Part 3A Environmental Assessment

Pursuant to Schedule 6A of the Environmental Planning and Assessment Act 1979

Proposed Concept Plan for Residential Development

Lot 1 DP 1097743 and Lot 6 DP 252223
Pacific Highway, Moonee Beach

Mooney Parklands Trust
Department of Planning & Infrastructure Ref: MP09_0067

Volume A

JW Planning Pty Ltd

Town Planning

Level 1, Suite 13/478 The Esplanade
WARNERS BAY NSW 2282
Tel: 02 4948 4322
Fax: 02 4948 4366
Email: email@jwplanning.com.au

Executive Summary

This environmental assessment (EA) has been prepared by JW Planning Pty Ltd on behalf of Moonee Parklands pursuant to Schedule 6A of the Environmental Planning and Assessment Act 1979 (EP&A Act). This report responds to the Director General's environmental assessment requirements to support a Concept Plan application for a residential development at Moonee Beach in the Coffs Harbour Local Government Area.

The site, predominantly used for grazing and largely cleared/underscrubbed, is 23 ha in area and forms part of the Moonee Beach urban growth area. The Concept Plan proposes; the creation of 12 public streets; public infrastructure; 159 residential lots - as part of the North Moonee Precinct identified in the Moonee Development Control Plan 2004 - and the rehabilitation, management and post construction dedication to council of approximately 6 ha of conservation land. This land provides protection to Moonee Creek and Cunninghams Creek riparian zones and forms a wildlife corridor to connect to corridors approved by the Minister for Planning and Infrastructure for the Glades Estate to the north and to identified corridors to the south of the site.

The proposed Concept Plan has been prepared based on an integrated consideration of the physical and environmental characteristics of the site and the requirements of suburban streets and lot development to achieve an attractive and legible place for residents within an area of environmental sensitivity.

In accordance with the Director General's Requirements, detailed investigations undertaken on the site include vegetation and habitat management, stormwater management, cultural heritage, traffic noise impacts, vehicle, cycle and pedestrian access to and through the site, etc. The findings and recommendations of these investigations have been balanced and incorporated into the Concept Plan.

On the basis of these investigations, the proposed development has been designed to optimise the retention and protection of sensitive environmental areas and the creation of a development footprint that facilitates efficient use of land and a development design that optimises physical and visual access to the surrounding sensitive environmental areas. It is generally consistent with Council's Moonee DCP and various state, regional and local planning policies and strategies.

The Concept Plan is supported by preliminary engineering details for the construction of the roads, residential lots and associated landscaping, earthworks and infrastructure.

The Concept Plan will eventually accommodate 159 households (or about 440 persons), which is a significant proportion of the urban growth planned for Moonee Beach by both the state government and Council.

Construction of the development is estimated to cost $10 million and create 130 jobs. The subsequent housing construction is expected to be approximately $108 million and create some 1,400 jobs

Upon completion the annual household expenditure generated from future households in the concept plan is likely to be in the order of $9,210,240 based on 161 dwellings.

The sites proximity to Moonee Beach Village will ensure that new residents will shop and use services at the village, which in turn ensure the long term economic and social sustainability of the local area.

The EA details the State, regional and local planning controls that govern the development of the site and demonstrates the capacity of the development in achieving Council's planning objectives for the Moonee Beach area. The Concept Plan comprises:

- A site analysis identifying the site's opportunities and constraints;
- extensive areas of the site to be protected, rehabilitated and managed and then dedicated to Council as conservation land including provision to establish the northern link of Council's desired coastal walk;
- a landscape plan to create a landscape that compliments the existing natural features of the Moonee locality; and
- a street network with high permeability for pedestrians, cyclists and motor vehicles, domestic and emergency services that connects to the Land and Environment Court approved collector road to Moonee Village.
- Preliminary engineering plans for subdivision of the site to create 161 residential lots;
- associated earthworks (cut and fill);
- provision of entry road landscaping;
- placement of the main pedestrian/cycleway linking the site to the north and south along the collector road;

The EA contains the following to address the Director General's requirements:

- a table outlining how the specified key issues have been addressed;
- the main report addressing key issues for the Concept Plan;
- a Statement of Commitments; and
- a separate volume containing the technical reports and investigations into the capability and suitability of the site for residential purposes.

With appropriate mitigation and management measures, including water quality controls, the proposed development will result in environmental impacts that are not significant and are acceptable in accommodating suburban development on the site.

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CERTIFICATION & LIMITATION STATEMENT

In preparing this report JW PLANNING PTY LTD has relied upon data, surveys, analyses, designs, plans and other information provided by the client and other individuals and organisations, most of which are referred to in the report (**the data**).

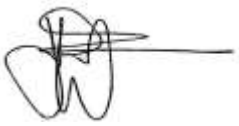
Except as otherwise stated in the report, JW PLANNING PTY LTD has not verified the accuracy or completeness of that data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report are based on in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of that data.

JW PLANNING PTY LTD will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to JW PLANNING PTY LTD.

Certifying Statement

I certify that I have prepared the contents of this Assessment and to the best of my knowledge the information contained in the report is neither false nor misleading.

Author: Jason Wasiak
Director, Principal Urban Planner, JW Planning Pty Ltd

Signature: 

Date: 5th June 2013

JW Planning Pty Ltd
Town Planning
Level 1, Suite 13/478 The Esplanade
WARNERS BAY NSW 2282
Tel: 02 4948 4322
Fax: 02 4948 4366
Email: email@jwplanning.com.au

Project Description:
Part 3A Concept Plan Environmental Assessment
Lot 1 1097743 & Lot 6 DP 252223
Pacific Highway, MOONEE BEACH NSW

Department of Planning & Infrastructure
Ref: MP09_0067

1.0 Introduction

This Environmental Assessment (**EA**) has been prepared by JW Planning Pty Ltd on behalf of Moonee Parklands Trust (**'the Trust'**) pursuant to Part 3A of the Environmental Planning and Assessment Act ('**the Act'**) and in accordance with the Director General's Requirements (DGRs) issued (as amended) on the 8th of February 2010

The purpose of the report is to identify the relevant environmental, social and economic characteristics of the site and its context to inform a suitable draft concept plan for the land, and to facilitate assessment of the draft plan by the NSW Department of Planning and Infrastructure (**'DoPI'**).

The draft concept plan proposed on the basis of this EA involves subdivision of privately owned land to create public streets, a public waterfront, private residential lots and associated infrastructure.

1.1 Relevant Background

The coastal area of land to the north of the existing Moonee Beach village is identified by Council and the State government as an urban growth area by both the Coffs Harbour Our Council's *Living City Settlement Strategy* (2008) and the *Mid North Coast Regional Strategy* (2009). The area is planned and/or approved for residential development, open space and environmental protection.

In 2005, a SEPP 71 draft master plan was prepared and submitted to the then Department of Infrastructure, Planning and Natural Resources (DIPNR) for the site and Lot 6 to the south **(Figure 10)**. The master plan was a prerequisite to any development consent as the land is defined as being within the coastal zone, as defined under the Coastal Protection Act 1979, and within a *sensitive coastal location* as defined under SEPP 71 (i.e. land that is within 100m above mean high water mark of the sea, a bay or an estuary).

The draft master plan was exhibited but withdrawn in January 2006 due to the introduction of SEPP Major Projects. This change essentially negated the need for a SEPP 71 master plan where subdivision in coastal areas proposed less than 26 residential lots.

On 26 March 2009, JW Planning sought confirmation from the Minister for Planning that Part 3A of the Environmental Planning and Assessment Act 1979 applied to the site and the proposal. On 27 September 2009, the Minister for Planning formed a view that the proposal is a project to which Part 3A of the Act applies, and authorised the submission of a Concept Plan.

Despite the repeal of Part 3A by the State government in 2011, the project has the status of a "transitional major project" and the provisions of Part 3A are still applicable to the proposal via Schedule 6A of the Act.

The site sits in-between two (2) parcels of land with differing status under Part 3A of the Environmental Planning and Assessment Act (the "Act"). The adjacent site to the north is owned by Rothwell Boys Pty Ltd (**'Rothwell site'**), with project approval granted on 5th March 2009. The land to the south is owned by Mr. R. Bateman (**'Bateman site'**) and the DGRs were issued for that site on 8 January 2009.

While the approved Part 3A site and the proposed Part 3A site adjoin the Pacific Highway, direct access to the Highway is not permitted. Accordingly, the Rothwell site relies on access being provided through the site and in turn, both the Rothwell site and the site will rely on access through the Bateman site via a collector road to Moonee Beach Road further to the south.

After some 18 months of uncertainty, the Land and Environment Court approved a Development Application for the collector road connecting the Glades Estate in the north, through the site and to the Moonee Beach Road to the south on 18th June, 2012. The Court approval was based upon a refusal by the NSW Office of Water to issue its' General Terms of Approval concerning the location of the collector road crossing of Cunninghams Creek and Coffs Harbour Council's subsequent inability to issue a consent under Part 4 of the Environmental Planning and Assessment Act.

Final preparations of this EA and the resulting draft concept plan was contingent on the outcomes of the court decision, which was simultaneously complicated by new time frames implemented by the Department in relation to outstanding Part 3A applications. The Director General recognized these issues and on 23 November 2012, granted an extension to lodge the EA until 1 April 2013.

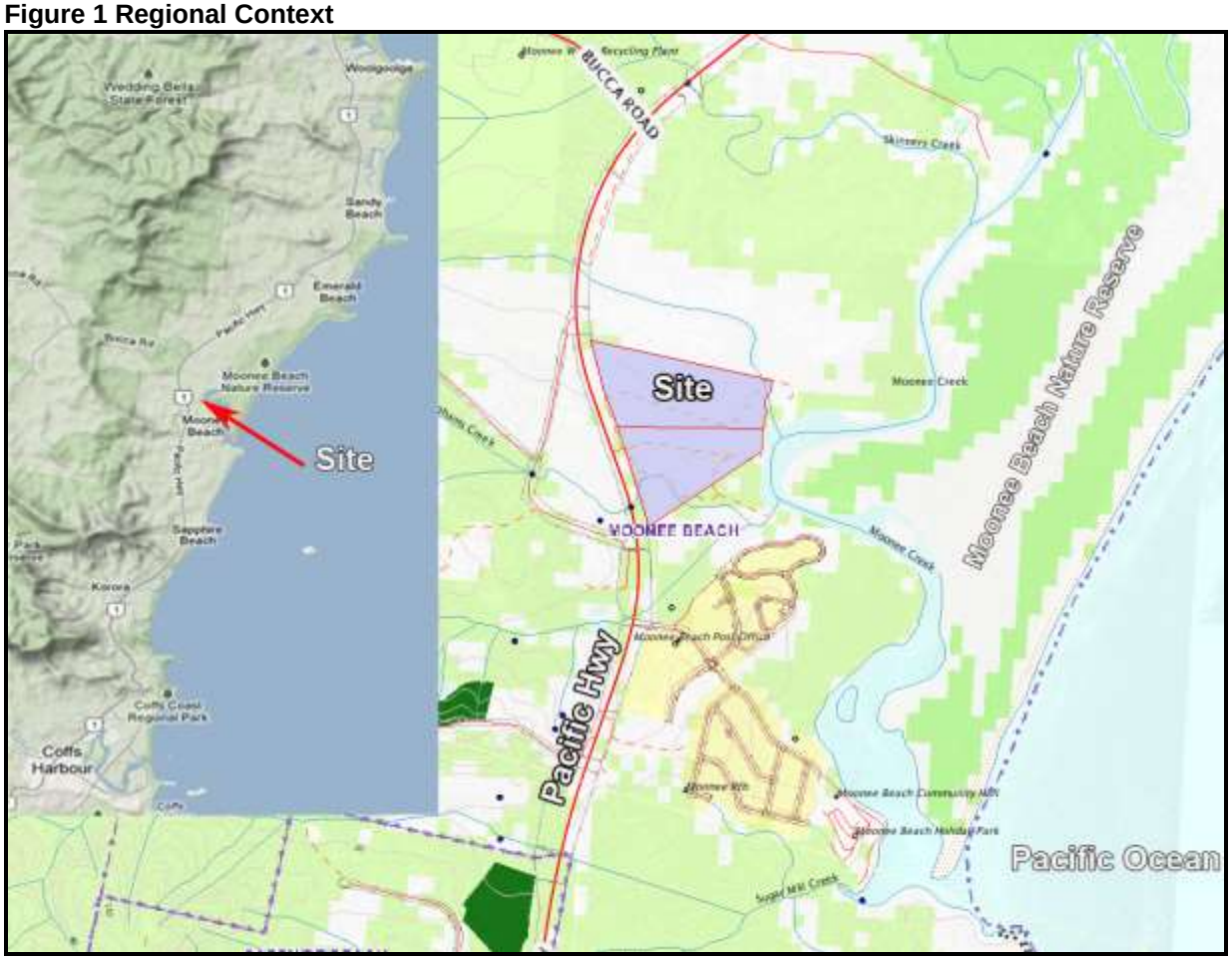
1.2 Site Context and Description

1.2.1 Location and Context

Moonee Beach is located equidistant between Coffs Harbour to the south and Woolgoolga to the north. The site is approximately 14 km or 15 minutes' drive time north of Coffs Harbour (refer **Figure 1**).

The site is located adjacent to the Pacific Highway, north of the village of Moonee. The site is currently accessed from the Pacific Highway via an informal gravel driveway.

Figure 1 Regional Context



As illustrated in **Figure 2**, the local context includes:

- The Glades Estate, an approved 524 lot Part 3A residential development to the north the Rothwell site) (refer **Figure 3**) ;
- A proposed 20 lot residential development to the south of the subject site (the Bateman site);
- Moonee Beach Nature Reserve to the east;
- Solitary Islands Marine Park to east that includes the Moonee Creek estuary;
- Cunninghams Creek to the south; and
- The Moonee village centre.

The site forms part of the Moonee Creek catchment that is drained by a series of small intermittent drainage lines, draining into three (3) main creeks (refer **Figure 7**).

Moonee Creek originates in the north, flowing south past the site until it discharges into the ocean at Moonee Beach.

There are three (3) main tributaries of Moonee Creek relative to the site being; Skinners Creek, to the north of the Glades Estate, which flows east until it joins Moonee Creek; Cunninghams Creek in the southern part of the site, and another minor tributary, an unnamed creek, dissects the north eastern corner of the site (refer **Figure 2**).

