposed intersection plan is provided as *Figure 4.7*. A works authorisation deed (WAD) has been prepared as required by the RTA given the infrastructure works proposed in the Pacific Highway road reservation. The proposed intersection has been analysed using the aaSIDRA modelling suite to test the operating life of the proposed intersection form. The modelling results indicate that the intersection as proposed would operate well within normal operating thresholds for a ten year design horizon.

The Moonee DCP identifies a series of collector roads north and south of Moonee Beach Road. It is understood that Council has initiated discussions with local stakeholders regarding the necessary land acquisitions for the section of the collector route between the site and Moonee Beach Road, however the timing of its completion is unclear as a result of the dependence on adjacent landowners and allocation of necessary funding (the collector road is likely to cost in the order of $4m).

It should be noted, however, that even if the collector road is constructed in the short term, it will not alleviate the need to construct the interim Pacific Highway intersection as the intersection of Moonee Road and the Pacific Highway is currently at capacity and cannot accommodate any additional

traffic. The grade separation upgrade of the Moonee Road / Pacific Highway intersection is not programmed for at least five to 10 years and is likely to cost in the order of $14m to $16m. It is therefore envisaged that the proposed interim access arrangement will operate until such time as the collector route to Moonee Beach Road has been constructed and upgrading of the Moonee Beach Road / Pacific Highway is undertaken to a standard that provides sufficient capacity to cater for the entire catchment. At this time the interim access will be decommissioned by the applicants and the area appropriately landscaped.

The applicants have undertaken extensive consultation with both Council and the RTA regarding the construction of the collector road and the proposed interim access arrangement and have offered to forward fund the construction of the collector road by way of contributions to be paid to Council on a per lot basis. A draft matrix has been prepared and presented to the RTA for discussion purposes. The draft matrix sets out various commitments by the applicants, in terms of limiting the number of lots that can be developed before construction of the collector road is commenced, as well as approximate timeframes for acquisition, construction and payment of contributions to Council. A copy of the draft matrix is attached as *Annex D*.

7.7 EARTHWORKS AND FILLING

Earthworks will be required within the development area in establishing fill platforms to enable discharge of underground stormwater drainage without undue disturbance to the surrounding environment. Required fill will be sourced from the ridge that traverses the site from west to east. It is not envisaged that any earthworks will be required to be imported to the site or exported from the site. Unsuitable materials and excess topsoil will be utilised for non-structural fill in landscaping mounds, noise attenuation berms and earth bunds adjacent to the bioretention swales.

One main area of cut (135 000 m^3) is proposed within the central portion of the project application area. A corresponding amount of fill is to be placed in the areas indicated on the bulk earthworks plan provided as *Figure 4.3*. Proposed earthworks will not require the construction of major retaining walls or steep allotment batters.

Proposed filling and excavation works will be carried out under the control of a suitably qualified geotechnical engineer and in accordance with the requirements of the Stormwater Management Plan (SWMP), to ensure there are no impacts on receiving waters. All disturbed areas will be stabilised immediately upon completion of earthworks. All works will conform to best management practices for the control of dust and air emissions.

8 STATEMENT OF COMMITMENTS

This chapter provides a draft Statement of Commitments.

8.1 INTRODUCTION

The following draft Statement of Commitments has been prepared in accordance with the Director General's Environmental Assessment Requirements and Part 3A of the *Environmental Planning and Assessment Act 1979*. These commitments outline the environmental management, mitigation and monitoring measures to be adhered to by the Rothwell Boys Pty Ltd throughout the life of the project to manage potential environmental impacts arising from the proposed development.

The draft Statement of Commitments has been prepared to meet the following aims:

- to ensure the development meets statutory requirements in construction and operation phases;
- to ensure consistency with non-statutory policies and guidelines applying to the proposal;
- to promote ongoing use of best-practice in the development; and
- to provide a set of conditions that are practical and economically feasible to implement.

8.2 DRAFT STATEMENT OF COMMITMENTS

8.2.1 Subdivision Design and Layout

- The proposed development will be carried out in accordance with the Environmental Assessment (EA) prepared by ERM dated November 2007 and supporting documents, except where amended by this Statement of Commitments.
- Rothwell Boys Pty Ltd will establish and construct all recreation facilities identified in the Landscape Concept Plan and Open Space Management Plan. Ultimately all recreation amenities will become public facilities once the development stages of the project are complete. All areas of open space and any recreation facilities will be maintained by the Rothwell Boys Pty Ltd for a period of two years after the dedication of the land to Council, after which time all maintenance will be Council's responsibility. The staged dedication of open space areas will take place upon registration of the linen plan for each stage of the subdivision.

8.2.2 Statutory Requirements

- In 1994, Council granted consent to a ten lot community title subdivision which proposed the creation of an internal collector road servicing a number of super lots. As this development has been substantially commenced, it remains a valid consent. Should the current project be approved, however, the Rothwell Boys Pty Ltd will surrender the 1994 consent, in accordance with Section 104A of the *EP&A Act*, prior to construction commencing.

- The following licences, permits and approvals will be obtained and maintained for the residential subdivision:

  - Coffs Harbour City Council Construction Certificates for engineering works (including earthworks, soil and water management, roadwork drainage, landscaping) for each stage of the subdivision;

  - Coffs Harbour City Council Subdivision Certificate for each stage;

  - Section 138 Approval for roadwork (*Road Act 1993*);

  - Telstra Compliance Certificate;

  - Electricity Compliance Certificate from Country Energy; and,

  - Water Compliance Certificate from Coffs Harbour Council.

8.2.3 Construction Phase

A Construction Environmental Management Plan (CEMP) will be prepared and include the following:

- a description of the work program outlining relevant timeframes for activities;

- traffic management, including measures to be taken at the interim seagull intersection on the Pacific Highway;

- a description of the roles and responsibilities for all relevant employees involved in the construction phase;

- the minimisation of rubbish and debris at the site from development activities during the construction phase;

- erosion and sediment control during construction;

- details of environmental management procedures, monitoring and reporting requirements during construction and operation phase;

- details of statutory and other obligations that must be met during construction and operation, including all approvals and agreements required from authorities and other stakeholders; and

- an education strategy of construction contractors.

Construction Work shall be confined to 7.00am to 6.00pm, Monday to Fridays and 7.00am to 12.00 midday on Saturdays.

8.2.4 Flora and Fauna

The proposed development will result in the removal of some vegetation, resulting in the loss of habitat for fauna utilising the site. However, the best quality habitat on the site will be retained. The following mitigation and management measures will be implemented to minimise impacts on native flora and fauna:

- landscape and landfill material will be sourced from a supplier where cane toads do not occur;

- mature habitat tree will be retained where possible;

- compensatory Koala habitat trees will be planted in the north-west corner of the site at a ratio of 10:1 for any Koala habitat trees removed;

- a qualified fauna handler will be on site when clearing occurs; and

- planting of suitable feed trees (*A. littorialis, A. torulosa*) around retained areas of the site for Glossy black cockatoos utilising the site.

8.2.5 Proposed Conservation Areas and Moonee Creek/Estuary Buffer zones

The draft Moonee Creek Estuary Management Plan has been prepared by Council (in collaboration with the Department of Natural Resources) to fulfil the requirements of the NSW Estuary Management Policy (1992) and the NSW Coastal Policy. Relevant management strategies for Moonee Creek in relation to the proposed development are:

- revegetation of foreshores and other degraded areas; and

- identification and protection of cultural heritage sites.

There are two locations within the site that are identified in the plan for foreshore revegetation ie, a small section on the eastern boundary with Moonee Creek and an area on the south-eastern boundary. Rehabilitation works are proposed for these areas as outlined in the Landscape Concept Plan and Open Space Management Plan prepared for the site (refer to *Figure 2.7*).

8.2.6 Water Cycle Management and Impact on Watercourses, including Moonee Creek and Estuary

The following stormwater treatment measures will be implemented in accordance with the SWMP to ensure that pollutants leaving the site are minimised:

- runoff from all catchments will be directed through bioretention swales that have been designed to treat flows up to and including those with a three month Average Recurrence Interval (ARI). These swales will be designed to overflow along their full length; and
- flows up to and greater than three months ARI will overtop the bioretention swales and pass through vegetated filter zones prior to being released into natural drainage lines.

8.2.7 Bushfire Risk Management and Mitigation

The following measures will be implemented to provide adequate bushfire protection within the development:

- The Rothwell Boys Pty Ltd will establish Asset Protection Zones (APZs) in accordance with the Bushfire Risk Assessment (September 2007) prepared by Resource Design and Management Pty Ltd;
- APZs will be maintained to ensure that:
  - fuel loads are kept to a minimum through under scrubbing and ongoing maintenance works;
  - trees and shrubs are maintained such that vegetation is not continuous; and
  - ground cover / fuel does not exceed 10 centimetres in height.

8.2.8 Traffic Management and Access

- Vehicle access to the site will be achieved by way of a new temporary unsignalised intersection on the Pacific Highway. The proposed intersection will be a priority-controlled AUSTROADS Type C seagull intersection. The proposed intersection may be decommissioned when the collector road and the Moonee Beach Road interchange to the south are constructed.
- The Rothwell Boys Pty Ltd will enter into a formal agreement with Council to forward fund the construction of the proposed collector road between the site and Moonee Beach Road, as outlined in the draft matrix attached as *Annex D*. This agreement will be entered into prior to the release of the subdivision certificate for Stage 1 of the development.