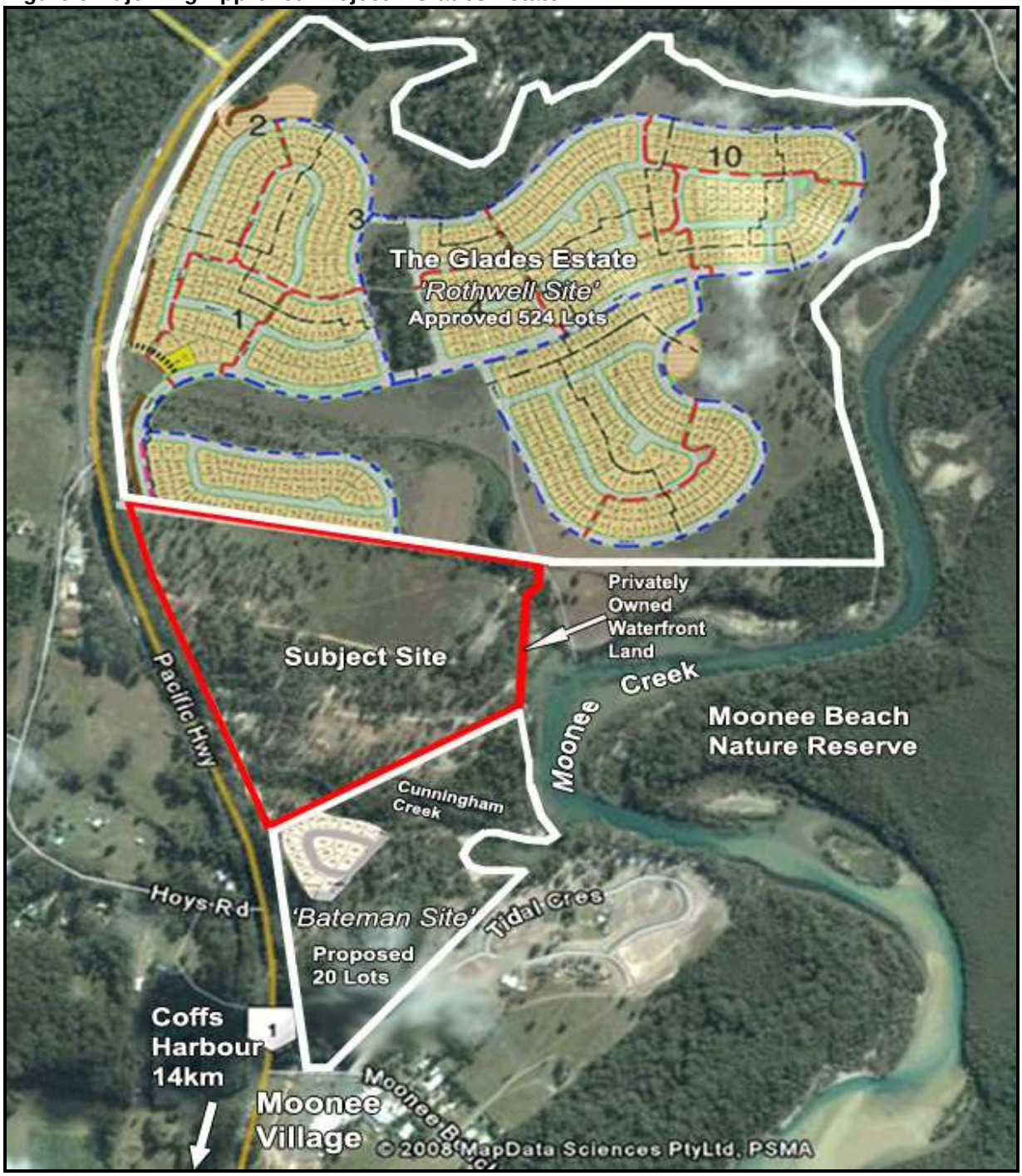
Figure 2 Local Context

Source: Google Earth annotated by JWP

The site sits in-between two (2) parcels of land with differing status under Part 3A of the Environmental Planning and Assessment Act (the "Act").

The land to the south is owned by Mr. Ralph Bateman (**'Bateman site'**) and the Director General's Requirements (DGRs) were issued for that site on 8 January 2009.The adjacent site to the north is owned by Rothwell Boys Pty Ltd (**'Rothwell site'**), with project approval granted on 5th March 2009 (see **Figure 3**).

Figure 3 Adjoining Approved Project – Glades Estate



1.2.2 Site Description

The site comprises two (2) parcels of land legally described as Lot 1 DP 1097743 and Lot 6 DP 252223, Pacific Highway, Moonee. The landowner for Lot 1 is Moonee Parklands Trust and the owner for Lot 6 is Mr. R. Barker. The site is 24.33ha in area (refer **Figure 4**).

Apart from an electrical kiosk, there are no significant structures on the site.

The site is predominately zoned for residential purposes (refer **Figure 5**), but also part zoned Environmental Protection 7A Habitat and Catchment (eastern edge of site), and part zoned Part 7B Scenic Buffer zone (western edge of site along Pacific Highway) pursuant to Coffs Harbour City Local Environmental Plan 2000 (CHCLEP 2000).

Figure 4 Lot 1 and Lot 6 Deposited Plans (compiled image)

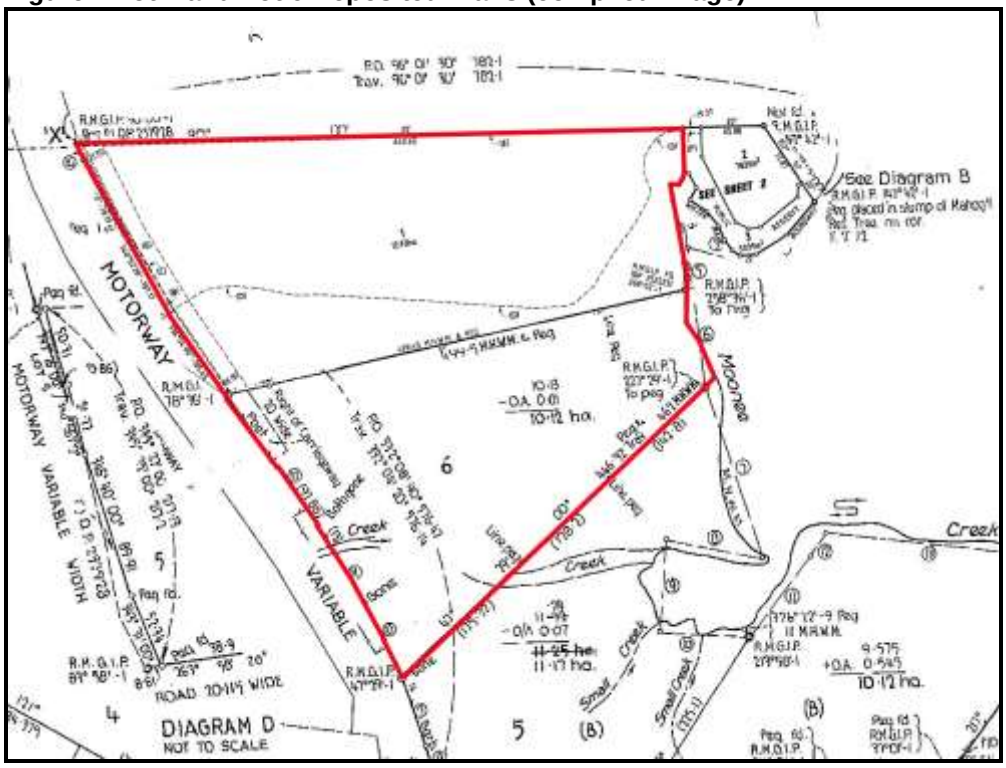
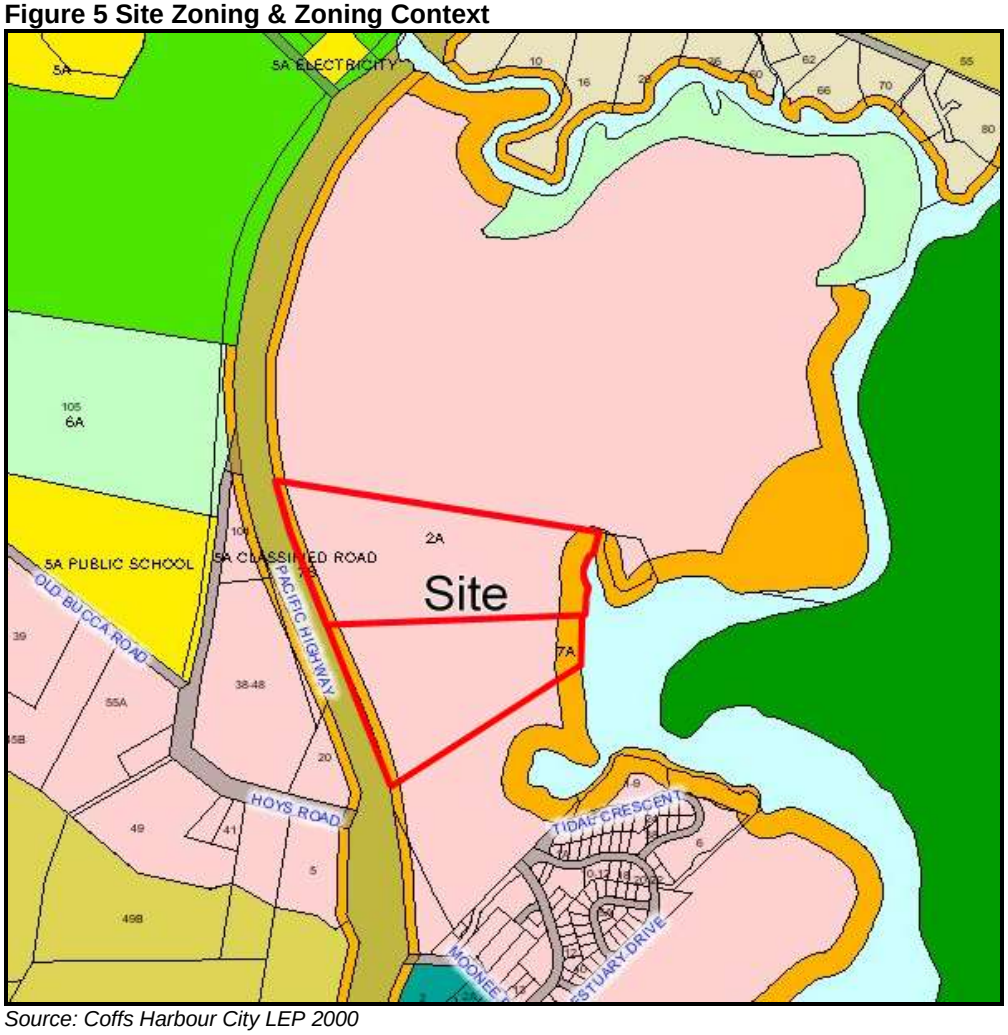


Figure 5 Site Zoning & Zoning Context

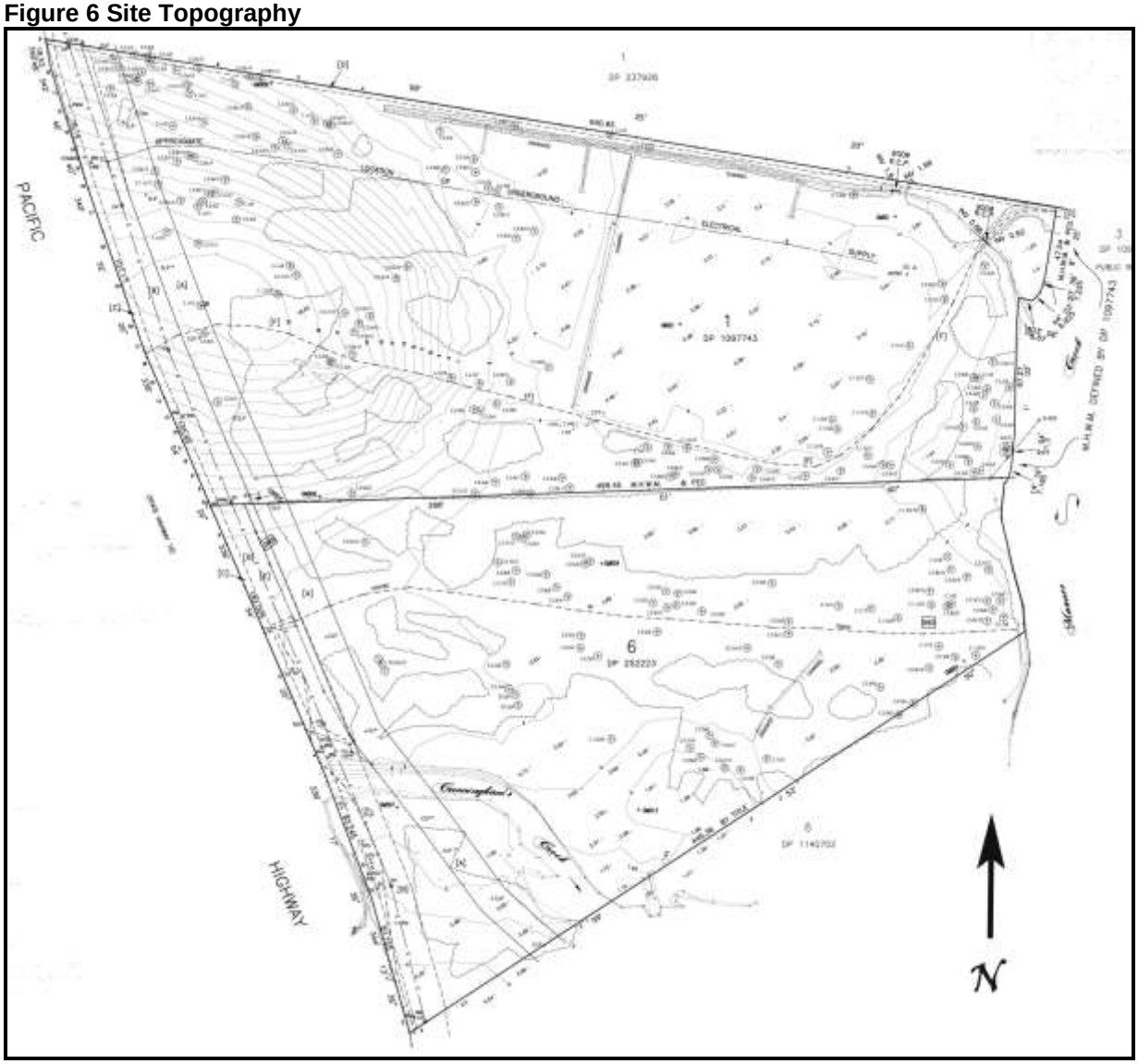


Source: Coffs Harbour City LEP 2000

1.2.3 Preliminary Site Analysis

The site is located in an area of gently to moderately undulating hills and flatter, low-lying alluvial plains associated with Moonee Creek. Site elevation ranges between approximately 19m AHD in the west and 2m AHD along the banks of Moonee Creek in the east with slopes of up to 8 degrees (14%) in the west and relatively flat (generally less than 5%) across low-lying areas in the east.