- The proposed internal roads shall be constructed and dedicated for the full frontage of all lots in the development. The design of the internal roads will be in accordance with the 'Road Design and Access Control' measures outlined in the Coffs Harbour City Council Subdivision Development Control Plan.

8.2.9 Noise

In order to reduce the impact of traffic noise from the Pacific Highway:

- an acoustically treated fence and landscaped bund will be constructed along the section of the Pacific Highway frontage of the site prior to the release of the Subdivision Certificate for Stage 1; and

- all future dwellings which adjoin the Pacific Highway shall be assessed by a qualified Acoustic Engineer. A restriction shall be placed on the title of the land via an 88B instrument to this effect.

8.2.10 Infrastructure Provision

The following infrastructure is to be provided;

- underground electricity reticulation to each residential lot to the satisfaction of Country Energy prior to the release of the Subdivision Certificate;

- reticulated potable water supply will be provided to each residential lot to Council's satisfaction prior to the release of the Subdivision Certificate;

- a reticulation vacuum sewer system is to be installed to each residential lot to Council's satisfaction prior to the release of the Subdivision Certificate; and

- satisfactory arrangements will be made with Telstra Australia for the provision of fibre optic cable to each residential lot prior to the release of the Subdivision Certificate.

8.2.11 Aboriginal Cultural Heritage

The following mitigation measures will be implemented to minimise any potential impacts of the development on Aboriginal cultural heritage:

- the area of remnant vegetation within Site 2 (refer to *figures 4.1* and *4.2*) will not be disturbed. During construction, this area will be protected from potential impacts by high visibility fencing and all contractors will be made aware that the area is not be disturbed;

- should activities involving ground disturbance within this area of remnant vegetation be unavoidable, further archaeological investigation will be conducted prior to any such disturbance;

- a surface collection of artefacts will be undertaken by representatives of the Aboriginal community and an archaeologist in the portion of Site 2 to be disturbed and in the vicinity of Site 1 and Site 5 prior to the commencement of any activities involving ground disturbance. Representatives of the Aboriginal community have stated that they wish to monitor initial ground disturbance works along the ridge on which Site 2 is located;

- the area of cultural significance and the potential archaeological deposits (PADs) identified in *Figure 4.2* will not be disturbed. During construction, these areas will be protected from potential impacts by high visibility fencing and all contractors will be made aware that the areas are not to be disturbed;

- should any activity be necessary within the area of cultural significance identified in *Figure 4.2* further consultation with representatives of the Aboriginal community will be undertaken prior to the commencement of any such activity;

- any works outside the proposed development footprint in relation to the construction of recreational areas and pathways will minimise ground disturbance by being confined to previously disturbed vehicle tracks or through the use of elevated boardwalks. Should this not be possible, further consultation with representatives of the Aboriginal community will be undertaken regarding the proposed location of any proposed ground disturbance works and further archaeological investigations in the form of surface collections or test excavations may be required; and

- site 3, Site 4, Site 6 and Site 7 will not be disturbed. During construction, these areas will be protected from potential impacts by high visibility fencing and all contractors will be made aware that the areas are not to be disturbed.

8.2.12 Geotechnical Conditions

- If required, a more detailed geotechnical assessment will be carried out to confirm site stability and suitability for the proposed development prior to construction works commencing within the project application area.

8.2.13 Section 94 Levies

- Section 94 developer contributions will be paid to Council in accordance with Council's applicable developer contributions plans.

8.2.14 Earthworks

The following measures will be employed to minimise potential environmental impacts associated with the proposed earthworks:

- proposed earthworks will be carried out strictly in accordance with the Bulk Earth Works Plan illustrated in *Figure 4.4* and the Stormwater Management Plan; and
- all disturbed area will be stabilised upon completion of earthworks.

9 CONCLUSION

This chapter provides justification for the project and draws conclusions regarding the overall suitability of the project, taking into account the environmental impacts of the project, the suitability of the site and the public interest.

9.1 JUSTIFICATION

The vision for the "Glades Estate" is to create an attractive residential community set within a high quality built environment that is sympathetic to the natural environment and consistent with the principles of ecologically sustainable development. The design of the estate and in particular the location of urban development and open spaces, has evolved following a detailed analysis of the constraints and opportunities of the site and relevant statutory planning considerations to determine the most appropriate development footprint. The following key constraints and features were considered:

- the presence of threatened species and significant habitat;
- Skinners Creek and Moonee Creek;
- flood prone and wetland areas;
- the central stand of mature vegetation;
- the presence of an Osprey nesting site; and
- areas of cultural significance.

The development footprint avoids all significant environmentally sensitive areas on the site. In total, approximately 45 hectares out of a total of 96 hectares is intended to be dedicated to Council as either habitat conservation or active / passive open space.

The proposed street network takes account of the existing topography and can readily accommodate traffic volumes expected to be generated by the future residents of the subdivision. It includes a road hierarchy that clearly defines the function of each street and reduces the potential for through traffic. Pedestrian and cycle networks are integrated with the proposed road network and provide north-south and east-west pedestrian and cycle connections through the estate. The road network has been designed to accommodate bus routes that will link the estate with Moonee village and Coffs Harbour to the south and the villages and beaches to the north.

The proposed development will achieve the target dwelling yield for North Moonee. The minimum dwelling yield as shown on Map 7 of the DCP is 486. The proposal will create 523 residential lots and will achieve a site density of approximately 10 dwellings per hectare.

The proposed development is expected to generate in the order of 1560 jobs during housing construction over the entire estate. In addition, the civil construction works will generate employment opportunities and result in a significant short-term increase in employment. During housing construction, the proposal is also expected to generate demand for over $40 million worth of primary materials, transport and property services. Annual household expenditure generated from future households in the estate is likely to be in the order of $25.5 million, providing significant positive economic benefits to the local economy.

9.1.1 Suitability of the Site

The site is considered suitable for residential development and has been zoned residential for over 20 years. The site is identified in Councils draft settlement strategy as land which is zoned residential but is yet to be developed. Development of the site will ensure that attractive residential land becomes available to satisfy genuine demand for a variety of housing types in appropriate locations throughout the estate.

The development footprint is largely cleared of vegetation and has been used for grazing for many years. Those areas adjoining Moonee and Skinners Creek which contain environmentally sensitive areas are to be conserved as required in Council's Moonee DCP.

A series of detailed investigation into a range of hazards including flooding, Acid Sulfate Soils, traffic noise, etc have demonstrated that these issues can be readily mitigated or are of no real concern. The conclusion can therefore be drawn that the site is well suited for its intended use.

9.1.2 Public Interest

The proposed development is in the public interest as it will:

- provide additional housing stock in the Coffs Harbour LGA;
- utilise public infrastructure which has been constructed with the capacity to accommodate this proposed development;
- provide greater housing choice for existing and future residents;
- be consistent with adopted state and local planning policies and strategies;
- strengthen the viability of the Moonee commercial area and local bus services;
- generate significant economic activity through the multiplier effect during the construction stages;

- ensure high quality built form and aesthetics through proposed design controls; and

- not pose any significant negative environmental or social impacts.

9.2 CONCLUSION

The proposed development will contribute to achieving the strategic objectives for population growth in the Coffs Harbour LGA in a manner consistent with the objectives and strategies contained in Council's draft "Our Living City" Settlement Strategy and the Moonee DCP.

It will provide additional housing choice for existing and future residents and has been demonstrated to be in the public interest for the reasons cited in S*ection 9.1.2*.

The proposed development footprint will be predominantly confined to areas which have been cleared for grazing, thereby avoiding all the significant environmentally sensitive areas of the site. It utilizes the RTA approved intersection to the Pacific Highway, for which development consent was granted by Council in 1994. The 1994 consent for a ten lot community title subdivision will be surrendered in accordance with Section 104A of the *EP&A Act* and the site will be developed in accordance with Council's target density for the site, as set out in the Moonee DCP.

With appropriate mitigation and management measures, including water quality controls, restrictions on built form to achieve a high level of residential amenity and implementation of bushfire risk management measures, the proposed development will not result in any significant environmental impacts.

The justification provided in the preceding chapters presents a strong case for The Glades Estate to be developed in the manner proposed provided all the environmental enhancement and mitigation measures discussed in the draft statement of commitments are implemented in a timely fashion.

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Volume 1

ANNEXURES

ANNEX A

Director General's Requirements

NSW GOVERNMENT
Department of Planning

Contact: Michael Woodland
Phone: 9228 6375
Fax: 9228 6540
Email: michael.woodland@planning.nsw.gov.au

Our ref: MP06-0143
File: 9042839

Mr D Rothwell
Rothwell Boys Pty Limited
PO Box 55
CAMMERAY NSW 2062

Dear Mr Rothwell

Director-General's Requirements for the Environmental Assessments of the proposed Concept Plan for Residential Subdivision of Lots 1 & 2 DP 725785, Pacific Highway, Moonee into approximately 500 lots and a Project Application for Stage 1 of the subdivision comprising approximately 121 lots (MP 06_0143).

The Department has received your application for the proposed residential subdivision of the land into 500 lots.

The Director-General's Environmental Assessment Requirements (DGRs) for the environmental assessment of the project for a Concept Plan and Project Application are attached to this correspondence at **Attachment 1**. These requirements have been prepared in consultation with the relevant government agencies including council.

Attachment 2 lists the relevant plans and documents which are likely to be required upon submission of your proposal, however, this should be confirmed with the Department prior to lodgement.

It should be noted that the DGRs have been prepared based on the information provided to date. Under section 75F(3) of the Act, the Director-General may alter or supplement these requirements if necessary and in light of any additional information that may be provided prior to the proponent seeking approval for the project.