Figure 6 Site Topography



Three man-made drains associated with past grazing activities exist on Lot 1 (refer **Figure 7**).

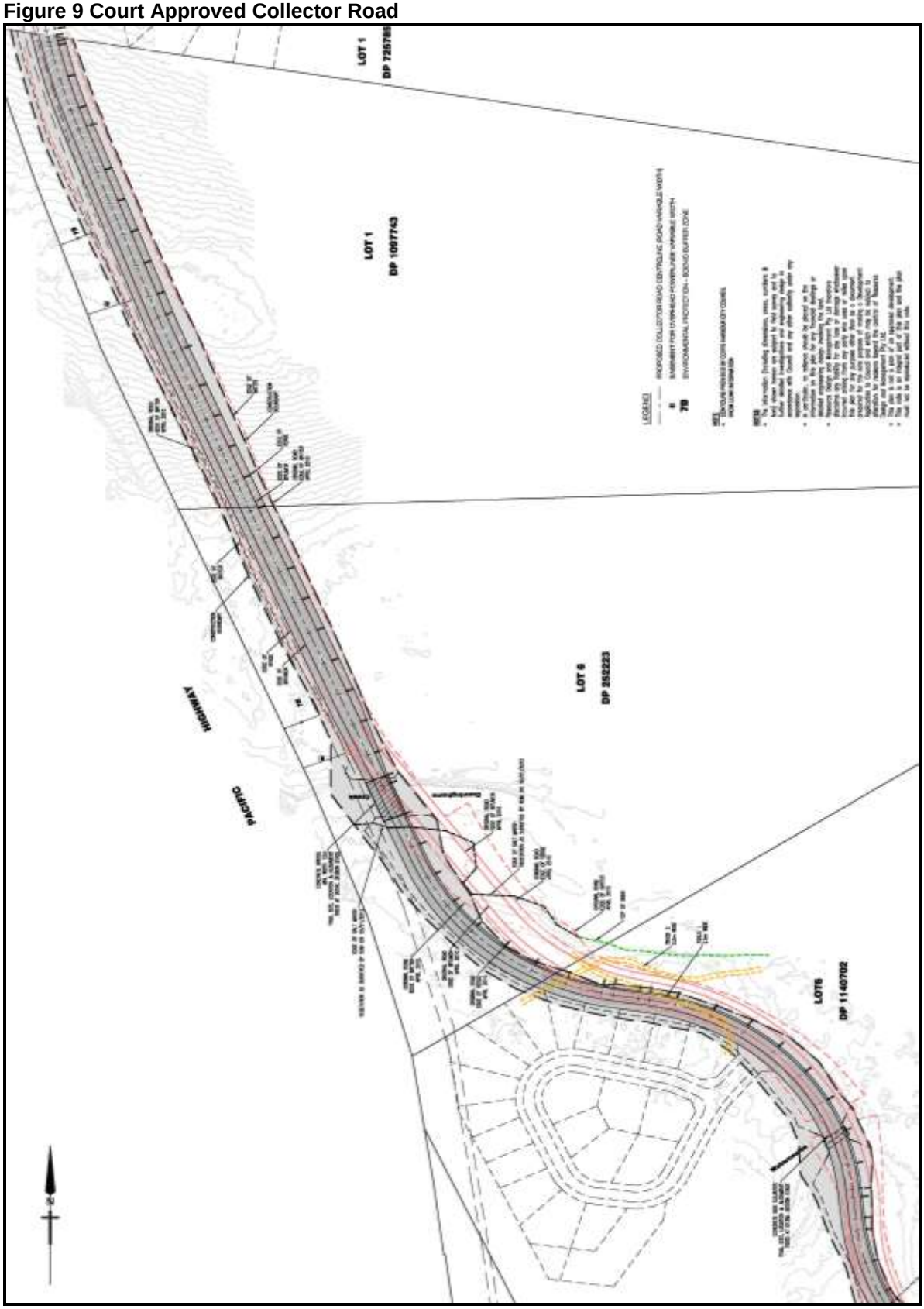
Figure 7 Site Drainage

Connections between the site and existing or planned urban areas in the locality are identified in **Figure 8**. There is an opportunity for a coastal walk and cycleway which, subject to approvals relating to land to the south, would provide modal choice for access to Moonee village. The waterfront is currently privately owned land.

Figure 8 Site Connectivity

Integration with the Glades Estate Project Approval adjacent and to the north of the site, and connectivity to Moonee Beach village centre to the south of the site, is ensured via the court approved road that runs generally inside the western boundary of the subject site (refer **Figure 9**).

Figure 9 Court Approved Collector Road



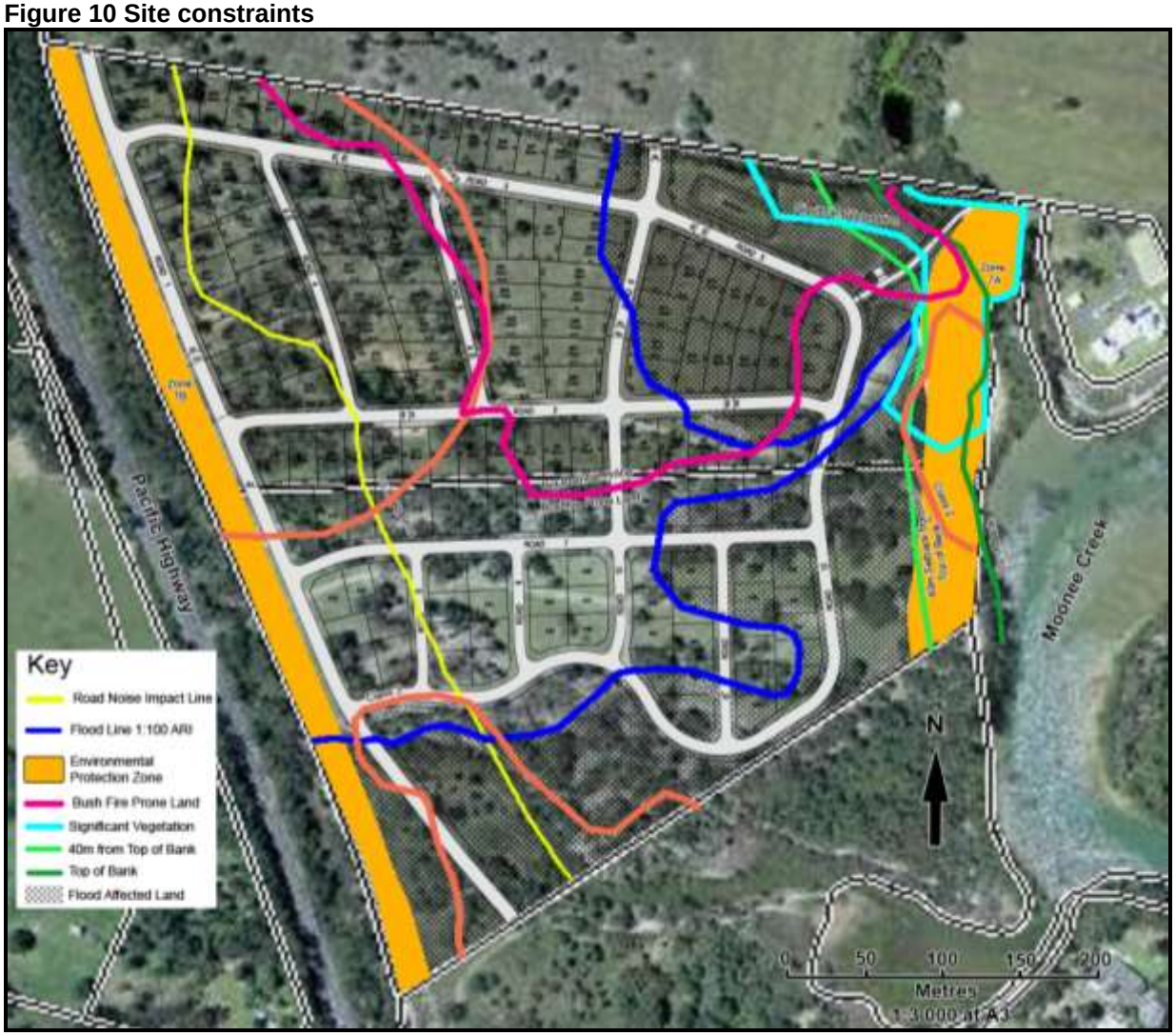
1.3 Proposed Concept Plan

Part 3A approval is sought for a Concept Plan that is derived from the technical studies informing this Environmental Assessment.

Influences upon the Concept Plan submitted under this EA (refer **Figure 10**) are:

- The prohibition of access to the Pacific Highway (access only via an internal Collector Road linking to Moonee Beach village)

Figure 10 Site constraints



- The alignment and design levels of the court approved collector road linking the site with the village of Moonee Beach and the adjoining Glades Estate;
- The location and long term sustainability of ecological populations and environmental linkages given the clearing of native vegetation associated with the upgrade of the Pacific Highway;
- Existing sub regional sewer, water and electricity infrastructure traversing the site, and associated easements;
- Key environmental considerations such as suitable, site specific buffers required to Moonee Creek and its riparian area, ecological values, and potential implications arising from climate change and sea level rise.

- Consultation with Coffs Harbour Council which discouraged further provision of active open space and facilities, to avoid duplication with approved provisions in the adjoining Glades Estate;
- Maintaining a physical and legal form of access to an existing dwelling on adjoining land to the east of Lot 1.
- The relevant requirements of the Project Approval granted under Part 3A for 524 residential lots on the adjoining land to the north (**'Glades Estate'**), which govern:
    - Internal road connections locations and opportunities for cycle and pedestrian paths;
    - Orientation of residential lots;
    - The location and long term sustainability of environmental linkages given required vegetation clearing and earthworks;
    - Finished ground levels to ensure continuity of engineering design between the adjoining sites in terms of roads, stormwater, services and utilities;
    - The level of open space and recreation facilities required (above that already proposed within the approved plan),

Environmental factors that inform the suitability and capability of the site for development, and the most appropriate extent and layout of development on the site, are addressed in the Environment Assessment in **Section 3.0**. **Figure 11** illustrates the concept plan.

Figure 11 Concept Plan

The resulting concept plan provides a framework for the approval of some 162 lots including:

For Lot 1

- 101 Torrens Title residential lots ranging in size from 650m2 to 795m2;
- Six (6) public streets (including the approved collector road approved by the Land and Environment Court in June 2012);
- One (1) lot to be dedicated to council as a public reserve containing a buffer to Moonee Creek varying between 64m and 86m in width (average of 78m wide);
- One (1) lot to provide access to Lot 2 DP 1097743;
- Dedication land containing the infrastructure corridor on the west side of the collector road to Council as a separate lot or as a part of the collector road reserve;
- associated bulk earthworks (cut and fill);
- associated water and sewer reticulation;
- associated stormwater drainage works;
- associated Asset Protection Zones;
- landscaping including street tree planting; drainage swales and parkland;
- provision of a walkway along the eastern perimeter road through the site as recognised in the Moonee DCP;
- placement of the main pedestrian/cycleway linking the site to the north and south along the collector road; and,
- Rehabilitation of existing native vegetation areas to be retained.

For Lot 6

- 58 Torrens Title residential lots ranging in size from 500m2 to 750m2;
- Seven (7) public streets (including the collector road approved by the Land and Environment Court in June 2012);
- One (1) lot to be dedicated to Council as a public reserve containing a buffer to Moonee Ck generally about 85m in width then wrapping around to provide a buffer to Cunninghams Ck; and,
- Dedication land containing the infrastructure corridor on the west side of the collector road to Council as a separate lot or as a part of the collector road reserve.

Some 8.23% or 20,020m2 of the site is intended to be dedicated to Council as environmental protection and where necessary, revegetated to re-establish a north south wildlife corridor.

The Concept Subdivision Plan for which approval is sought under Part 3A is illustrated in **Figure 12**.

More specific details of the Concept Plan, including measures required to mitigate any foreseeable or inappropriate impacts, are provided in **Section 5.0**.

Figure 12 Concept Subdivision Plan

1.4 Structure of Environmental Assessment

This EA consists of two (2) volumes.

Volume 1 contains the Environmental Assessment report and includes the following chapters:

Chapter 1 provides an introduction, preliminary site analysis and the proposed concept plan;

Chapter 2 Provides the Director General's Requirements that the concept plan

Chapter 3 provides the environmental assessment of concept plan containing summaries of the key issues identified in the environmental assessment including measures and strategies proposed to mitigate any adverse impacts on the environment. The environmental assessment includes investigations in relation to flora and fauna, water management, traffic management, hazard management, noise impacts, infrastructure provision and heritage significance

Chapter 4 Proposed Concept Subdivision Plan, staging plan, development options, open space

Chapter 5 considers relevant statutory and non-statutory provisions arising from relevant environmental planning instruments, development control plans and planning strategies;

Chapter 6 outlines the consultation that has taken place with government authorities and the community with respect to the proposed development;

Chapter 7 documents the draft Statement of Commitments which sets out the management, mitigation and monitoring measures to be implemented to minimise any potential adverse impacts associated with the project.

Volume 2 contains the following technical reports:

- **Attachment A** Full copy of the Director Generals Requirements
- **Attachment B** Bushfire Risk Assessment by Building Code and Bushfire Hazard Solutions;

- **Attachment C** Aboriginal Cultural Heritage Assessment by Myall Coast Archaeological Services (MCAS);
- **Attachment D** Geotechnical Assessment including Acid Sulfate Soils Assessment by Martens and Associates;
- **Attachment E** Potential Land Contamination by Martens and Associates Pty Ltd
- **Attachment F** Flood Assessment by Martens and Associates Pty Ltd
- **Attachment G** Ground water by Martens and Associates Pty Ltd
- **Attachment H** Flora and Fauna Assessment by Pacific Environmental Associates
- **Attachment I** Noise Assessment by Wilkinson and Murray Pty Ltd
- **Attachment J** Traffic Assessment by Better Transport Futures
- **Attachment K** Preliminary Engineering Plans
- **Attachment L** Stormwater Management by Martens and Associates Pty Ltd
- **Attachment M** Landscape Concept Plan by GeoLink
- **Attachment N** Preliminary consultation with Solitary Island Marine Park and NSW Fisheries

2.0 Director General's Requirements

Site investigations undertaken over the site, and presented in **Section 3.0**, are in response to the Director General's requirements issued on 8 February 2010 (as amended) (see **Attachment A**).