It would be appreciated if you would contact the Department at least 2 weeks before you propose to submit the Environmental Assessment for the project to determine:

- the fees applicable to the application;
- consultation and public exhibition arrangements that will apply; and
- number and format (hard-copy or CD-ROM) of the Environmental Assessment that will be required.

A list of some relevant technical and policy guidelines which may assist in the preparation of this Environmental Assessment are attached at **Attachment 3**.

Prior to exhibiting the Environmental Assessment, the Department will review the document to determine if it adequately addresses the DGRs. The Department may consult with other relevant government agencies in making this decision. If the Director-General considers that the Environmental Assessment does not adequately address the DGRs, the Director-General

may require the proponent to revise the Environmental Assessment to address the matters notified to the proponent.

Following this review period the Environmental Assessment will be made publicly available for a minimum period of 30 days. The DGRs will be placed on the Departments website along with other relevant information which becomes available during the assessment of the project. As a result, the Department would appreciate it if all documents that are subsequently submitted to the Department are in a suitable format for the web, and if you would arrange for an electronic version of the EA to be hosted on a suitable website with a link to the Departments website.

If your proposal includes any actions that could have a significant impact on matters of National Environmental Significance, it will require an additional approval under the Commonwealth Environment Protection Biodiversity Conservation Act 1999 (EPBC Act). This approval would be in addition to any approvals required under NSW legislation. If you have any questions about the application of the EPBC Act to your proposal, you should contact the Commonwealth Department of Environment and Heritage in Canberra (6274 1111 or http://www.deh.gov.au).

If you have any queries regarding these requirements, please contact Michael Woodland, Team Leader, Coastal Assessments on 9228 6375 or email michael.woodland@planning.nsw.gov.au

Yours sincerely

19.10.06

Chris Wilson
Executive Director
as delegate for the Director General

Attachment 1
Director-General's Environmental Assessment Requirements

Section 75F of the *Environmental Planning and Assessment Act 1979*

Application number	06-0143
Project	**Proposed Residential Subdivision at Lot 1 & 2 DP 725785, Pacific Highway, Moonee Beach** • **A: Concept Plan Application:** A concept plan approval is sought for residential subdivision into approximately 500 lots. This will include approval of the following key parameters: layout and staging of the subdivision; access to the site; provision of habitat corridors; conservation areas and buffers to Moonee Creek/Estuary. • **B: Project Application:** Subdivision of Stage 1 (121 lots) and associated site works, access roads, services and infrastructure provision.
Location	Lots 1 & 2 DP 725785, Pacific Highway, Moonee Beach, Coffs Harbour
Proponent	Rothwell Boys Pty Limited
Date issued	19 October 2006
Expiry date	2 years from date of issue
General requirements	The Environmental Assessment must include: **PART A: the Concept Plan Application:** 1. An executive summary; 2. An outline of the scope of the project including: • any development options; • justification for the project taking into consideration any environmental impacts of the project, the suitability of the site and whether the project is in the public interest; • outline of the staged implementation of the project if applicable; 3. A thorough site analysis and description of the existing environment; 4. Consideration of any relevant statutory and non-statutory provisions and identification of any non-compliances with such provisions, in particular relevant provisions arising from environmental planning instruments, Regional Strategies (including draft Regional Strategies) and Development Control Plans as well as impacts, if any, on matters of national environmental significance under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*; 5. An assessment of the potential impacts of the project and a draft Statement of Commitments, outlining environmental management, mitigation and monitoring measures to be implemented to minimise any potential impacts of the project; 6. The plans and documents outlined in **Attachment 2**;

	7. A signed statement from the author of the Environmental Assessment certifying that the information contained in the report is neither false nor misleading; and 8. An assessment of the key issues specified below and a table outlining how these key issues have been addressed. **PART B: the Project Application**: 1. The matters listed above in Part A, and 2. A detailed description, including plan details, of the project application component, comprising the first stage of the subdivision.
Key issues	**PART A: Key issues to be addressed in the Concept Plan Application for all stages of the subdivision.** The Environmental Assessment must address the following key issues: **1 Subdivision Design and Layout** 1.1 Demonstrate that the subdivision design and layout will be consistent with the Coastal Design Guidelines for NSW (2003). 1.2 Demonstrate that the subdivision design and layout maximises connections to existing urban areas and to the planned Moonee urban release areas; achieves an integrated design; provides a continuous network for vehicles (including bicycles) and pedestrians to, within and from the site, and includes consideration of possible fragmentation from the Moonee urban release area due to any separate access and/or secondary access to the Pacific Highway. 1.3 Address access to facilities including retail facilities, transport, and recreation and community facilities. 1.4 Address visual impacts and relevant mitigation measures, in the context of adjoining and surrounding development, and the setting if the site, from all publicly accessible areas. 1.5 Identify appropriate open space areas, buffer zones, bushfire asset protection zones and conservation areas, see 3.1 and 5.1 below. 1.6 Provide a staging plan of the subdivision that demonstrates that lots will be released in an orderly and coordinated manner. **2. Flora and Fauna** 2.1 Outline measures for the conservation of animals and plants and their habitats within the meaning of the *Threatened Species Conservation Act 1995* and *Fisheries Management Act 1994.* 2.2 Outline measures for the conservation of existing wildlife corridor values and/or connective importance of vegetation on the subject land, including Koala habitat and areas identified as being of high and/or very high ecological status. **3. Proposed Conservation Areas and Moonee Creek/Estuary Buffer Zones** 3.1 Identify conservation and buffer areas having consideration to strategies and recommendations of the Estuary Management Plan for Moonee Creek (or draft Estuary Management Plan for

Moonee Creek), this is to include appropriate setbacks to Moonee Creek and Solitary Island Marine Park and should exclude areas for stormwater management and/or bushfire risk mitigation.

4. Water Cycle Management and Impact on Watercourses, including Moonee Creek and Estuary

4.1 Address potential impacts on the water quality of surface and groundwater, and on the waters and estuarine environment of Moonee Creek and Solitary Islands Marine Park. This should include consideration of potential impacts of formal access (such as boat ramps and jetties) and of potential informal access, as well as impacts of additional recreational use.

4.2 Address relevant strategies and recommendations of the Estuary Management Plan for Moonee Creek (or draft Estuary Management Plan).

4.3 Outline measures for Integrated Water Cycle Management (including stormwater drainage) based upon Water Sensitive Urban Design principles, and including consideration of impacts on the surrounding environment, use of treated grey water, and ongoing monitoring and maintenance.

4.4 Liaise with the Department of Natural Resources and Department of Primary Industries/Fisheries in relation to any requirements for water use, water management and work within 40m of the top of the bank of rivers and streams, and free passage of fish in waterways.

5. Hazard Management and Mitigation

5.1 Address the requirements of *Planning for Bush Fire Protection 2001* (RFS) and ensure required bushfire asset protection zones are located outside proposed conservation areas and buffer zones.

5.2 Address the requirements of relevant flooding data in relation to the subdivision design and layout and minimum site and floor levels. This should include consideration of the impacts of predicted sea level rise over next 100 years

5.3 Identify any areas of contamination on site and appropriate mitigation measures to ensure these can be managed in accordance with relevant statutory and non statutory requirements.

5.4 Identify the presence and extent of acid sulfate soils on the site and appropriate mitigation measures.

5.5 Identify any other site specific natural hazards where relevant, and mitigation measures.

6. Traffic Management and Access

6.1 Prepare a 'Traffic Impact Study' in accordance with the RTA's Guide to Traffic Generating Development, which addresses but is not limited to the following matters:

- The RTA's Coffs Harbour Pacific Highway Planning Strategy.
- The capacity of the road network to safely and efficiently cater for the additional vehicular traffic generated.
- Potential construction and operational impacts on

existing and proposed intersections/s in particular intersections/s with the Pacific Highway.

- Consider available public transport and additional demands for such transport, and provisions for pedestrians and cyclists.

7. Noise

7.1 Address potential noise impacts, in particular road traffic noise, for future residents and appropriate mitigation measures. This should include consideration of the impacts of the RTA's planned upgrade of this section of the Pacific Highway.

8. Infrastructure Provision

8.1 In consultation with relevant agencies, address the existing capacity and requirements of the development for sewerage, water, electricity, telecommunications, waste disposal and gas.

8.2 Address the provision of public services and infrastructure having regard to the Council's section 94 Contribution Plan/s.

9. Heritage

9.1 Identify whether the site has significance in relation to Aboriginal cultural heritage and identify appropriate measures to preserve any significance.

9.2 Identify any other items of European heritage significance and provide measures for conservation of such items.

PART B: Key issues to be addressed in the Project Application Environmental Assessment for Stage 1 of the subdivision

1. Compliance with the requirements for the Concept Plan

1.1 The Environmental Assessment must demonstrate consistency with all DGRs as detailed above in Part A, and the following additional matters.

2. Subdivision Layout and Design

2.1 Demonstrate that the subdivision design and layout can provide for energy efficiency, safety, accessibility and housing diversity.

2.2 Outline possible building envelope, built form and design quality controls, and the means of implementing them.

3. Proposed Conservation Areas and Moonee Creek/Estuary Buffer Zones

3.1 Outline the means for the long-term management of these areas, including: their ownership and control; public access; revegetation and rehabilitation works; weed management; and measures to control access by domestic animals.