Table 1 provides a cross reference to the relevant Sections of the EA in response to the DGRs.

Table 1 Director General's Requirements

General Requirements		Relevant Section
1. An executive summary;		
2. A detailed description of the proposal, including:		
· An outline of the scope of the project;		*1.3 & 4.0*
· Discussion of different development options considered;		*4.1*
· Justification for the proposed modification taking into consideration any environmental impacts of the project, the suitability of the site and whether the project is in the public interest; and		*N/A*
· Detail of the proposed changes to staged implementation of the project.		*N/A*
3. A thorough site analysis including constraints mapping and description of the existing environment;		*1.2 & 3*
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;		*5*
5. Consideration of the consistency of the project with the objects of the Environmental Planning and Assessment Act 1979;		*5.2.1*
6. Consideration of impacts, if any, on matters of National Environmental Significance under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999;		*3.9, 5.1 & Table 20*
7. An assessment of the potential impacts of the project and a draft Statement of Commitments, including a description of mitigation and management options that will be used to avoid, remedy or mitigate identified environmental impacts associated with the project, to reduce risks to human health, and prevent the degradation of the environment. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented;		*3.1, 3.5, 3.7 and 7*
8. The plans and documents outlined in Attachment 2;		
9. A signed statement from the author of the Environmental Assessment certifying that the information contained in the report is neither false nor misleading; and		*Page 11*
10. An assessment of the key issues specified below and a table outlining where in the EA these key issues have been addressed.		*See below*
Key Issues		
The EA must address the following key issues:		
1.	***Strategic Planning***	
1.1	*Justify the proposal with reference to relevant local, regional and State planning strategies. In particular provide justification for any inconsistencies with these planning strategies.*	5
1.2	*Consider the consistency of the proposal with the draft Local Environmental Plan for the Moonee area (Amendment 24 to Coffs Harbour Local Environmental Plan 2000), and the Moonee Development Control Plan 2004.*	5 & 6.2.7
1.3	*Consider the provisions of the Moonee Creek Estuary Management Plan in regard to all relevant issues, including but not limited to, water quality/quantity, flooding, flora & fauna.*	3.9
1.4	*The EA should address how the development will enhance connectivity between proposed developments to the north and south of the subject site – particularly transport connections, services, and open space.*	1.2.3, 1.3, 4.1
2.	***Subdivision Design, Layout and Desired Future Character***	
2.1	*Demonstrate the consistency of the proposed subdivision design and layout with the North Coast Urban Design Guidelines, Coastal Design Guidelines for NSW, NSW Coastal Policy 1997 and SEPP 71 – Coastal Protection.*	4 & 5.4.3

2.2	*Identify the type of subdivision proposed across the site i.e. community title, Torrens, strata. A draft community management statement should be provided if any community title is proposed.*	1.3
2.3	*Demonstrate that the proposal provides for the establishment of a suitable neighbourhood character for the area. Provide details of potential building envelopes, built form, potential housing typologies, aesthetics, energy and water efficiency, public safety, any proposed design quality controls and the means for implementing them, and identify opportunities to orientate allotment configurations and shapes to maximise solar access, aspect and views.*	4
2.4	*Provide details of any staging that demonstrates the lots will be released in an orderly and coordinated manner, including the release of allotments for sale, the installation of services and infrastructure.*	4.1
2.5	*Outline the long-term management and maintenance of any areas of open space or conservation including ownership and control, management and maintenance funding, public access, revegetation and rehabilitation works and bushfire management.*	3.9.4,7
2.6	*Provide for treatment of the Environmental Protection 7B Scenic Buffer Zone adjacent to Pacific Highway consistent with the aim and objectives of the zone.*	N/A
	Earthworks	
2.7	*Provide an outline of any bulk earthworks required to modify the site to enhance its suitability for residential development. Provide an indicative plan of areas of cut and fill, sediment and erosion controls, pre and post-construction topography, and identify how construction effects will be managed to avoid, remedy or mitigate adverse environmental impacts (i.e the development of a Site Management Plan).*	3.6
3.	***Visual Impact***	
3.1	*Address the visual impact of the proposal in the context of surrounding development and provide appropriate mitigation measures. In particular address impacts on views from public places, the visual impact of any acoustic measures to mitigate highway traffic noise, and cumulative impacts.*	Table 22 & 23
4.	***Infrastructure Provision***	
4.1	*Identify existing capacity of, and requirements for the provision of all appropriate services and infrastructure, including: sewerage, water, stormwater, electricity, waste disposal, telecommunications, gas, open space, roads and transport, pedestrian and cycle-friendly infrastructure, community facilities and social infrastructure. Undertake consultation with relevant agencies and provide evidence of this consultation. Identify and describe staging, if any, of proposed infrastructure works.*	3.12, 4.3, 4.5
4.2	*Address and provide the likely scope of any planning agreements and/or development contributions with Council/ Government agencies (including relevant community/state infrastructure contributions).*	5.5.4
5.	***Transport and Accessibility***	
5.1	*Prepare a transport and accessibility impact study in accordance with Table 2.1 of the RTA's Guide to Traffic Generating Developments.*	3.11.2, 3.11.3 Table 23
	Alternative Modes of Transport	
5.2	*Address how the Proposal is consistent with the objectives and principles of the NSW Government's Integrating Land Use and Transport Policy package and the NSW Planning Guidelines for Walking and Cycling.*	3.11.2, 3.11.3 Table 23
5.3	*Identify measures to manage travel demand and increase the use of public and non-car transport modes.*	3.11.2, 3.11.3
5.4	*Outline any proposed cycleways and ensure connectivity with existing or proposed cycleways in the area.*	4.5, 4.6
5.5	*Identify the likely transport infrastructure and recurrent servicing costs for Government in proceeding with the development.*	Developer funded
	Traffic and Roads	
5.6	*Demonstrate that the proposed road layout can achieve a high degree of pedestrian and cycle access, and can support future bus access in accordance with the NSWTI bus planning guidelines for regional areas. Also identify and address how staging of the development will impact on accessibility across different transport modes.*	4.4
5.7	*Demonstrate that the proposed internal road layout maximises connectivity within the development, to the broader Moonee area, and to the surrounding environment.*	
5.8	*Address how access will be managed to Lot 2 DP1097743 (K & S Albert).*	1.3
5.9	*Analyse the impacts of an expected increase in traffic on the existing road network surrounding the site, and provide measures to ensure that traffic impacts on the existing and future local road network are minimised.*	3.11
5.9a	*Provide details of the proposed staging/timing of the development with respect to the Pacific Highway Upgrade (Sapphire to Woolgoolga), the development of Glades Estate to*	3.11.1

	the north (currently described as Lots 1 & 2 DP725785), and the development of the Bateman site to the south (Lot 5 DP252223). In particular the Glades Estate has triggered interim upgrades to the Moonee Beach Rd/Pacific Highway intersection prior to the construction of the Pacific Highway Upgrade – address how the Proposal will interact with this interim access and outline any arrangements made to facilitate this.	
5.10	*Outline any proposed temporary access to the site for construction traffic and provide an assessment of the feasibility and environmental impacts of this access, including:* ▲ *Provide details of any proposed access to the site for construction purposes e.g. is it proposed to share the existing temporary arrangements to the Glades Estate?* ▲ *Provide justification for the proposed location and design of the temporary access and its suitability;* ▲ *identify the expected life of the temporary access and any staging of works and/or construction of the permanent road alignment;* ▲ *identify how the temporary intersection is proposed to be controlled;* ▲ *provide an assessment of the safety and capability of the proposed temporary intersection; and* ▲ *address any potential adverse environmental effects (including noise, amenity etc) for adjacent landowners*	Attachment J
	Public Access	
5.11	*Consider, where appropriate, new opportunities for controlled public access to Moonee Creek. Note the submission from the Land and Property Management Authority (see Attach 4) and address the potential for impacts resulting from unregulated public access to the Creek. Consider access for the disabled, where appropriate.*	Table 22 and 23
5.12	*Consider issues associated with an increase in public access to Moonee and Cunningham's Creeks and provide appropriate mitigation/management measures.*	Table 23
6.	***Hazard Management and Mitigation***	
Contamination		
6.1	*Identify any deep soil, surface water and groundwater contamination on site and assess appropriate mitigation measures and monitoring program necessary in accordance with the provisions of SEPP 55 – Remediation of Land.*	3.5
Acid Sulfate Soils		
6.2	*Identify presence and extent of acid sulfate soils and potential acid sulphate soils on the site and, where relevant, provide appropriate mitigation measures for the development's construction and operational stages. Identify the need for an Acid Sulfate Management Plan and prepare if necessary (prepared in accordance ASSMAC Guidelines).*	3.4.2
Bushfire		
6.3	*Address the requirements of Planning for Bush Fire Protection 2006 (RFS) and ensure that any proposed Asset Protection Zones do not adversely affect environmental objectives (e.g. buffers) and provision is made for their appropriate management into the future.*	3.1 &4.7
Geotechnical		
6.4	*Provide an updated assessment of any geotechnical limitations that may occur on the site and if necessary, appropriate design considerations that address these limitations.*	3.4
Flooding		
6.5	*Provide an updated assessment of any flood risk on site (for the full range of floods including events greater than the design flood, up to probable maximum flood; and from coastal inundation, catchment based flooding or a combination of the two) and having consideration of any relevant provisions of the NSW Floodplain Development Manual 2005, the NSW Sea Level Rise Policy Statement (DECCW, 2009), the Draft Flood Risk Management Guide: Incorporating Sea Level Rise Benchmarks in Flood Risk Assessments (DECCW, 2009), and the Draft NSW Coastal Planning Guideline: Adapting to Sea Level Rise (DoP, 2009). The assessment should determine: the flood hazard in the area; address the impact of flooding on the proposed development, address the impact of the development (including filling) on flood behaviour of the site and adjacent lands; and address adequate egress and safety in a flood event.*	3.7
6.6	*Assess the potential impacts of sea level rise and increases in rainfall intensity on the flood regime of the site and adjacent lands.*	3.75
7.	***Stormwater***	
7.1	*Address stormwater quality and quantity, including lawful points of discharge. A comprehensive stormwater management plan should be provided that allows for the appropriate management of stormwater and ensures there are no adverse environmental impacts as a result of the proposal. The plan must also include a conceptual design layout for the preferred stormwater treatment train showing location, size and key functional elements of each part of the system and identify the anticipated effect of each element.*	4.2
7.2	*Address and outline measures for Integrated Water Cycle Management based on Water Sensitive Urban Design principles which addresses impacts on the surrounding*	4.2

	environment, drainage and water quality and quantity controls for the catchment, so that there is no water pollution resulting from the development.	
8.	***Surface water***	
8.1	*In accordance with the correspondence from the NSW Office of Water and DECCW (refer to Attachment 4), provide an assessment of any impacts on surface water (particularly Cunningham Creek and Moonee Creek) as a result of the development, including any impacts on quantity, quality and the functioning of the hydrological regime.*	4.2
8.2	*Provide an assessment of measures to ensure the following water quality objectives for the proposal are met:* *· There is no pollution of waters during the construction and operational phases;* *· There is no inconsistency with any Statement of Joint Intent established by the Healthy Rivers Commission; and* *· Ensure the proposal is not inconsistent with the relevant River Flow Objectives and Water Quality Objectives for the area.*	4.2
Riparian Areas		
8.3	*Identify all riparian areas on site including any creeks, wetlands, drainage lines etc. Address measures to protect, manage and restore the riparian corridor and adjacent aquatic habitats within Moonee Creek and Cunningham Creek (including rehabilitation, planting, monitoring, and ongoing maintenance). The protection and restoration of riparian zones will maintain and improve the ecological functions of watercourses and forms a key part of ensuring appropriate water quality is achieved. If any works are proposed within the riparian areas (such as bridges, culverts, stormwater outlets, walking tracks etc) then this should be identified. Address the comments from the Land and Property Management Authority (LPMA) regarding development of a Vegetation Management Plan.*	4.2.7
9.	***Groundwater***	
9.1	*In accordance with the correspondence from the NSW Office of Water (refer to Attachment 4), provide an assessment of groundwater issues associated with the development, the location of the water table, the nature and profile of the groundwater regime, if any works will intercept the water table, any potential contamination issues, any proposed use of groundwater resources, any associated impacts on registered bores, any works that may result in increased groundwater discharge, impact on the stability of potential acid sulfate soils in the vicinity, or affect groundwater dependent native vegetation, and any impacts on the quantity and quality of groundwater.*	3.8
10. Heritage and Archaeology		
10.1	*Identify whether the site has significance to Aboriginal cultural heritage and identify appropriate measures to preserve any significance. The assessment must address the information and consultation requirements of the draft Guidelines for Aboriginal Cultural Heritage Assessment and Community Consultation (DEC 2005).*	3.2
10.2	*Carry out a detailed heritage assessment by a suitably qualified consultant that includes consultation undertaken with the relevant Local Aboriginal Land Council/s and Aboriginal community groups. The assessment should include:* *· Up to date surveys by suitably qualified archaeological consultants and include evidence of consultation with traditional Aboriginal custodians;* *· Identification of the nature and extent of impacts on Aboriginal Cultural Heritage values across the project area. If impacts are proposed as part of the final development, clear justification for such impacts should be provided;* *· A description of the actions that will be taken to avoid or mitigate impacts of the project on Aboriginal Cultural Heritage values. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented;* *· An assessment of the archaeological and Aboriginal significance of the site's Aboriginal Cultural Heritage values. If impacts on Aboriginal cultural values are proposed as part of the final development, an assessment of the regional significance of the values to be impacted, the extent to which these values are protected elsewhere in the landscape and consideration of the proposed impacts in the context of 'intergenerational equity' should be undertaken; and* *· Evidence that effective community consultation with Aboriginal communities has been undertaken in assessing impacts, developing options and making final recommendations. DECCW supports broad-based Aboriginal community consultation and as a guide the 'Interim Community Consultation Requirements for Applicants' provides a useful model to follow. Identify any items of non-indigenous heritage significance and, where relevant, provide measures for the conservation of such items.*	3.2 &4.8
10.3	*Identify any items of non-indigenous heritage significance and, where relevant, provide measures for the conservation of such items.*	N/A