4. Water Cycle Management and Impact on Watercourses, including Moonee Creek and estuary

4.1 Provide a concept plan for Integrated Water Cycle Management (including stormwater concept plan/s) based upon Water Sensitive Urban Design principles, and including

	consideration of impacts on the surrounding environment, use of treated grey water, and ongoing monitoring and maintenance. **5. Hazard Management and Mitigation** 5.1 Submit a geotechnical assessment report that details appropriate geotechnical investigations to establish certainty in terms of site stability and suitability for the proposal. **6. Traffic Management and Access** 6.1 Address impacts of additional intersection/s and access to the Pacific Highway, and address their closure upon the establishment of access via the local/collector road system set out in Council's Moonee DCP 2004. **7. Earthworks and filling** 7.1 Address impacts of earthworks and filling on the existing hydrology and water quality, the conservation of animals, plants and habitat, and the management of acid sulphate soils and any contamination of the site. 7.2 Provide details of the source of fill including types of material and soils, and details of suitable revegetation planting.
Consultation	You should undertake an appropriate and justified level of consultation with the following agencies during the preparation of the environmental assessment: (a) *Agencies or other authorities:* • Coffs Harbour City Council; • Department of Natural Resources; • Department of Environment and Conservation; • Department of Lands; • Department of Primary Industries/ Fisheries; • Roads and Traffic Authority; • NSW Rural Fire Service; • Solitary islands Marine Park Authority; • Country Energy; • Telstra; • Local Aboriginal Land Council/s. (b) *Public:* Document all community consultation undertaken to date or discuss the proposed strategy for undertaking community consultation. This should include any contingencies for addressing any issues arising from the community consultation and an effective communications strategy. The consultation process and the issues raised should be described in the Environmental Assessment.
Deemed refusal period	**60 days**

Attachment 2
Plans and Documents to accompany the Application

Plans and Documents of the development	The following plans, and diagrams of your proposal as well as the relevant documents will be required to be submitted for the **Concept Plan application for all stages of the subdivision**: 1. The **existing site survey plan** is to be drawn to 1:500 scale (or other appropriate scale) and show: • the location of the land, the measurements of the boundaries of the land, the size of the land and north point; • the existing levels of the land in relation to buildings and roads; • location and height of existing structures on the site; and • location and height of adjacent buildings and private open space. 2. A **Site Analysis Plan** must be provided which identifies existing natural elements of the site (including all hazards and constraints), existing vegetation, property dimensions, footpath crossing levels and alignments, existing pedestrian and vehicular access points and other facilities, slope and topography, natural features such as watercourses, rock outcrops, utility services, boundaries, orientation, view corridors and all structures on neighbouring properties where relevant to the application (including windows, driveways etc. 3. A **locality/context plan** drawn to 1:500 scale (or other appropriate scale) should be submitted indicating: • significant local features such as parks, community facilities and open space, water courses and heritage items; • the location and uses of existing buildings, shopping and employment areas; • traffic and road patterns, pedestrian routes and public transport nodes; and • The existing site plan and locality plan should be supported by a written explanation of the local and site constraints and opportunities revealed through the above documentation. 4. The **Environmental Assessment** in accordance with the Director-General's Environmental Assessment Requirements as outlined in Attachment 1. 5. The **Subdivision plans** are to show the following:- • General dimensions of proposed and/or existing allotments, for the concept plan; • Location of all structures proposed and retained on site; • North point; • Name of the road fronting the site; • Vegetation retention; • Access points; and • Type of subdivision proposed (Torrens, strata and/or community title). 6. **Stormwater Concept Plan** – illustrating the concept for stormwater management from the site; 7. **Infrastructure Concept Plan** – illustrating the overall concept for infrastructure provision for the site, and primarily sewerage and water supply.

	The following plans and diagrams of your proposal as well as relevant documents will be required to be submitted for the **Project Application for stage 1:** 1. The **Environmental Assessment** in accordance with the Director-General's Environmental Assessment Requirements as outlined in Attachment 1. 2. Detailed **Subdivision layout plans** to illustrate the following:- • Location of all structures both proposed and retained on site; • North point; • Dimensions of proposed and/or existing allotments; • North point; • Name of the road fronting the site and other surrounding major roads; • Cross sections of roads, including gradients, widths, road names, footpaths etc. • Access points; • Title showing the description of the land with lot and DP numbers etc; • Type of subdivision proposed (Torrens, strata and/or community title). • Vegetation retention; • Any easements, covenants or other restrictions either existing or proposed on the site; 3. **Stormwater Plan** - illustrating the plan for stormwater management of the site and must include details of any major overland flow paths through the site and any discharge points to the street drainage system. Where an on-site detention system is required, the type and location must be shown and must be integrated with the proposed landscape design. Site discharge calculations should be provided. 4. **Erosion and Sediment Control Plan** – plan or drawing that shows the nature and location of all erosion and sedimentation control measures to be utilised on the site; 5. **Landscape Plan** – plan or drawing that shows the basic detail of planting design and plat species to be used, listing botanical and common names, mature height and spread, number of plants to be utilised and surface treatments (i.e. pavers, lawn etc); 6. **Waste Management Plan** – where demolition is proposed, a plan which addresses demolition and construction wastes that may be generated including likely quantities, proposed disposal destinations and best practices for safe handling and disposal in accordance with WorkCover's Occupational Health and Safety requirements must be provided; 7. **Construction Management Plan** – a plan which outlines traffic and pedestrian management during construction and management of impacts on amenity of adjoining properties and appropriate mitigation measures including noise , dust and sediment and erosion controls..
Specialist advice	Specialist advice, where required to support your Environmental Assessment, must be prepared by suitably qualified and practicising consultants in relation to issues including, but not limited to, the following: • Flora and Fauna; • Bushfire; • Traffic; • Landscaping;

	• Geotechnical and/or hydro geological (groundwater); • stormwater/drainage; • Urban Design/Architectural; • Contamination in accordance with the requirements of SEPP 55; and • Acid Sulphate Soil Management Plan;
Documents to be submitted	• Initially only 1 hard copy of the Environmental Assessment and 1 set of plans should be submitted to the Department, so that a preliminary test of adequacy can be carried out, prior to final submission of all documentation. • 10 hard copies of the Environmental Assessment; • 10 sets of architectural and landscape plans to scale, including one (1) set at A3 size (to scale); • 1 copy of the Environmental Assessment and plans on CD-ROM (PDF format), not exceeding 5Mb in size (see below); and • If the Environmental Assessment is bulky and lengthy in volume, you will be required to package up each Environmental Assessment ready for distribution by the Department to key agencies.
Electronic Documents	Electronic documents presented to the NSW Department of Planning for publication via the Internet must satisfy the following criteria:- • Adobe Acrobat PDF files and Microsoft Word documents must be no bigger that 1.5 Mb. Large files of more than 1.5 Mb will need to be broken down and supplied as different files. • File names will need to be logical so that the Department can publish them in the correct order. Avoid sending documents that are broken down in more than 10 files. • Image files should not be bigger than 2Mb. The file names will need to be clear and logical so the Department can publish them in the correct order. • Graphic images will need to be provided as [.gif] files. • Photographic images should be provided as [.jpg] files. • Large maps will need to be presented as individual files and will need to be calibrated to be no more than 2Mb each. • Images inserted into the document will need to be calibrated to produce files smaller than 1.5Mb. Large images will need to be presented as individual files and will need to be calibrated to be no more than 2Mb each. The file names will need to be clear and logical so the Department can publish them in the correct order. Alternatively, these electronic documents may be placed on your own web site with a link to the Department of Planning's website.

Attachment 3
State Government technical and policy guidelines

The following list provides relevant technical and Policy Guidelines which may assist in the preparation of the Environmental Assessment. It should be noted, however, that this list is not exhaustive as other documents and policies may need to be reviewed. It is also important to note that not of all of these guidelines may be relevant to your proposal.

The majority of these documents can be found on the relevant Departmental Websites, on the NSW Government's on-line bookshop at http://www.bookshop.nsw.gov.au or on the Commonwealth Government's publications website at http://www.publications.gov.au.

Aspect	Policy /Methodology
Biodiversity	
Flora and Fauna	Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities, Working Draft (Department of Environment and Conservation, 2004)
	Draft Guidelines for Threatened Species Assessment (Departments of Environment and Conservation, and Primary Industries, 2005, available from Department of Planning)
	Atlas of NSW Wildlife (NSW National Parks and Wildlife Service)
	NSW BioNet Website (www.bionet.nsw.gov.au)
	Threatened Species: Species, Populations, and Ecological Communities of NSW (www.threatenedspecies.environment.nsw.gov.au/index.aspx)
	Key Habitats and Corridors for Forest Fauna: A Landscape Framework for Conservation in North-East NSW (David Scotts NSW NPWS, Occasional Paper 32, June 2003)
	Interim Guidelines for Targeted and General Flora and Fauna Surveys under Native Vegetation Conservation Act (former Department of Land and Water Conservation 1999)
Fish and Aquatic Ecosystems	Policy and Guidelines Aquatic Habitat Management and Fish Conservation (NSW Fisheries, 1999)
	Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (NSW Fisheries, 2003)
	Policy and Guidelines for Fish Friendly Waterway Crossings (NSW Fisheries, 2003)
Bushfire	
	Planning for Bushfire Protection 2001 (NSW Rural Fire Service)
Coastal Planning & Water bodies	
	NSW Coastal Policy 1997 - A sustainable Future for the New South Wales Coast (Department of Urban Affairs & Planning, 1997)
	Coastal Design Guidelines for NSW (Coastal Council of NSW, 2003)
	Far North Coast Regional Strategy (Department of Planning, draft, 2006)
	Coastal Dune Management Manual (Department of Land and Water Conservation, 2001)
	Rehabilitation Manual for Australian Streams (I Rutherford, K Jeries, N Marsh- Land and Water Resources Research and Development Corporation, 2000)
	NSW Wetlands Management Policy (Department of Land and Water

Aspect	Policy/Methodology
	Conservation, 1996)
	Coastal Lakes: Independent Inquiry into Coastal Lakes (Healthy Rivers Commission, 2002)
	Estuary Management Plan and Study, Moonee Creek, Final Draft Report (WBM Oceanics, 2006)
Environmental Management Systems	
	Guidelines for Preparation of Environmental Management Plans (DIPNR, 2004)
Heritage	
	The Australia ICOMOS Charter for the Conservation of Places of Cultural Significance (The Burra Charter). Guidelines to the Burra Charter (Australia International Council on Monuments and Sites, 1999)
	Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (Department Environment and Conservation 2005, available from Department of Planning)
	Aboriginal Cultural Heritage Standards & Guidelines Kit (DEC, 1997)
	NSW Heritage Manual and Assessing Heritage Significance (NSW Heritage Office, July 2001)
	NSW Heritage Manual (NSW Heritage Office,1996)
	Assessing Heritage Significance: A NSW Heritage Manual update (NSW Heritage Office, 2001)
	Guidelines for Photographic Recording of Heritage Items (NSW Heritage Office, 1994)
	How to Prepare Archival Records of Heritage Items (NSW Heritage Office, 1998)
Lighting	
	Control of Obtrusive Effects of Outdoor Lighting (Standards Association of Australia, 1997, AS 4282)
Noise & Vibration	
	Environmental Criteria for Road Traffic Noise (Department of Environment and Conservation 1999)
	Noise Guide for Local Government (Department of Environment and Conservation, 2004)
	Environmental Noise Management Manual (Roads and Traffic Authority, 2001)
	Assessing Vibration: A Technical Guideline (Department of Environment and Conservation, 2006)
	NSW Industrial Noise Policy (Department of Environment and Conservation, 2000)
	Interim Guidelines for Applicants: Consideration of Rail Noise and Vibration in the Planning Process (Rail Infrastructure Corporation & State Rail Authority, November 2003).
Safety, Security & Risk Assessment	
	Crime Prevention and the Assessment of Development Applications (former PlanningNSW, April 2001)
	The Demolition of Structures (Standards Australia, 2001, AS 260)
	Multi-Level Risk Assessment Guidelines (former Department of Urban Affairs & Planning, 1999)

Aspect	Policy /Methodology
Soils & Contamination	
	Acid Sulfate Soil Manual (Acid Sulfate Soils Management & Advisory Committee [ASSMAC], 1998; published by DUAP)
	Contaminated Sites: Sampling Design Guidelines (former Environment Protection Authority, 1995)
	Contaminated Sites: draft Guidelines for the NSW Auditor Scheme (former Environment and Protection Authority, 2nd edition, 2002)
	Contaminated Sites: Guidelines on Significant Risk of Harm from Contaminated Land and Duty to Report (former Environment Protection Authority, 1999, revised 2003)
	Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land, (former Department of Urban Affairs & Planning and the Environment Protection Authority 1998.
	Soil and Landscape Issues in Environmental Impact Assessment (former Department of Land and Water Conservation Technical Report No. 34, 2000)
	Taking on the Challenge: NSW Salinity Strategy (former Department of Land and Water Conservation, 2000)
Sustainability	
	The Building Sustainability Index, BASIX – www.basix.nsw.gov.au
Traffic, Transport & Pedestrian & Cyclist Facilities	
	Guide to Traffic Generating Developments (Roads and Traffic Authority, 1993)
	Planning Guidelines for Walking and Cycling (former Department of Infrastructure Planning and Natural Resources & RTA, December 2004)
	Traffic Control at Worksites Guidelines (Roads and Traffic Authority, September 2003)
	Guide to Traffic Engineering and Guide to Geometric Design of Rural Roads (Ausroads, 2003)
Urban Design	
	Neighbourhood Character: An Urban Design Approach for Identifying Neighbourhood Character (former Department of Urban Affairs and Planning, 1998)
	Residential Densities: A Handbook Illustrating the Urban Design Characteristics of Different Densities (former Department of Urban Affairs and Planning, 1998)
	Mixed Use in Urban Centres, Guidelines for Mixed Use Development, (PlanningNSW, 2001)
	Better Urban Living: Guidelines for Urban Housing in NSW, (former Urban Design Advisory Service & Department of Urban Affairs and Planning, 1998)
	Urban Form: An Urban Design Approach for Understanding the Urban Form of Regional Centres (former Department of Urban Affairs and Planning, 1998)
	Residential Flat Design Code (Urban Design Advisory Service, 2002)
	Residential Flat Design Pattern Book (Urban Design Advisory Service, 2001)

Aspect	Policy /Methodology
Waste	
	Wastewater Reuse in the Urban Environment: Selection of Technologies (LandCom, 2006)
Water	
Water Quality	Australian & New Zealand Guidelines for Fresh & Marine Water Quality (Australian & New Zealand Environment & Conservation Council (ANZECC), 2000)
	Coastal Lakes: Independent Inquiry into Coastal Lakes (Healthy Rivers Commission, April 2002)
	Marine Water Quality Objectives for NSW Ocean Waters, North Coast (Department of Environment and Conservation, 2005)
	Local Planning for Healthy Waterways: Using NSW Water Quality Objectives (Department of Environment and Conservation, 2006)
	Using the ANZECC Guidelines and Water Quality Objectives in NSW (Department of Environment and Conservation, 2006)
Flooding & the Floodplain	NSW Government Floodplain Development Manual - the Management of Flood Liable Land (DIPNR, 2005)
	Restoring the Balance: Guidelines for Managing Floodgates and Drainage Systems on Coastal Floodplains (former NSW Agriculture/Department of Primary Industries, 2003)
Groundwater	Guidelines for Groundwater Protection in Australia (Australian & New Zealand Environment & Conservation Council (ANZECC), 1995)
	NSW Groundwater Policy Framework Document – General (DLWC, 1997)
	NSW State Groundwater Quality Protection Policy (DLWC, 1998)
	NSW State Groundwater Dependent Ecosystems Policy (DLWC, 2002)
Stormwater	Water Sensitive Urban Design Strategy: Best Planning and Management Practices (Book Two) (NSW Landcom, 2004)
	Water Sensitive Planning Guide and Practice Notes for Sydney Region, (Upper Parramatta River Catchment Trust for WSUD in Sydney Region, 2003, www.wsud.org)
	Managing Urban Stormwater: Source Control (former Environment Protection Authority, draft 1998)
	Managing Urban Stormwater: Treatment Techniques (former Environment Protection Authority, draft 1997)
	Managing Urban Stormwater: Soils & Construction "The Blue Book" (NSW Landcom, 2004)
	Managing Urban Stormwater: Harvesting and Reuse (Department of Environment and Conservation, 2006)
	Australian Rainfall and Runoff (Institution of Engineers, Australia, revised edition 1997)
	Australian Runoff Quality (Institution of Engineers, Australia, 2005)
	Better Drainage: Guidelines for the Multiple Use of Drainage System (former PlanningNSW/DUAP, 1993)

ANNEX B

RTA Letter of Approval - Intersection Design

File No: 10/110n00267
Greg Nash

RTA

Rotherwell Boys Pty Ltd
P.O Box 2578
Southport BC QLD 4215

Attention: Mr Dale Holt

Subject: DA No . 257/94– Detailed Design Review Pacific Highway Intersection With Proposed Subdivision Road Moonee Beach (Glades Development) – Coffs Harbour

Dear Mr Holt

I refer to a letter sent 9 February 2006 from Resource Design and Management Pty Ltd on your behalf enclosing copies of detailed design drawings (Your Reference: 1779 Sheets 1 to 40 inclusive) for the subject development.

The RTA advises that the drawings are accepted for construction purposes and a copy is enclosed for your information. A copy will also be forwarded to Coffs Harbour Council.

Please note that this letter does not represent an approval to commence construction works within the State road reserve. Any construction certificate issued by Council or any Accredited Certifier should exclude works in the State road reserve until RTA issues an authorisation letter after receipt and acceptance of all pre-construction documentation enabling the works to proceed.

Pre-construction documentation includes:

- All statutory approvals
- Road occupancy license
- Project management plan comprising:
  - Environmental management plan
  - OH&S plan
  - Quality plan
  - Inspection & test plan
  - Traffic control plan
  - Traffic management plan
  - E&SC plan
- Approved security
- Construction program
- Written notice of commencement
- Names of proposed contractors and sub-contractors
- Insurances

A road occupancy licence must be issued prior to any lane closure and works commencing. This can be obtained from the Traffic Impact Co-ordinator, Mr Tony Smith, on (02) 66401077.

The RTA will undertake surveillance during construction. Please arrange for the construction contractor to maintain contact with the RTA's surveillance officer, Mr David Byrnes, on (02) 66429933 during the construction period.

If you have any questions in relation to this letter please contact Project Manager, Mr John Perkins, on (02) 66049328.