11. Flora and Fauna		
11.1	*Provide an up-to-date assessment of any potential direct and indirect impacts of the development on flora and fauna, taking into consideration impacts on any threatened species, populations, ecological communities and/or critical habitat and any relevant recovery plan in accordance with the draft Guideline for Threatened Species Assessment (Part 3A) and Threatened Species Assessment Guideline: The Assessment of Significance. Describe the actions that will be taken to avoid or mitigate impacts or compensate unavoidable impacts on native flora and fauna, where relevant.*	3.9.2
11.2	*The assessment should specifically report on the guiding principles for threatened species assessment at sect 1.2 of the draft Guideline for Threatened Species Assessment (Part3A).*	3.9
11.3	*Provide an assessment of the proposal that ensures (if possible) adverse impacts on identified areas of ecological significance are avoided or mitigated (including the adjacent Moonee Creek wetland, Endangered Ecological Communities e.g. coastal saltmarsh, protected ecosystems e.g. mangroves, and threatened species habitat etc), including the establishment of appropriate buffers and other measures.*	3.9.2, 3.9.3 & 3.9.4
11.4	*A field survey of the site should be conducted as part of this assessment in accordance with DECCW's Threatened Biodiversity Survey and Assessment Guidelines.*	3.9.1
11.5	*Address, where relevant, the provisions of the Moonee Creek Estuary Management Plan, the Coffs City Harbour Council Koala Plan of Management, and the draft Coffs Harbour Priority Habitats and Corridors Strategy.*	3.9
11.6	*Outline measures for the conservation and management of existing wildlife corridor values and/or connective importance of any vegetation on the subject land.*	3.9.3
11.7	*Include provision for appropriate environmental buffers between the development and the Solitary Islands Marine Park (refer to the advice from the Solitary Islands Marine Park Authority in Attachment 4). Address how climate change is accounted for when designing environmental buffers to waterways, and ensure that buffers can maintain their integrity throughout the expected lifespan of the development.*	5.5.1.7 & 5.6.1 and 5.6.2
12. Biting Insects		
12.1	Address the potential for an increase in the impact of biting insects on the amenity of the area, in particular salt marsh mosquitoes. The assessment should address impacts on future residents, and potential increases in mosquito borne disease. Undertake consultation with Council and the NSW Area Health Authority and provide for measures to control and ameliorate their effects, including measures to minimise their breeding habitat. Prepare a biting insect management plan if the problems are considered severe.	4.9
13. Noise		
13.1	*Assess any potential noise impacts resulting from, and impacting on, the development. In particular the potential impacts from road traffic noise for future residents from Pacific Highway and the proposed Moonee collector road. Outline appropriate mitigation measures to mitigate noise impacts.*	3.10
14. Socio-economic Impacts		
14.1	*Provide a social impact assessment for the development. Address the social and economic context of the development in terms of infrastructure requirements, public transport, community services and facilities (including schools and medical services). Identify the need for any additional and/or augmentation of social and community infrastructure and resources. In particular explore the potential and methods for a new educational facility to be provided for.*	3.13
14.2	*Identify opportunities to incorporate affordable housing into the proposal.*	4.1
Consultation		
An appropriate and justified level of consultation with the following agencies during the preparation of the environmental assessment:		6
(a) Agencies or other authorities:		
· Coffs Harbour City Council;		
· Solitary Islands Marine Park Authority;		
· Department of Environment, Climate Change and Water;		
· NSW Office of Water;		
· Department of Housing;		
· Northern Rivers Catchment Management Authority;		
· NSW Rural Fire Service;		
· Land and Property Management Authority – especially in relation to Crown roads and owners consent issues;		

· Department of Transport and Infrastructure;	
· Roads and Traffic Authority;	
· Department of Health;	
· Local Aboriginal Land Council;	
· Department of Education and Training.	
(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.	6

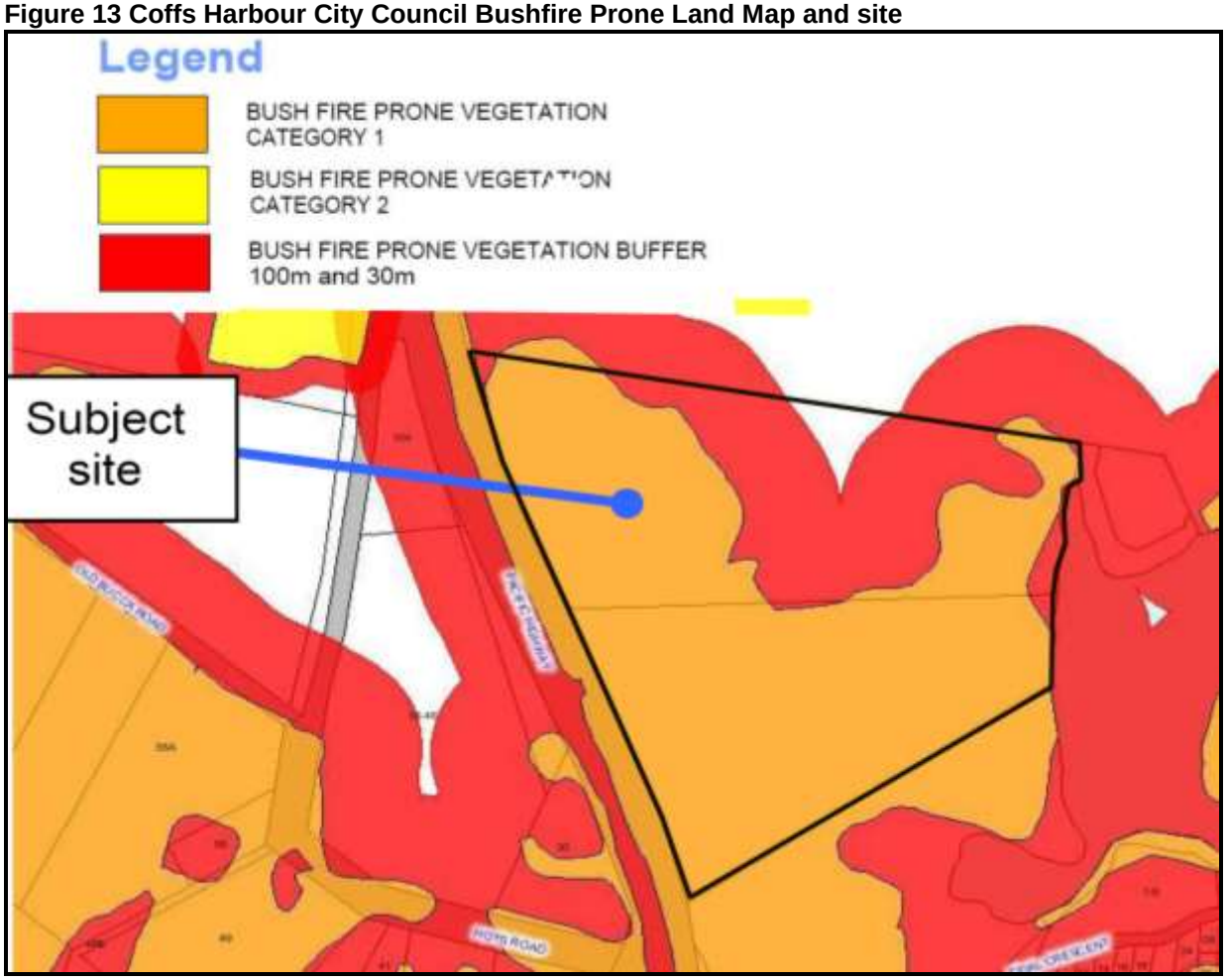
3.0 ENVIRONMENTAL ASSESSMENT

3.1 Bushfire Hazard Assessment

A Bushfire Hazard Assessment has been prepared by Building Code & Bushfire Hazard Solutions Pty Limited (refer **Attachment B**). The assessment has been prepared in accordance with the relevant sections of the EP&A Act, *Rural Fires Act 1997* and *Planning for Bushfire Protection Guidelines 2006*.

Coffs Harbour Council's Bushfire Prone Land Map identifies that the site contains Category 1 Vegetation and its associated 100 metre buffer zone (refer **Figure 13)**. Any development therefore needs to meet the requirements of *Planning for Bush Fire Protection* 2006 and the construction requirements of Australian Standard 3959 '*Construction of buildings in bushfire-prone areas*'.

Figure 13 Coffs Harbour City Council Bushfire Prone Land Map and site



The vegetation identified as a potential bushfire hazard is located to the northeast within a yet to be rehabilitated wildlife corridor running from the approved Glades development to the north, east within a proposed public wildlife corridor and south within the southern allotment (Lot 6 in DP 252223).

The minimum required Asset Protection Zone (APZ) – as per Table A2.5 of *Planning for Bush Fire Protection* 2006 – is to be 20 metres to the northeast and east and 10 metres to the south.
The provisions of the Asset Protection Zones described herein will not expose any future dwelling to a Bushfire Attack Level higher than BAL 40 (i.e. Flame Zone). The APZs will provide a reasonable and satisfactory level of bushfire protection to the subject development.

3.2 Aboriginal Cultural Heritage

Myall Coast Archaeological Surveys (MCAS) were engaged in 2012 to assess the potential impacts of the proposed development on Aboriginal Cultural Heritage (refer **Attachment C)**. The assessment was carried out in accordance with the Department of Environment and Conservation (DEC*) Interim Community Consultation Requirements for Applicants* (2005).

The site was first assessed in 2006 in relation to a Development Application for subdivision. The Coffs Harbour Aboriginal Land Council undertook the initial assessment and found the land to be disturbed and indicated that, whilst it may be possible for artefactual evidence to randomly occur within the study area, such evidence would have lost any contextual integrity. Their observations in 2006 did not reveal any evidence.

3.2.1 Predictive Modelling of Landscape

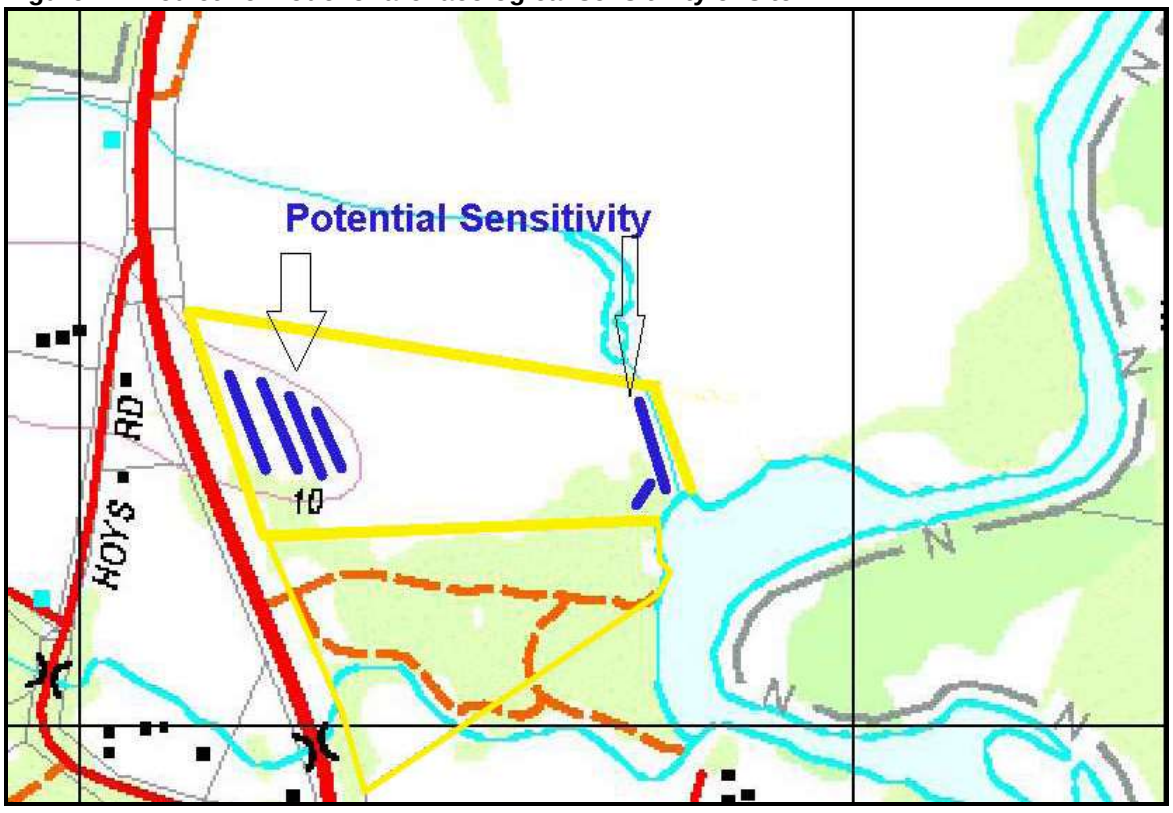
The 2012 assessment undertook a landscaped approach to determine any potential Aboriginal archaeological evidence, rather than only attempting to identify individual sites across the study area. This required the identification of the range of landscape units likely to contain Aboriginal archaeological evidence. This ensures that the landscape context is assessed for significance and a predictive model of Aboriginal occupation of the study area is determined.

Aboriginal Heritage is centred on Moonee Creek, its tributaries particularly the confluence with Skinners Creek and more importantly, Yellow Waterholes. Moonee Beach and the coastline was also a favoured area. The study area is but part of the wider landform centred on Monee Beach and Yellow Waterholes; a substantial occupation area for Aboriginal people. Whilst all landscapes are of significance to Aboriginal people, there are no areas of archaeological or cultural significance within the study area.