Yours sincerely

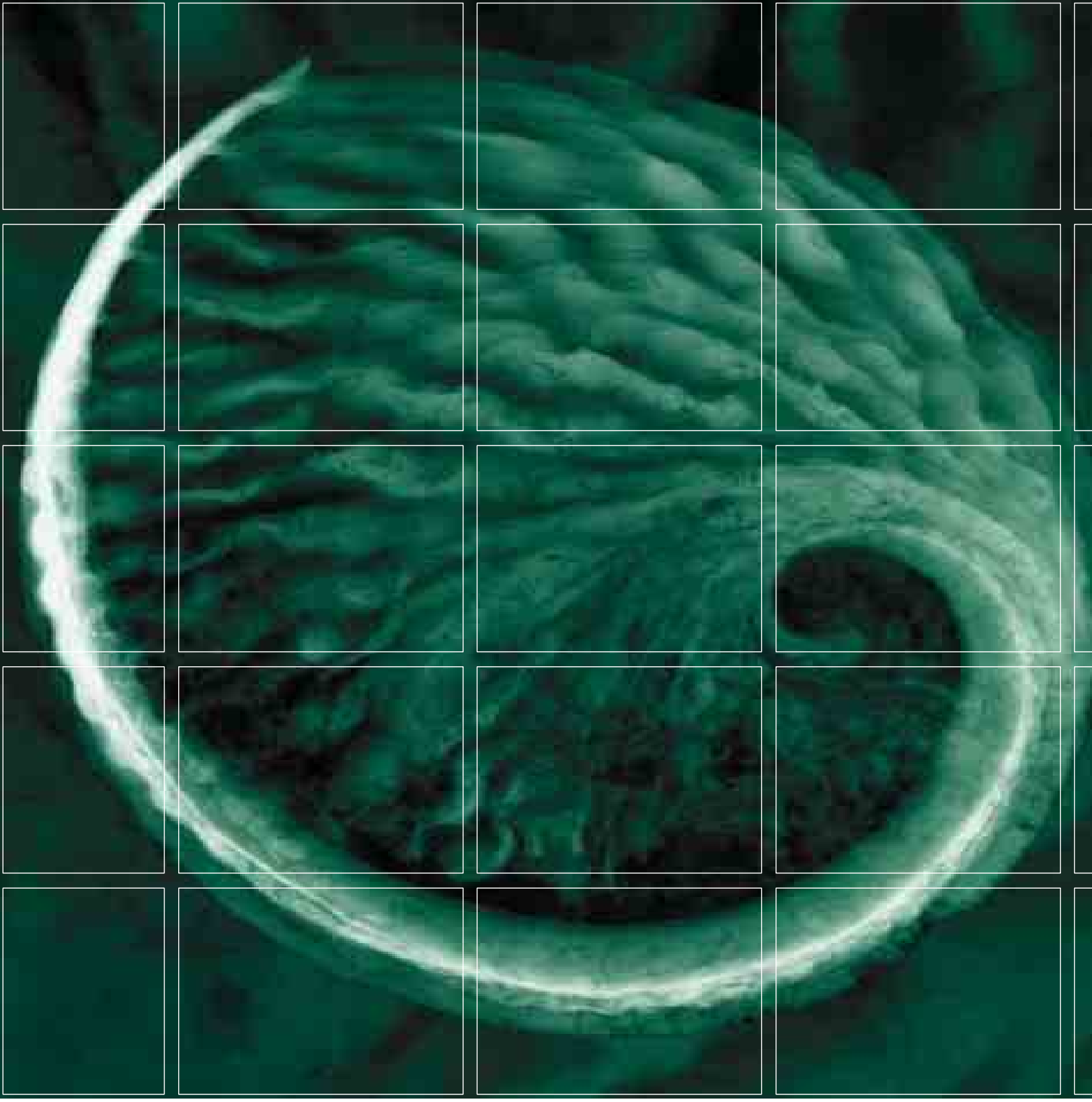
John Alexander
Manager, Road Safety Traffic & Development

Encl:

Cc: Auspacific Engineers Pty Ltd
Coffs Harbour Council

Annex C

Environmental Construction Management Plan



The Glades Estate, Pacific Highway, Moonee

Construction Environmental Management Plan

Rothwell Boys Pty Ltd

September 2007
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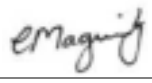
Delivering sustainable solutions in a more competitive world

ERM

Approved by:	*Carolyn Maginnity*
Position:	Project Manager
Signed:	
Date:	*4 September 2007*
Approved by:	*Steve O'Connor*
Position:	Project Director
Signed:	
Date:	*4 September 2007*

Environmental Resources Management Australia Pty Ltd Quality System

The Glades Estate, Pacific Highway, Moonee

Construction Environmental Management Plan

Rothwell Boys Pty Ltd

September 2007

0037659 CEMP FINAL

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This report has been prepared in accordance with the scope of services described in the contract or agreement between Environmental Resources Management Australia Pty Ltd ABN 12 002 773 248 (ERM) and the Client. The report relies upon data, surveys, measurements and results taken at or under the particular times and conditions specified herein. Any findings, conclusions or recommendations only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client. Furthermore, the report has been prepared solely for use by the Client and ERM accepts no responsibility for its use by other parties.

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1 INTRODUCTION

1.1 BACKGROUND

This Construction Environmental Management Plan (CEMP) has been prepared by Environmental Resources Management (Australia) Pty Ltd (ERM) on behalf of Rothwell Boys Pty Ltd for a proposed development at Moonee. The residential estate is to be known as the "Glades Estate" at Moonee Beach, north of Coffs Harbour. The Glades Estate will be constructed in stages and will ultimately comprise approximately 523 residential lots and approximately 44 hectares of open space and habitat conservation areas.

This CEMP relates to the Project Application for Stages 1 to 3 of the subdivision, involving the construction of 148 residential lots and associated infrastructure and access roads and details the proposed environmental management procedures that will be implemented during construction of the initial stages of the subdivision.

1.2 SITE DESCRIPTION

The site is located approximately 13 kilometres north of Coffs Harbour and approximately 8 kilometres south of Woolgoolga on the Mid North Coast. The site is on the eastern side of the Pacific Highway (the highway runs north south generally parallel to the coastline) and is approximately 1 kilometre north of the existing Moonee Village urban area. A Locality Plan is provided as *Figure 1.1*.

The site comprises Lots 1 and 2 in DP 725785 and has an area of approximately 96 hectares. The site has a western frontage of approximately 920 metres to the Pacific Highway. On the northern and eastern boundaries are Skinners Creek and Moonee Creek respectively. To the east of the site across Moonee Creek is the Moonee Beach Nature Reserve which contains the estuarine and dunal environments adjacent to the beach. To the south of the site is vacant land that is zoned for urban use. An aerial photograph of the site and surrounds is shown in *Figure 1.2*.

1.3 PROJECT DESCRIPTION

The project involves the creation of a Torrens Title residential subdivision of approximately 523 residential lots as illustrated by the Concept Plan at *Figure 1.3*. The identification of the area proposed to be developed for residential purposes has resulted from a detailed analysis of the constraints and opportunities of the site to determine the most appropriate development footprint.

Source: 1:25,000 Topographic Series

0 500m

Approximate Only

Figure 1.1 **Locality Plan**

The Glades Estate, Coffs Harbour

Jobs/2006/0037659/CEMP- Fg1.1 Locality Plan.cdr 24 08 2007 SP Environmental Resources Management Australia Pty Ltd

Source:AUSPACIFIC Engineers Pty Ltd 06-1811 July 2006

ERM

0 100m
Approximate Only

Figure 1.2 **Aerial Photograph**

The Glades Estate, Coffs Harbour

Source: AUSPACIFIC Engineers Pty Ltd 04 - 1600 November 2006

ERM

0 100m
Approximate Only

Figure 1.3 **Concept Plan**

The Glades Estate, Coffs Harbour

This CEMP relates to the Project Application for Stages 1 to 3 of the subdivision, which involves the construction of 148 residential lots ranging in area from approximately 590m^2 to 870m^2 and associated infrastructure and access roads, as shown on the Project Plan at *Figure 1.4*.

This plan relates to the construction of the subdivision and associated infrastructure. It does not address construction of dwellings or other structures once the construction of the subdivision is complete.

1.4 CONSTRUCTION ACTIVITIES

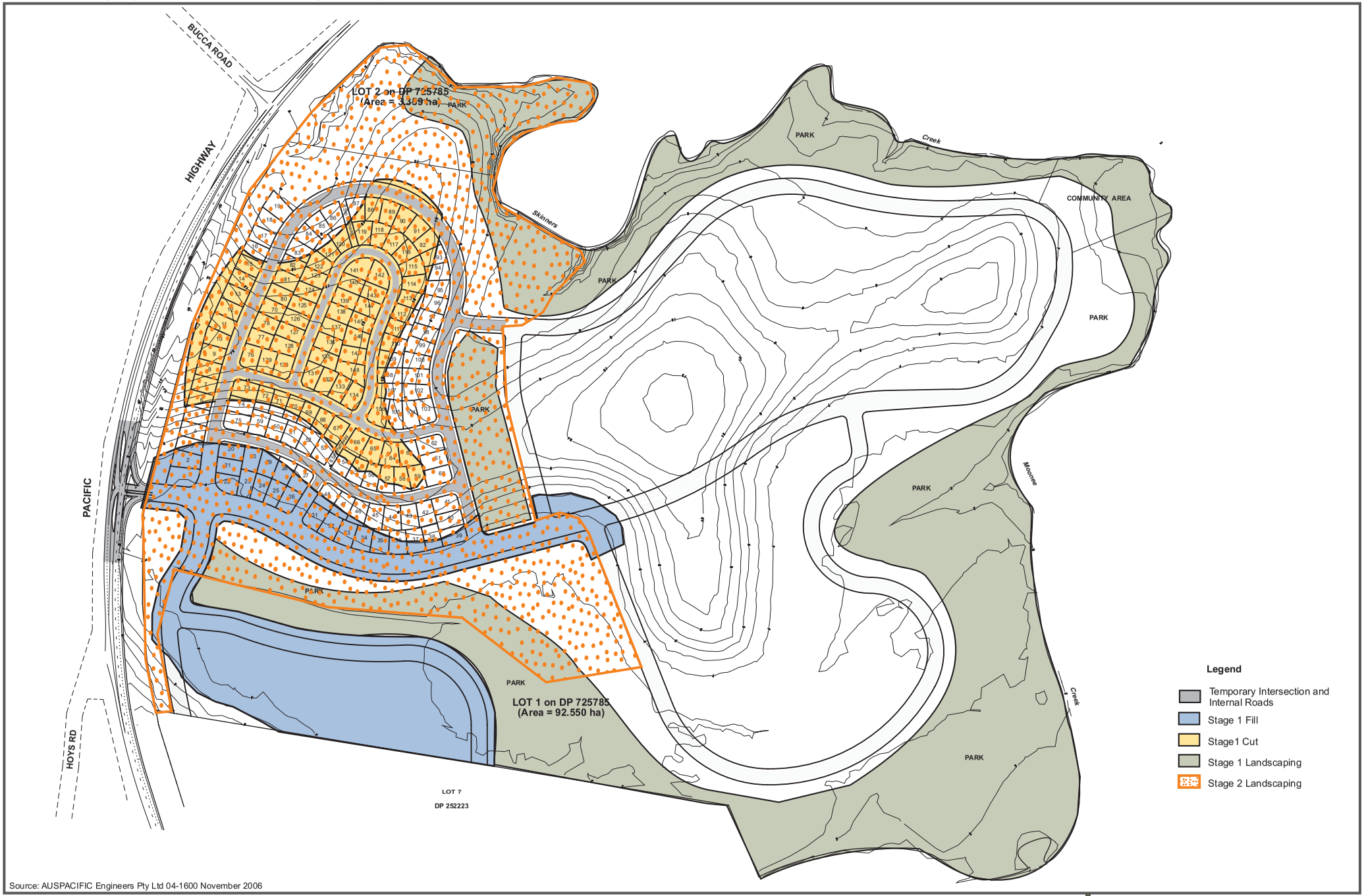
Activities associated with the construction of the subdivision, and which are covered by this plan include:

- clearing of vegetation in accordance with the project approval;
- stripping and stockpiling of topsoil;
- construction of road pavements, kerb and guttering, and associated piped stormwater drainage and water quality controls;
- construction of telecommunications, electricity, and reticulated water and sewer services and infrastructure;
- earthworks; and
- revegetation of exposed soils following completion.

1.5 OPERATING HOURS

Proposed operating hours are within the following:

- Monday to Friday, 7:00 am to 6:00 pm;
- Saturday, 8:00 am to 4:00 pm if inaudible at residential premises, alternatively hours will be 8:00 to 1:00pm; and
- no construction on Sundays or public holidays.



Source: AUSPACIFIC Engineers Pty Ltd 04-1600 November 2006

ERM

0 100m
Approximate Only

Figure 1.4 **Project Plan**

The Glades Estate, Coffs Harbour

2 CONSTRUCTION MANAGEMENT

2.1 OBJECTIVES OF THE CEMP

The objectives of the CEMP are to:

- ensure that the construction activities comply with current environmental legislation and best practice environmental management;
- comply with the relevant development approval for the site; and
- minimise the risk to public safety, and to protect the amenity of adjoining residents and the public generally.

2.2 ENVIRONMENTAL MANAGEMENT STRUCTURE AND RESPONSIBILITIES

This plan is to be updated prior to the commencement of construction with appropriate roles and responsibilities relating to environmental management. Tasks and responsibilities are summarised in *Annex A* of this CEMP.

2.3 APPROVAL AND LICENSING REQUIREMENTS

The project requires approval from the NSW Minister for Planning under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

2.4 TRAINING AND SITE INDUCTION

All employees and subcontractors will undergo environmental awareness training as part of the site induction to ensure they understand their obligations and responsibilities under this CEMP. The site induction will include:

- familiarisation with the requirements of the CEMP and other relevant management plans (ie erosion and sediment control plan);
- environmental emergency response procedures; and
- familiarisation with site environmental controls.

Records of all site inductions will be kept and maintained by the site supervisor.

2.5 EMERGENCY CONTACT AND RESPONSE

In the event of an environmental emergency, the following person can be contacted 24 hours per day, seven days per week:

Name:	Dale Holt
Position / Responsibility:	Winten Project Manager
Contact Number:	0418 758 988
Alternative Contact Number:	(07) 5503 1000

Emergency services contact details are as follows:

Emergency Hotline:	000
Ambulance:	000
NSW Fire Service:	000
Coffs Harbour Police Station:	(02) 6652 0299
SES:	13 2500
WIRES (injured wildlife):	0500 559 559

All on-site information relating to hazardous materials, including Material Safety Data Sheets and spill containment materials will be kept at the Site Office.

3 SITE CONTROLS

3.1 PUBLIC SAFETY, AMENITY, AND SITE SECURITY

Procedures for the management of public safety, amenity and site security include:

- all vehicular access / egress associated with the construction works will be via the main site entrance (to be noted to personnel during site inductions);
- main entrance and site office will be appropriately signposted;
- signage will be placed at site boundary to provide appropriate safety warnings, and include contact details of construction company and / or site supervisor;
- no materials will be stored within the road reserve or placed where it will hinder public access across adjoining public land;
- exposed areas will be kept to a minimum to minimise visual impact as well as reduce air and water pollution;
- safety fencing will be erected and maintained around specific areas of work site as appropriate (to be identified in an occupational health and safety plan).

3.2 FLORA AND FAUNA

The following measures are intended to minimise the impact of construction activities on flora and fauna:

- clearing activities will be restricted to only those areas nominated on construction plans for Stage 1;
- vehicle movements within uncleared areas will be restricted; and
- any injured wildlife will be reported to WIRES or similar organisation immediately for rescue.

3.3 NOISE AND VIBRATION CONTROLS

The EPA criteria for noise from construction sites are assessed at residential properties and the following are applicable during construction of the subdivision:

- for construction periods of between four and 26 weeks, the L_{10} noise level due to the construction site should not exceed the existing L_{90} background noise level by more than 10 dB; and

- for construction periods longer than 26 weeks, the criteria for a continuously operating source should apply, which generally means that the L_{10} noise level due to construction should not exceed the existing L_{90} background noise level by more than 5 dB.

No construction activities are to be undertaken outside the operations hours nominated in this plan to minimize the impact of noise on nearby residences.

All combustion engine plants, such as generators, compressors and welders, will be maintained and kept in good working order to ensure they produce minimal noise. Where practical, machines will be operated at low speed or power and switched off when not being used rather than be left idling for prolonged periods.

Machines found to produce excessive noise compared to industry best practice will be removed from the site or stood down until repairs or modifications can be made.

Once noisy construction activity commences close to any residence, it is to be completed with the minimum of undue delay. In any case, all reasonable attempts will be made to complete significant noisy activities within a short period.

While the above measures will not necessarily result in meeting the construction noise criteria, they will serve to reduce impacts to levels most residents will find acceptable considering the relatively short-term nature of construction work.

3.4 AIR AND DUST MANAGEMENT

Management of air quality and dust impacts on the site during construction will include:

- exposed soil areas will be regularly watered down during hot and windy days, or as needed;

- vehicle movements will be restricted to sealed or dedicated areas;

- truck and vehicle speeds will be below 20km / hr on unsealed roads;

- all vehicles containing loads that may generate dust travelling to or from the site will be covered to prevent dust emissions; and

- all site vehicles and machinery will be kept in good working order to minimise exhaust emissions.

3.5 STORMWATER AND SEDIMENT CONTROL

All management measures outline in the Stormwater Management Plan and Erosion and Sediment Control Plan will be implemented and maintained on site.

All rubbish and waste materials will be stored appropriately to ensure they do not enter nearby drains and waterways. Chemicals, oils, and fuels will not be stored on site, or alternatively, will be stored suitable containers, in a secure storage area.

3.6 WASTE AND MATERIALS RE-USE

The Coffs Harbour Waste Management Development Control Plan (WMDCP 2006) applies to residential premises including rural residential subdivision and residential subdivision. The objective of the WMDCP is to set standards of good practice in on-site management of wastes. While "The Glades" will be assessed under Part 3A of the *Environmental Planning and Assessment Act* 1979 (EP&A Act), the WMDCP has been used as a guideline in the preparation of the Concept Plan Application and the Project Application to be submitted to the Department of Planning in accordance with the Director Generals Requirements (DGRs).

The consideration of waste minimisation during the design and planning phases of a project is more likely to maximise reuse opportunities and minimise the waste generated.

There are a number of practical techniques outlined in the '*WasteWise Construction Program – Handbook Techniques for reducing construction waste*' (Department of the Environment and Heritage) that assist with construction managers with site waste management. Various procedures will be expected from the successful contractor for the proposed development and will require the nomination of an appropriate person to be responsible for waste management.

Estimated waste generated from construction can only be adequately determined once the volume of cut and fill and of materials required for the construction of roads is known. This would be normally carried out by the contractor during the tendering process or by a quantity surveyor prior to tendering.

To achieve adequate reuse and recycling of materials, it is necessary to ensure that appropriate areas for the separation and storage of waste will be provided.