3.2.2 Predictive Modelling of Artifacts

The predictive model to identify site type, location and density of isolated stone artefacts, stone artefact scatters, scarred trees and middens, indicates two areas of the site have potential for having archaeological evidence as indicated in **Figure 14.**

Figure 14 Predictive model of archaeological sensitivity of site

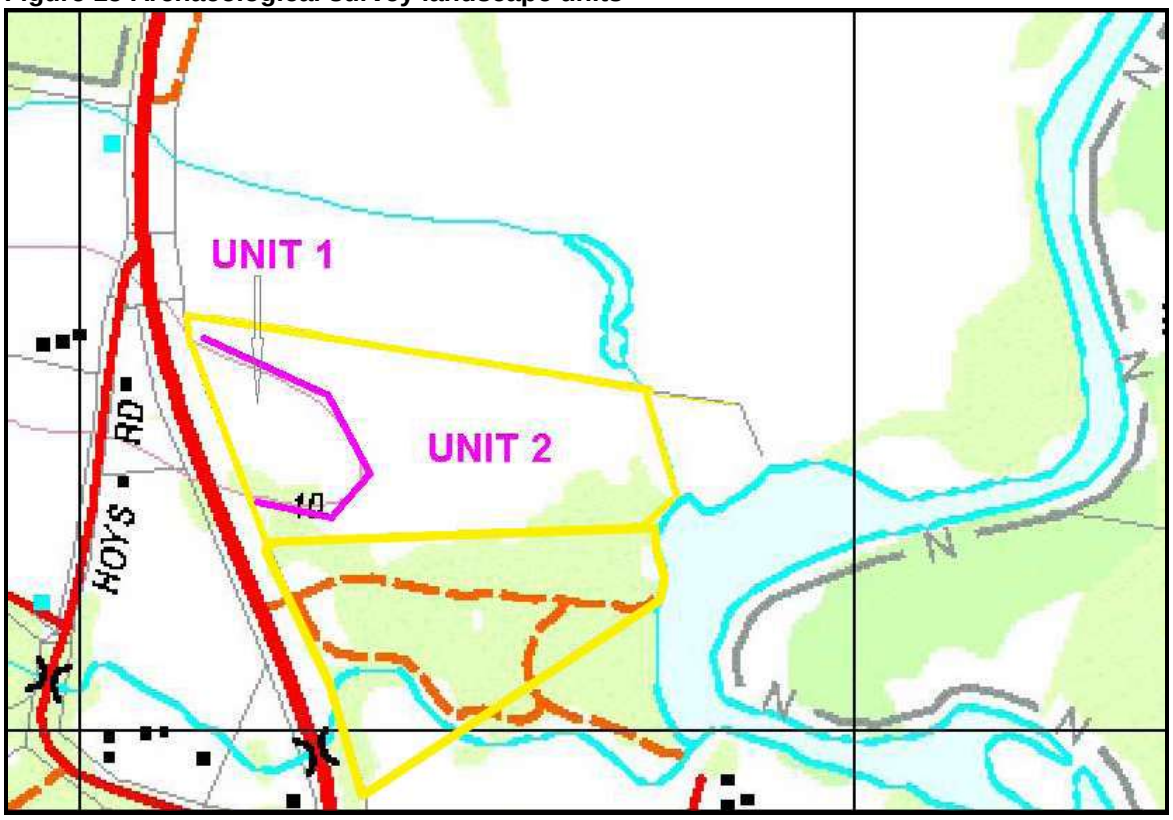


3.2.3 Site Inspection

A site inspection was undertaken on 30 November 2012 by MCAS in conjunction with Mr Ian Brown, Mr Mark Flanders and Mr Josh Anderson from LALC, Mr EJ Williams representing Yarra group and Mr Cecil Laurie from the Garby Elders.

As the proposed development footprint is over 2 distinct landform units, estuarine flat and small rise, the development footprint was broken into 2 survey units - *Unit 1 Rise and Unit 2 Estuarine flat*. Each unit was considered separately (refer **Figure 15**).

Figure 15 Archaeological survey landscape units



Only Unit 1 contained an artefact scatter of interest. The individual artefacts consisted of a red silcrete flake, a greywacke flake, a baked greywacke flake and a white quartz core. The red silcrete flake was only 3m distant from the others which were in close proximity to one another. The finds were in a gravel driveway. The site had been levelled and appeared to have been used in the past as a log dump for timber getting. The artefacts were located within in a very disturbed context. There was very little topsoil, if any at all and the underlying soil composition appeared to be bedrock.

As the artefacts were in a context of spread gravel, it is likely that the artefacts were imported with the gravel. One of the members from the CHLALC who inspected the area in 2006 remembers examining the Unit 1 area carefully and is confident the artefacts were not there then and the land has not changed since (See 2006 CHLALC report Appendix B). The landowner advises that the road was re-sheeted with gravel a few years ago from a quarry on Bucca Road 2km to the west. An examination of that quarry indicates that it overlooks the headwaters of Skinners Creek and the landform indicates probable extensive Aboriginal Occupation.

Previous archaeological reports and the landform tend to indicate Aboriginal use of the area and it was expected that artefacts would be found. A very thorough search of the unit was undertaken and no other artefacts were identified. There is no evidence of any form of gravel or stones within the unit except for the driveway and immediate surrounds.

The knowledge holders present did not attribute any special significance to the artefacts as they were neither unusual nor rare. They were also poor examples of Aboriginal Objects.

Unit 2 consists of the area east of the driveway towards the river, and whilst not part of the proposal, it is considered to be a potential archaeological deposit. However, it was not inspected and could not be conclusively determined as such. The area is a conservation area not subject to development, and as such, investigation is neither warranted nor necessary.

3.2.4 Aboriginal Community Consultation

In accordance with the Office of Environment and Heritage (OEH) requirements, Aboriginal community consultation was undertaken to advise, consult and oversee the Aboriginal Cultural Heritage Assessment for the project.

- An advertisement was placed in the Coffs Coast Independent on the 24/5/2012.
- Letters written to Aboriginal people and organisations identified through agency response seeking an expression of interest in the project.
- Coffs Harbour LALC, responded and was registered as a stakeholder for the project.
- Several further attempts were made to obtain additional stakeholders but no response was received. This was probably because the area in question was not necessarily an area of interest and secondly and perhaps more importantly, a good relationship exists between the various family groupings and the Land Council and the families are content for the Land Council to manage the cultural heritage matters.
- Initial meeting held with the LALC to explain the project and seek information about the area. It was revealed at that meeting that an inspection had been undertaken some years ago and it was considered disturbed land.
- Visual inspection of the study area was conducted with representatives of the land council and other community representatives Draft report forwarded to LALC for comment and feedback on 1/2/2013
- Cultural report received from stakeholders

The consultation process provided confirmation that the proposal, implemented in accordance with the recommendations, will not impact on the Aboriginal Cultural Heritage values of the area.

3.2.5 Proposed Management of Artifacts

There is no need for any offsets as the only Aboriginal Objects that will be impacted directly or indirectly by the proposal will be subject to a management plan that either leaves them in situ or relocates them to an area on site that will not be impacted by the proposal.

All known areas, objects and features of value to the Aboriginal community are outside footprint of the proposed development.

3.3 European Heritage

There are no items of European Heritage listed on the Heritage Schedule to the Coffs Harbour LEP either on the site or in the vicinity of the site. There are no items listed on the State Heritage Register for the Moonee locality. Site inspections have confirmed that there are no items of European heritage on site or in the immediate vicinity of the site.

3.4 Soils and Urban Capability

Martens and Associates Pty Ltd were engaged to undertake soils and geotechnical investigations (refer **Attachment D)** to determine the following in respect of the site:

- General sub-surface conditions across the site including soil type and rock depth
- Soil and rock strength properties for foundations and pavement design
- Groundwater conditions
- Excavation requirements
- Site classification in accordance with AS 2870 (1996)
- Slope stability and hazard risk assessment

The field investigations were undertaken 26 to 28 July 2010 and included:

- Walkover inspection of the site assess existing site conditions and local topography, geology, soil conditions and vegetation;
- Excavation of 14 boreholes to between 0.6 – 9.2 m depth using a hydraulic auger to allow for the characterisation of underlying soils and geology;
- Dynamic Cone Penetration (DCP) testing at 13 borehole locations to determine indicative strengths of sub-surface materials in accordance with AS 1289.6.3.2 (1997);
- Installation of groundwater monitoring wells at 8 borehole locations (BH1, BH2, BH3, BH4, BH6, BH7, BH8 and BH13);
- Collection of 4 bulk soil samples from 4 boreholes for the purposes of CBR testing (Californian Bearing Ratio);
- Collection of 5 bulk soil samples from 3 boreholes for the purposes of testing shrink/swell properties; and
- Collection of seventy-five soil samples from thirteen boreholes for potential acid sulfate soils testing.

The location of subsurface investigations is provided in **Figure 16**.

Borehole investigations indicate that the site soil profile generally consists of stiff – very stiff, moderately plastic grey clays with up to 1.5 m of sand overlying clays in some parts of the site. Sandy deposits are thicker at lower elevations and absent on the lower slopes in the north-west of the site (above approximately 5m AHD). No bedrock was detected to a depth of 9.2m below ground surface.

Preliminary site classification in accordance with AS 2870 (2011) and based on the depth of clay in the soil profile, and groundwater levels, is H1 on the alluvial plain, and H2 on the lower slopes. The relatively shallow groundwater table on the low-lying alluvial plains generally reduces site classification.

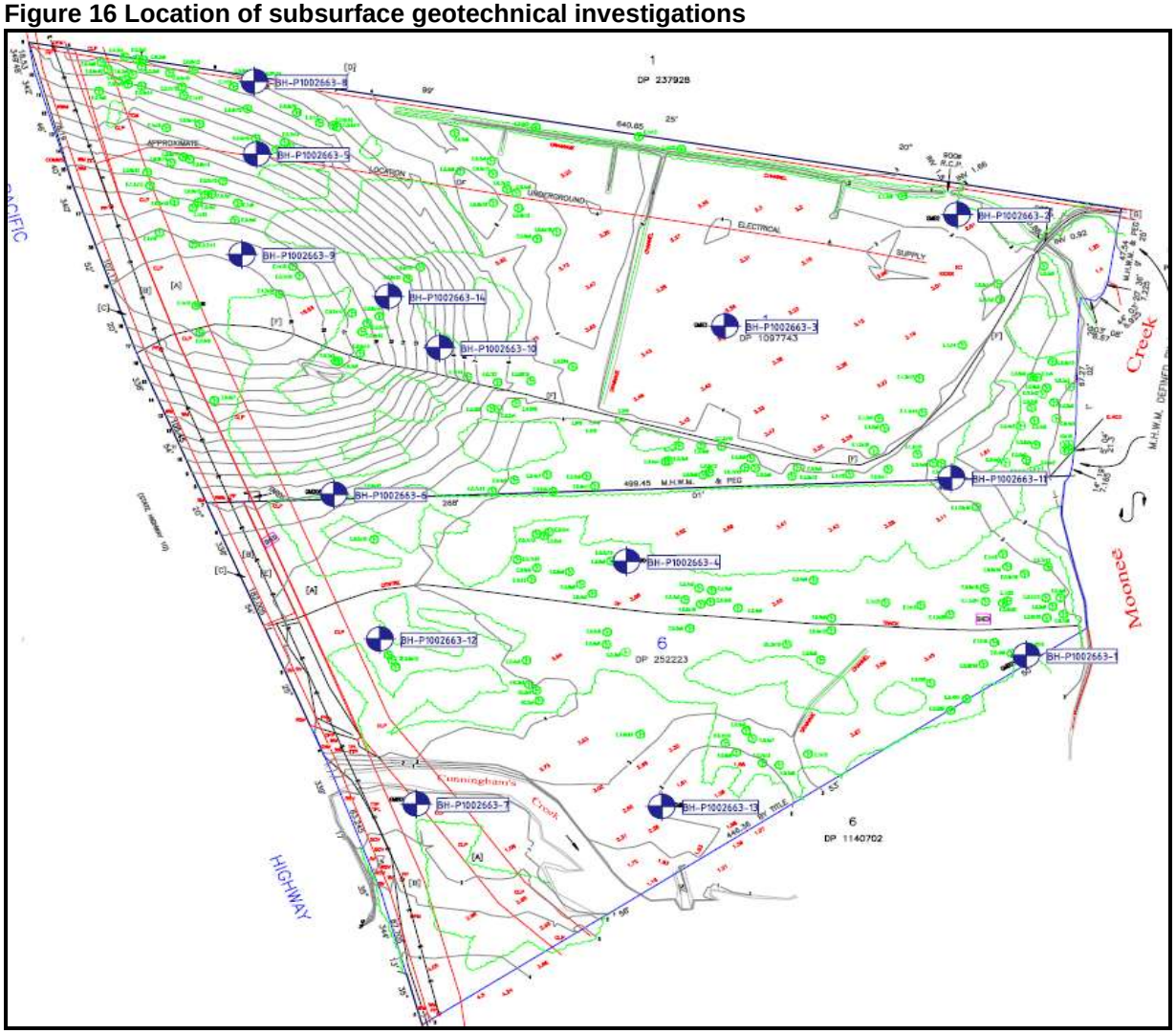
There is no evidence of subsidence or recent gross slope instability on-site.

Rotational slide and soil creep are considered hazards at the site, primarily on the lower hill slopes in the north-west. Recommended treatment measures for these hazards are as follows:

- Rotational slide/slump – Good hill slope engineering practice (Guidelines for Hillside Construction from AGS, 2007); and
- Soil Creep – Maintain vegetation wherever possible and ensure appropriate foundations and footings design.

The proposed sub-division constitutes a very low risk to life and property resulting from geotechnical hazards and is acceptable provided the recommendations of the geotechnical report are implemented.

Figure 16 Location of subsurface geotechnical investigations



3.4.1 Matters for consideration at construction certificate

The following needs to be considered in the detailed engineering design of the development include:

- **Waterlogged Soils** - areas of the site subject to waterlogged soils include the low lying alluvial plains in the east, particularly adjacent to local drainage depressions and creeks. The amount of water logging in the soils will be dependent on recent rainfall and climate conditions, in particular the water level in Moonee Creek. Where development is proposed in these areas, design and construction should take into account the waterlogged soils and subsequent low strengths of the clay subsoils. Sub-soil drains may need to be installed.
- **Expansive Soils** - five clay samples from three borehole locations were tested to determine the reactivity of the soils in relation to moisture change. Analysis of Atterberg Limits testing results indicates that the clay soils generally have a low – high expansive rating and are classified as either 'Inorganic clays of low to medium plasticity (CL)' or 'Inorganic clays of high plasticity (CH)' in accordance with the *Unified Soil Classification Scheme* (USCS).
- **Preliminary Pavement Design -** California Bearing Ratio (CBR) testing was undertaken on samples collected from four locations at depths ranging from 0.2 – 0.9 m below ground level along the likely internal roads. Results indicate that CBR is highly variable and careful pavement design and geotechnical supervision will be required on-site to ensure adequate sub-grade is achieved during the road construction process.
- **Treatment of Soft Spots** - Soft areas of soil that are incapable of providing adequate design CBR values should be stiffened as required or replaced.

- **Excavations**
- **Fill Material**
- **Sub-grade Preparation**
- **Footings and Foundations**
- **Retaining Structures**
- **Groundwater**
- **Stormwater and Groundwater Seepage Management**
- **Trafficability and Construction Access**
- **Soil Erosion Control**

3.4.2 Acid Sulfate Soils

According to the former Department of Natural Resources acid sulfate soil risk maps, the site is categorised as having acid sulfate soils, namely Class 2, 3 and Class 5 (refer **Figure 17**).