Appropriate training and supervision of staff will be conducted to ensure that the objectives of the waste management plan are implemented and that contamination of the recyclable waste streams is avoided. Raising awareness of waste management will be achieved through both formal and/or informal

discussion with staff and contractors, such as during site inductions, and 'tool-box talks'.

The successful construction contractor will ensure any subcontractor's waste streams are also included in the planning process and comply with the construction management plan.

Waste segregation is the practice of classifying waste and placing it into the appropriate waste container immediately after the waste is generated. In order to achieve effective recycling and reuse, appropriate waste segregation will be carried out on site.

Avoidance

Purchasing policies will ensure that excessive waste is avoided through simple product substitutions for those with less packaging (or packaging that can be recycled) and avoiding over-ordering of items with expiry periods.

Reduction

Products will be assessed prior to purchase in terms of potential to generate excess waste. Products that include minimal packaging would be favoured, without compromising on product performance. Pre-fabricated products that avoid the production off-cuts will be preferred.

Re-Use

Whenever possible, practical and cost effective to do so, re-usable waste from the construction of the first stage of the subdivision will be utilised later in the development. Items that will be considered for reuse include:

- green waste will be mulched, stockpiled, and used in landscaping;
- topsoil will be stripped, stockpiled and reused to revegetate exposed areas following construction;
- excess fill will be used onsite if possible; and
- waste timber, pallets, and other suitable items will be reused as formwork if possible.

Re-Cycling

Plastic, paper, cardboard and other recyclable products will be disposed of in a dedicated receptacle, and, stored and baled for recycling collection.

3.7 TRAFFIC MANAGEMENT

Pedestrian and cycle access is available along the Pacific Highway adjacent to the site. This will not be hindered during the construction phase, with exception of some vehicular movements into and out of the site accessway. The accessway will be signposted with warning signage to alert pedestrians, cyclists and drivers.

The following measures will be taken to minimise any disruption to local traffic during the demolition works:

- all vehicular access / egress associated with the demolition works will be via the Pacific Highway entrance (to be noted to personnel during site inductions);
- staggering the arrival of vehicles where possible;
- heavy vehicle movements to / from the site shall be restricted to the operating hours noted in *Section 2.2*;
- oversize vehicle movements will obtain appropriate permits from the Roads & Traffic Authority and comply with any conditions contained therein;
- all vehicles will be accommodated within on-site parking areas;
- all loading and unloading will be carried out within the boundaries of the site; and
- use of advisory signage to warn pedestrians and cyclists of heavy vehicle movements.
- if any dust or foreign materials build up on the public roadway, this material will be swept off or vacuumed as soon as practicable;
- where traffic movements associated with the construction works will cause delays in traffic flows on the surrounding road network, appropriate traffic control plans will be developed and implemented.

REFERENCES

Coffs Harbour City Council (2006) **Coffs Harbour Waste Management Development Control Plan.** Coffs Harbour City Council.

Department of the Environment and Heritage (2005) **WasteWise Construction Program – Handbook Techniques for reducing construction waste.** Australian Government.

ANNEX C

Construction Environmental Management Plan

Table A.1 Construction Environmental Management Plan Checklist

Environmental Management Control	Person Responsible	Timing/Frequency	Completed (Initials/date)	Reference/Notes
General Site Issues				
Conduct site induction training for all personnel to alert them to sensitive work areas, explain the requirements of this CEMP, outline each individual's responsibilities, outline emergency response procedures. Documented evidence to be kept and maintained of site inductions.	Environmental manager	Before commencing work and ongoing during operations		
Public Safety, Amenity and Site Security				
Ensure all vehicles access site via Pacific Highway entrance only.	Site supervisor	Ongoing during operations		CEMP Section 3.1
Ensure site office and Pacific Highway entrance are clearly signposted.	Site supervisor	Before commencing work		CEMP Section 3.1
Safety signage erected around site boundary and at site entrance.	Safety manager	Before commencing work		CEMP Section 3.1
No materials are to be stored / placed within public road reserve.	Site supervisor	Ongoing during operations		CEMP Section 3.1
Areas of work to be kept to minimum required to minimise visual impact (as well as dust emissions and sediment generation).	Site supervisor	Ongoing during operations		CEMP Section 3.1
Safety fencing erected around work areas in accordance with the site safety plan.	Safety manager	Before commencing work and ongoing during operations		CEMP Section 3.1
Flora and Fauna				
Ensure conservation areas are surveyed and marked using polyweb fencing or similar before commencing vegetation clearing. Maintain fencing during works to keep vehicles out of designated areas.	Environmental manager	Before commencing work and ongoing during operations		CEMP Section 3.3
Noise and Vibration				

Environmental Management Control	Person Responsible	Timing/Frequency	Completed (Initials/date)	Reference/Notes
Check that all work is being conducted within prescribed operation hours.	Site supervisor	Daily		CEMP Section 1.5
Air Quality				
Check vehicles are keeping to sealed and / or designated areas.	Site supervisor	Ongoing during operations		CEMP Section 3.4
Check machines are complying with emission standards (i.e. emissions not visible for more than 10 seconds).	Site supervisor	Ongoing during operations		CEMP Section 3.4
Enforce 20km / h speed limit on unsealed tracks / roads.	Site supervisor	Ongoing during operations		CEMP Section 3.4
Ensure a mobile water tanker equipped with a pump and sprays is used to suppress dust from unsealed roads when in use and other areas as required.	Site supervisor	Ongoing during operations		CEMP Section 3.4
To prevent dust emissions, all vehicles leaving and entering a site with loads that may generate dust will be covered at all times except during loading / unloading.	Site supervisor	Ongoing during operations		CEMP Section 3.4
Stormwater and Sediment Control				
Prepare and implement a Stormwater Management Plan .	Environmental Manager	Prior to commencement of work		CEMP Section 3.5
Provide an area for storage of waste materials.	Site Supervisor	Prior to commencement of work		CEMP Section 3.5, 3.6
Ensure all hazardous materials are appropriately stored.	Site Supervisor	Prior to commencement of work		CEMP Section 3.5
Waste Management				
During clearing, vegetation will be stockpiled for mulching and use in landscaping on-site.	Environmental Manager	During operatioms		CEMP Section 3.6
Topsoil and excess fill will be reused on site wherever possible.	Site Supervisor	Prior to commencement of work		CEMP Section 3.6
Waste materials will be reused on site wherever possible prior to recycling or disposal.	Site Supervisor	Prior to commencement of work		CEMP Section 3.6
Provide an area for the segregation, storage and recycling of waste.	Site Supervisor	Prior to commencement of work		CEMP Section 3.6

Environmental Management Control	Person Responsible	Timing/Frequency	Completed (Initials/date)	Reference/Notes
Traffic Management				
Heavy vehicle movements to/from the site shall be restricted to the operating hours.	Site supervisor	Ongoing during operations		CEMP Section 3.7
Oversize vehicle movements will obtain appropriate permits from the Roads & Traffic Authority and comply with any conditions contained therein.	Site supervisor	Ongoing during operations		CEMP Section 3.7
Ensure the main access is not used for parking, loading, marshalling or standing of any semi-trailer, heavy plant floats or wide loads.	Site supervisor	Ongoing during operations		CEMP Section 3.7
Ensure all vehicles can be accommodated within on-site parking areas.	Site supervisor	Prior to commencement		CEMP Section 3.7
All loading and unloading will be carried out within the boundaries of the site.	Site supervisor	Ongoing during operations		CEMP Section 3.7
Erect advisory signage to warn pedestrians and cyclists of heavy vehicle movements.	Site supervisor	Prior to commencement		CEMP Section 3.7
Where traffic movements associated with the construction works will cause delays in traffic flows on the surrounding road network, appropriate traffic control plans will be developed and implemented.	Site supervisor	Ongoing during operations		CEMP Section 3.7

ANNEX D

Draft Matrix
- Forward Funding of Collector Road

"THE GLADES" PROJECT TIMEFRAMES
September 2007

Phase	Description	Trigger/Requirement	Approximate Start Year	Approximate Year of Completion	Lots Developed (Approximate rate of 60-70 lots per year)	Contributions to Council	Credits for Collector Road
1	Construct temporary unsignalised seagull access intersection on Pacific Highway in accordance with design approved by the RTA	RTA Approval under 1994 Consent.	2008	2008		0	0
2	Construct first stages of the development (Stages 1-3) and associated site works	Completion of Pacific Highway access intersection & DoP approval of Project Application. The access intersection will need to be in place prior to the linen plans endorsement by CHCC of Stage 1.	2008	2011	148	4884000	1332000
3	Start construction of the collector road	Construction[1] must be commenced prior to CHCC endorsement of the 200th lot or completion of the 100th dwelling, whichever occurs first. Council must have completed all land acquisitions, resolved the final design of the collector route and called tenders for construction.	2011	2012	210	6930000	1890000
4	Complete construction of the collector road	Construction[1] must be completed prior to CHCC endorsement of the 400th lot or completion of the 150th dwelling or prior completion of RTA grade seperation at Moonee Beach Road whichever occurs first.		2015	400	13200000	3600000
5	Completion of development			2018	523	17259000	4707000
6	Removal of temporary access intersection on Pacific Highway	Completion of collector road and Moonee Beach Road interchange or at RTA direction.			523	17259000	4707000

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Notes

1 *The collector road construction will be achieved by way of a forward funding arrangement whereby contributions will be paid to CHCC on a per lot basis which will then be made available as credit towards the collector road construction. The credit amount is approximately $9,000 per lot.*

Abbreviations

CHCC Coffs Harbour City Council
DoP Department of Planning
RTA Roads and Traffic Authority, NSW

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