An acid sulphate soils investigation was undertaken on the site by Martens and Associates (refer **Attachment D**) in accordance with:

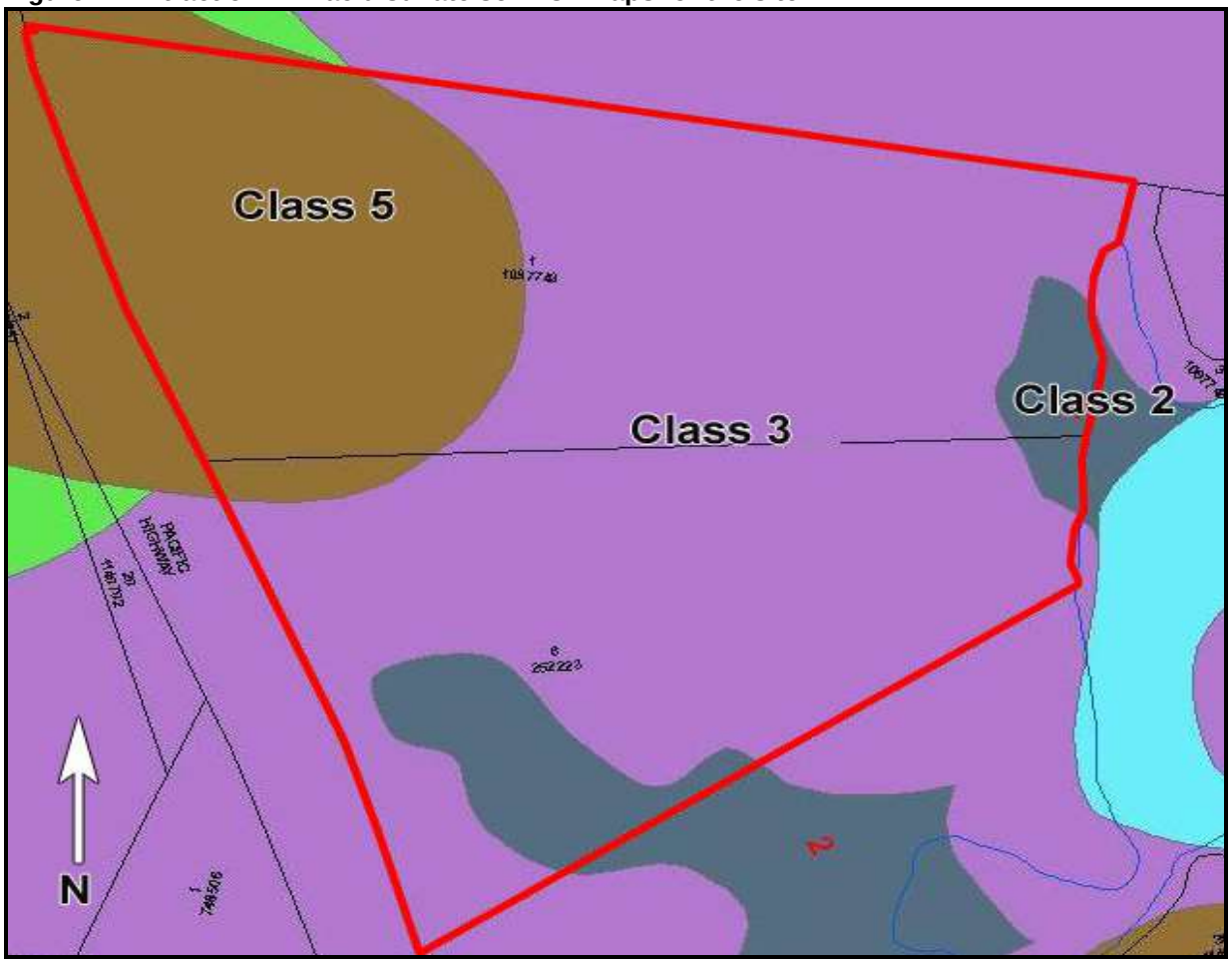
- NSW Acid Sulfate Soil Management Advisory Committee (ASSMAC, 1998).
- Coffs Harbour City Council (2000) *Local Environmental Plan, Part 4 – Environmental Hazards: Acid Sulfate Soils*.

The assessment addressed soil layers as deep as 4.0 m below existing ground level in parts, which is sufficient assessment for excavation to 3.0 m depth

The likelihood of acid sulphate soils occurring on the site is high given the presence of the following geomorphic characteristics:

- Holocene sediments;
- Soil horizons less than 5 m AHD;
- Marine/estuarine sediments or tidal lakes;
- Coastal wetland; backwater swamps; waterlogged or scaled areas;
- Dominant vegetation is mangroves, reeds, rushes and other swamp or marine tolerant species;
- Geologies containing sulphide bearing material / coal deposits or former marine shales/sediments; and
- Deep older (Pleistocene) estuarine sediments

Figure 17 Extract of DNR acid sulfate soil risk maps for the site



A soil sample was collected from every soil layer or every half meter generally to maximum depth of 1.5 to 7.0 m below ground level at thirteen boreholes distributed across the site, (refer **Figure 16**).

None of the tested samples showed signs of being actual acid sulfate soils (pH <4). However all but one of the twenty samples showed slightly – moderately positive signs of being potential acid sulfate soils based on a lowering of pH after oxidation Samples from BH7 on the southern banks of Cunningham Creek had the most positive results.

The laboratory results indicate that eight samples from five boreholes exceed the action criteria triggering the need for a management plan based on Titratable Peroxide Acidity T.P.A), including samples from boreholes situated on the low-lying alluvial plains as well as on the lower hill slopes in the north-west (Lot 1).

Testing indicates that the majority of soils at the site are unlikely to have pyritic sulphur, but may contain organic sulphur. On this basis, it is recommended that the majority of soils are not actual acid sulfate soils (ASS) or potential acid sulfate soils (PASS), but are *in-situ* acidic soils. Regardless, an acid sulfate soils management plan is required.

Further testing could alter or negate the requirement for a management plan in certain parts of the site, particularly on the hill slopes where soil horizons lie above 5 m AHD.

A management plan has been prepared to address the risk of acid sulfate soils exposure during site development works (refer **Attachment D**). Provided the management plan is implemented, acidic soil conditions should not restrict the proposed development. However, if excavations of more than 3.0 m depth are proposed, then further testing of deeper soil horizons would be recommended.

3.5 Potential Land Contamination

A preliminary land contamination investigation was undertaken by Martens and Associates Pty Ltd (refer **Attachment E**). Prepared in accordance with NSW EPA (2000) *Guidelines for Consultants Reporting on Contaminated Sites,* the purpose of the assessment was to detail the suitability of the site for the proposed development and to determine if further site assessment (Stage 2 soil sampling and testing) is required. The Stage 1 assessment was based on a historical review of site land use and does not involve soil sampling.

3.5.1 NSW EPA/DECC Contaminated Land Record

Review of the NSW EPA/DECC contaminated land record shows that the subject site has not been regulated by the EPA in regards to contaminated land. No site within the suburb of Moonee was listed on the register.

3.5.2 Development Application History

DA and building plan records kept by Coffs Harbour City Council back to approximately 1950 indicate that all previous DA have been in relation to residential use or sub-division.

3.5.3 Historical Aerial Photograph Analysis

Historical aerial photographs taken of the site during 1954, 1964, 1974, 1989, 2000 and 2008 indicate that the site has not sustained any intensive land use except for possibly grazing pasture after 1954.

3.5.4 Walkover Site Inspection

A site inspection completed 28 July 2010 noted several stockpiles of local soil created from minor earthworks such as cutting of dirt access roads on-site. No other evidence of potential contamination such as soil staining, unnatural odours or plant stress was observed on-site.

The results of the preliminary site investigation indicate that the site has been used for residential purposes after 2004 and possibly grazing after 1954. On this basis, the site is unlikely to be contaminated and further site assessment (sampling and laboratory testing) is not considered necessary. If excavated material is to be removed from the site, a waste classification will be required.

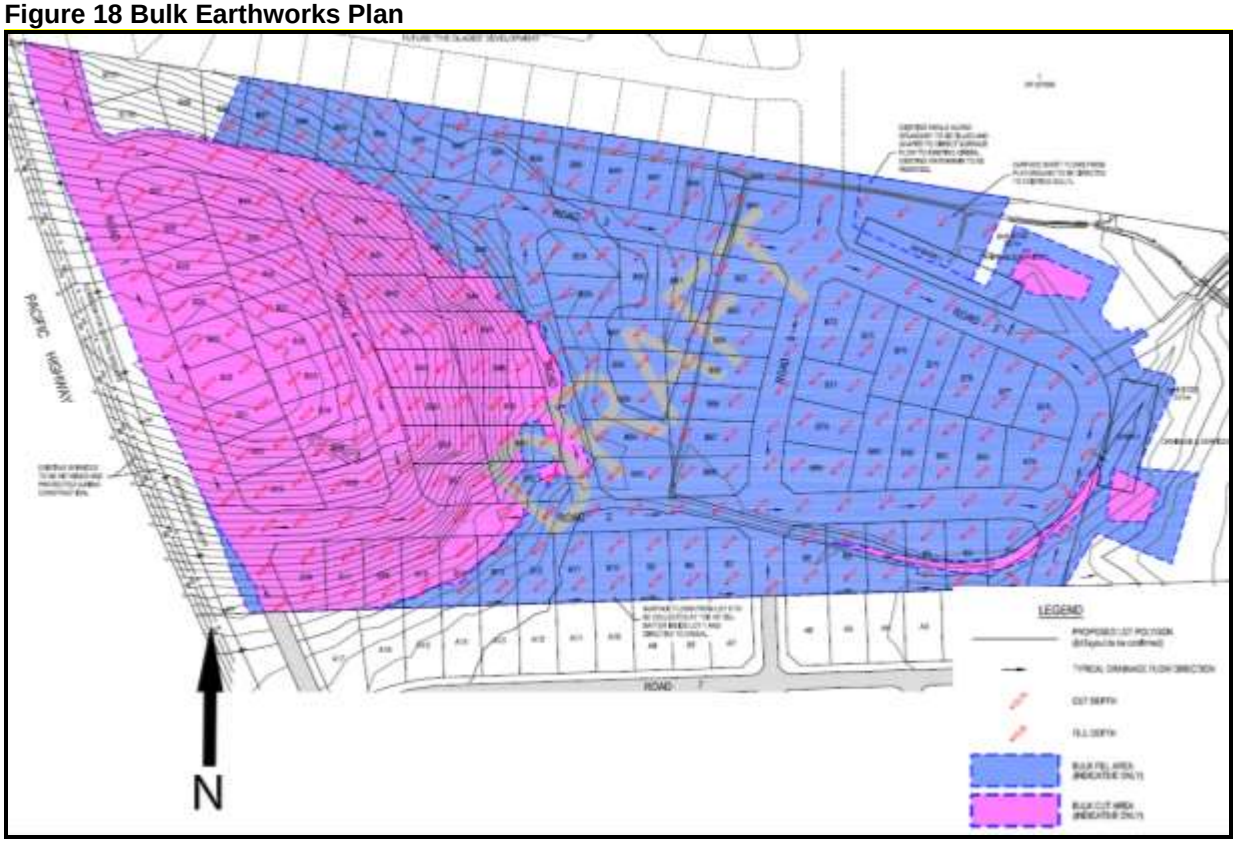
3.6 Earthworks

Post development ground surface levels are governed by a combination of:

- The ground surface levels required by both the subject site and the adjoining (northern) Part 3A approved project to mitigate flood inundation in a 1 in 100 year event (allowing for sea level rise and finished floor levels); and
- the need to integrate with design levels for the court approved collector road and other internal roads, stormwater drainage and the utilities services associated with the adjoining Part 3A approved project.

Civiltech Pty Ltd, in consultation with the engineers preparing detailed engineering plans for the adjoining Part 3A approved development to the north, have determined that filling of up to 2 metres in depth is required on the eastern half of the subject site. A bulk earthworks plan proposes that fill material be obtained from the elevated areas in the western half of the site (refer **Figure 18**).

Figure 18 Bulk Earthworks Plan



The proposed cut to fill ratio is approximately 82,000m3 of cut to 74,000m3 fill with the additional material allowing for unsuitable material and compaction. Cuts of up to four metres will be required for integrating the proposed lots on the western end of the site with the approved collector road.

The subdivision earthworks proposed will not require the construction of major retaining walls or steep allotment batters. It is not envisaged that any fill will be required to be imported to the site or exported from the site, thereby avoiding unnecessary 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*.

3.7 Flood Assessment

A flood assessment of the site and the proposed development was undertaken by Martens and Associates Pty Ltd (refer **Attachment F**). The purpose of this assessment is to provide details of flood heights and extents for the 1 in 100 year ARI and the Probable Maximum Flood (PMF) events for existing and developed conditions. The assessment included projected sea level rise and increased rainfall intensities associated with climate change.

The following documents were considered in the flood assessment (and implemented in concept plan):

- *Coffs Harbour City Council DCP (2012)*
- *NSW Department of Environment and Climate Change (2007) Floodplain Risk Management Guideline Practical Consideration of Climate Change*
- *NSW Department of Environment Climate Change and Water (2010) Draft Flood Risk Management Guide: Incorporating sea level rise benchmarks in flood risk assessments*
- *Coffs Harbour City Council (2009) Engineering Development Specification Design – 0074 Stormwater drainage Design*

3.7.1 Previous Flood Studies

Moonee Creek Flood Study (GHD 1994) undertaken for the Heritage Park development 2km north determined flood levels in Moonee Creek using a 1D hydraulic model (HEC-2) (refer **Table 2**).

Table 2 Flood levels from 1994 Moonee Creek Flood Study

HEC-2 Section	Existing Flood Levels m AHD		Flood Levels After Development m AHD 100 year ARI
	20 year ARI	100 year ARI	100 year ARI
7	2.80	3.23	3.24
8	2.91	3.36	3.36
9	3.08	3.53	3.53

Moonee Creek Flood Study (Paterson Consultants 1998) prepared for council utilised a MIKE 11 model of Moonee Creek and its tributaries. Peak flood levels for varying durations during the 1 in 100 year ARI flood for Moonee Creek and Cunninghams Creek in the vicinity of the site are summarised in **Table 3.**

Table 3 Flood levels from 1998 Moonee Creek Flood Study

Location			Storm Duration (hrs)			
2	3	4.5	6	9		12
Moonee Creek						
at Cunninghams Creek	2.64	2.50	2.62	2.62	(2.69)	2.62
Cunninghams Creek						
u/s Pacific Highway	(2.83)1	2.67	2.71	2.67	2.76	2.74

A series of flood maps showing flood characteristics for the 1 in 100 year ARI flood (heights and hazards) were produced that show a peak flood level of approximately 2.8 m AHD in Moonee Creek adjacent to the site and levels ranging from 2.8m AHD to approximately 4.0 m AHD along the northern site boundary in Bucca Creek. Hazard mapping showed the site to be largely outside of existing 1 in 100 year ARI flood extents, with some portions of the site identified as having a “Low Hazard” rating.

Coffs Creek Floodplain Risk Management Plan (Bewsher Consulting, 2005) prepared for council details a floodplain risk management plan for Coffs Creek. Whilst Moonee Creek and its tributaries were not included in this assessment, a flooding and hazard extents map was prepared for areas to the north of Coffs Creek, based on the previous assessment conducted by Paterson Consultants (1998). This map shows that a portion of the site is affected by the 1 in 100 year ARI peak flood extents and that the area affected is considered to be a ‘low flood extent’ area.

Moonee Creek Estuary Process Study (WBM Oceanics, 2005)
This assessment determined hydraulic characteristics (tidal movement and water levels) for Moonee Creek. The assessment used levels recorded by the NSW Department of Commerce Manly Hydraulic Laboratory (MHL) for a site located approximately 1.9 km from the mouth of Moonee Creek and approximately 0.8 km from the subject site. Recorded water levels are summarised below in **Table 4**.

The Glades, Moonee Beach – Hydraulic Assessment (Cardno Lawson Treloar, 2007) was prepared for the approved Glades development north of the site. This assessment utilised the MIKE – 11 model developed in the *Moonee Creek Flood Study* (Paterson 1998), supplemented with additional cross-sections and the addition of the Pacific Highway bridge over Skinners Creek to improve model accuracy in the vicinity of the development.

Table 4 Summary of water levels in Moonee Creek from 2005 estuary processes study

Water Levels	Moonee Creek	Ocean (Coffs Harbor)
Maximum Water Level	1.17m AHD	1.23m AHD
Minimum Water Level	-0.1m AHD	-0.18m AHD
Median Water Level	0.24m AHD	-0.04m AHD
Median High Water Level	0.56m AHD	0.56m AHD
Median Low Water Level	0.11m AHD	-0.59m AHD

The assessment considered three flood simulations (i.e. flood envelope) to determine the 1 in 100 year flood event envelope curve as follows:

- 1 in 100 year flood event, normal high tide level as boundary conditions (0.6 m AHD).
- 1 in 20 year flood event, 1 in 20 year tide level as boundary conditions (adopted as 2.3 m AHD).
- 1 in 5 year flood event, 1 in 100 year tide level as boundary conditions (adopted as 2.6 m AHD).

The development was modelled by assuming that all developed areas would be filled to be above the 1 in 100 year ARI flood level, and modelling results showed that the effects of the adjacent development on local flooding levels were contained within the relevant site (Lot 1 DP 725785).

Flood hazard mapping showed that there are some small areas of the subject site (Lot 1 DP1097743) closest to Moonee Creek that are classified as "High Flood Risk Precinct", a high hydraulic hazard.

Modelling results indicated that downslope of Moonee Creek section 6580 (upslope of the site), peak flood levels resulted from the high tailwater scenarios rather than the peak flood flow scenario. Flood level results of the assessment for sections close to the site are summarised in **Table 5.**

Table 5 Peak flood levels in Moonee Creek and Bucca Creek for the Glades development

Creek / Model Branch	Section Chainage	1 in 100 Year ARI Water Surface Level Envelope (m AHD)	
		Existing Conditions	Proposed Conditions
Moonee Creek	6900	2.69	2.69
	7200	2.65	2.65
	7280	2.64	2.64
	7400	2.64	2.64
Bucca Creek	800	3.92	3.98
	810	3.91	3.98
	840	3.85	3.97
	866	3.77	3.81
	900	3.71	3.77
	1030	3.46	3.51
	1100	3.22	3.34
	1270	3.01	3.03
	1350	2.84	2.87
	1520	2.68	2.68
	1800	2.65	2.65

3.7.2 Flood Assessment Methodology and Assumptions

The flood assessment for the subject site was undertaken in relation to Lot 1 DP1097743. The assessment used the SMS Tuflow two-dimensional hydraulic modelling package and results of hydrological modelling undertaken using the RAFTS program to determine flood characteristics for existing and proposed conditions (pre and post development, respectively).

In accordance with the NSW Department of Environment and Climate Change (2010) Draft Flood Risk Management Guideline, the following scenarios were assessed to determine the peak 1 in 100 year ARI flood characteristics for Moonee Creek and Bucca Creek at the site:

- **Scenario 1** – 1 in 100 year ARI ocean level with 1 in 20 year ARI catchment flooding with coincident peaks.
- **Scenario 2** – 1 in 100 year ARI catchment flooding with 1 in 20 year ARI ocean level with coincident peaks.
- **Scenario 3** – 1 in 100 year ARI catchment flooding with neap tide cycle with coincident peaks.

The flood characteristics of the PMF have been assessed assuming PMF catchment flooding coinciding with peak neap tide. The effects of climate change on results were also assessed.

The study used the following computer models to determine site flood characteristics:

- RAFTS hydrological modelling package to determine existing and post-development peak flow rates and sub-catchment hydrographs for the critical duration 1 in 20 year; 1 in 100 year ARI and Probable Maximum Precipitation (PMP) storms for use in the flood modelling. Design rainfall data used in the model were sourced from NSW Bureau of Meteorology and are considered to be consistent with figures provided by Council.
- Tuflow 11.0.10 1D / 2D hydraulic modelling package to determine existing and post-development flood characteristics and potential effects of proposed development on adjacent properties and infrastructure.

Models were based on a draft concept plan, surveyed site levels, LiDAR data, and drainage information provided by Council, along with various assumptions in the RAFTS model and the *Tuflow Model* (refer to flooding report in **Attachment F** for the complete list of assumptions).

3.7.3 Hydrological Modelling

RAFTS modelling conducted for this study generated results in terms of peak flow discharged from the sub catchments are summarised in **Table 6.** Comments by Martens on the hydrological modelling include:

- The critical storm duration for the overall catchment is the 9 hour storm event for the 1 in 20 year ARI, 1 in 100 year ARI and PMP events. Sub-catchment hydrographs for these event were used in the hydraulic model; and
- Peak flows obtained from the model for the 1 in 100 year ARI and 1 in 20 year ARI are comparable to the results obtained in the CLT (2007) flood assessment for “The Glades” development using the calibrated MIKE-11 model.

Table 6 Summary of results of RAFTS hydrological modelling (total peak discharge for Moonee Creek catchment) for storms modelled

Duration (minutes)	1 in 20 Year ARI Peak Discharge (m3/s)	1 in 100 Year ARI Peak Discharge (m3/s)	PMF Peak Discharge (m3/s)
10	112.7	147.3	-
15	141.8	183.6	644.3
20	137.0	180.7	-
25	170.8	214.6	-
30	159.3	203.8	775.0
45	139.7	216.9	1,026.8
60	178.5	258.4	1,260.6
90	217.9	326.1	1,387.1
120	243.1	374.7	1,505.2
180	273.9	410.6	1,399.8
270	285.3	421.3	-
360	305.0	444.6	1,459.2
540	379.5	547.0	1,685.1
720	346.8	510.5	1,675.8
1080	304.1	429.5	1,448.8
1440	363.3	503.9	1,094.8

Note: Highlighted rows are critical storm duration.

3.7.4 Site Flooding Assessment

The existing and proposed conditions models were set-up with the assumptions and conditions referred above. Sea levels adopted at model boundaries for each scenario are summarised in **Table 7.**

Table 7 Summary of sea level boundary conditions adopted in hydraulic modelling

Scenario	Sea Level adopted at model boundary (m AHD)
1 (1 in 100 year ARI sea level)	2.40
2 (1 in 20 year ARI sea level)	2.10
3 (neap tide)	0.60
4 (PMF flood – adopted as neap tide)	0.60
5 (climate change – 1 in 20 year ARI level with additional 0.91 m)	3.01

The results of hydraulic flood modelling with peak flood levels for each scenario modelled summarised in **Table 8.**

Table 8 Summary of peak flood levels (m AHD) per scenario modelled

Observation Point	Scenario Modelled						Adopted 1 in 100 Year ARI Level	
	1		2		3			
	Existing Conditions	Proposed Conditions	Existing Conditions	Proposed Conditions	Existing Conditions	Proposed Conditions	Existing Conditions	Proposed Conditions
1	2.76	2.76	2.90	2.90	2.80	2.80	2.90	2.90
2	**2.76**	**2.76**	**2.90**	**2.90**	**2.80**	**2.80**	**2.90**	**2.90**
3	**2.76**	**2.76**	**2.90**	**2.90**	**2.80**	**2.80**	**2.90**	**2.90**
4	2.76	2.76	2.90	2.90	2.80	2.80	2.90	2.90
5	**2.76**	**2.76**	**2.90**	**2.90**	**2.80**	**2.80**	**2.90**	**2.90**
6	2.76	2.76	2.90	2.90	2.80	2.80	2.90	2.90
7	4.12	4.12	4.16	4.16	4.16	4.16	4.16	4.16
8	3.10	3.10	3.12	3.12	3.12	3.12	3.12	3.12
9	**3.24**	**D1**	**3.27**	**D1**	**3.27**	**D1**	**3.27**	**D1**
10	D1	D1	D1	D1	D1	D1	D1	D1
11	2.78	2.78	2.94	2.94	2.84	2.84	2.94	2.94

Note 1: *Observation Points; 2 = eastern site boundary; 3 = bridge access to Lot 2; 5 = Bucca and Moonee Creek junction; 9 = Northern boundary*
Note 2: *Highlighted rows relevant to subject site.*

The following general comments are made:

- Results show that proposed site filling has no significant adverse effects on existing flood behaviour (height and extents) on adjacent properties (upslope and downslope) during the 1 in 100 year ARI and PMF flood events. Increases are within the margins of error for the model.
- Results indicate minimal change in velocity of floodwater as a result of site filling for both the 1 in 100 year ARI and PMF events. Changes to flood velocity appear to be generally confined to the area downslope of the driveway access to Lot 2 DP 1097743.
- 1 in 100 year ARI flood hazard mapping for the site indicates that inundated areas of the site for post-development conditions generally experience flows with velocity of less than 0.4 m2/s, indicating that hydraulic hazard across the site is generally low. Areas within Bucca Creek and adjacent to the eastern site boundary along the edge of Moonee Creek experience high hydraulic hazard flows. Hazard extents do not appear to change significantly for post-development conditions.
- The access to Lot 2 in DP1097743 (west of the subject site) will be inundated for the 1 in 100 year ARI flood event for existing conditions. Raising the access and the provision of new culverts underneath the driveway where it crosses Bucca Creek is recommended to ensure that the driveway is trafficable during the 1 in 100 year ARI for existing climate conditions.
- The identified flood heights, velocities and extents of this flood assessment are consistent with other accepted flood models of Moonee Creek.

3.7.5 Climate Change and Sea Level Rise

In the *Floodplain Risk Management Guideline -- Practical Consideration of Climate Change* (2010) sea level rise along the NSW coast is expected to be in range of 0.18m to 0.90m by the year 2090 to 2100. To assess the likely impact of sea level rise on site flooding, the hydraulic model was re-run for the adopted 1 in 100 year ARI flooding scenario with the downstream boundary condition of the 1 in 20 year ARI sea level (i.e. scenario 2) increased by 0.91 m.

Results show that flood levels at the site (for the year 2100) generally increase by 0.14 – 0.50 m with sea level rise (refer **Table 9**). Peak velocities in the lower Moonee Creek system for climate change conditions are generally increased over the floodplain areas and decreased in the main channel.

Flood hazard increases with increased depth and the site access driveway to Lot 2 DP1097743 will be inundated to a greater depth and for a longer period of time.

Table 9 Summary of peak flood levels (m AHD) for climate change - sea level rise for the 1 in 100

Observation Point	Existing Conditions (mAHD) (Refer Fig 9)	Proposed Conditions (mAHD)(Refer Fig 9)	Change in level from existing climate conditions (m)
1	3.39	3.39	0.49
2	**3.40**	**3.40**	**0.50**
3	**3.40**	**3.40**	**0.50**
4	3.40	3.40	0.50
5	**3.40**	**3.40**	**0.50**
6	3.40	3.40	0.50
7	4.16	4.16	0.00
8	3.41	3.40	0.29
9	**3.41**	**D1**	**0.14 (Existing only)**
10	D1	D1	-
11	3.42	3.42	0.48

Modelling indicates that the development has minimal impact on flooding (compared to existing ground conditions) for climate change flood events modelled.

The hydrological and hydraulic models were re-run for the 1 in 100 year ARI storm events including the effects of climate change by increasing the rainfall intensities of existing 1 in 100 year ARI storms by 10% by 2030 and 2070 (in accordance with the Floodplain Risk Management Guideline – Practical Consideration of Climate Change (2010)). Results of the hydrological model show that the 9 hour storm event is the critical storm duration (refer **Table 10**).

The hydraulic model was re-run using the hydrographs generated by the 1 in 100 year ARI with climate change 9 hour storm event, in conjunction with the 1 in 20 year ocean peak level with climate change as the downstream boundary condition. A summary of peak flood heights and change in flood heights at the site is provided in **Table 11.**

Table 10 Summary of peak flow rates (overall Moonee Creek catchment) for increased rainfall intensities for hydrological model sub-catchments

Duration (minutes)	1 in 100 Year ARI with Climate Change Peak Discharge (m3/s)
10	164.80
15	203.84
20	202.72
25	239.16
30	227.31
45	247.77
60	295.78
90	369.02
120	422.97
180	459.22
270	470.66
360	495.98
540	**607.08**
720	567.22
1080	472.49
1440	554.68

Table 11 Summary of peak flood levels (m AHD) for climate change – rainfall intensity increase and sea level rise for the 1 in 100 year ARI flood event

Observation Point	Existing Conditions (mAHD)	Proposed Conditions (mAHD)	Change in level from existing climate conditions (m)
1	3.39	3.39	0.49
2	**3.40**	**3.40**	**0.50**
3	**3.40**	**3.40**	**0.50**
4	3.40	3.40	0.50
5	**3.40**	**3.40**	**0.50**
6	3.40	3.40	0.50
7	4.16	4.16	0.00
8	3.41	3.40	0.29
9	**3.41**	**D1**	**0.14 (Existing only)**
10	D1	D1	-
11	3.42	3.42	0.48

Results of the modelling indicate that the major factor in increased flood levels at the site as a result of climate change will be sea level rise as opposed to increased rainfall intensity (refer **Figures 19 -20**). This result is expected given the sites close proximity to the Pacific Ocean and relative site levels.

3.7.6 Flood Planning Level

Council's (2009) Engineering Design guidelines require a freeboard of 0.5 m from site floor levels to the 1 in 100 year ARI level in open channels. Martens recommend that the Flood Planning Level (FPL) for the site be set at 3.97m AHD. This is derived from the 1 in 100 year with climate change flood level (1 in 100 year ARI rainfall plus 10% intensity and 1 in 20 year ARI sea level with sea level rise) in Moonee Creek adjacent to the site (3.47m AHD) plus a freeboard of 0.5 m.

The flood assessment concludes:

- All flooding impacts arising from the proposed development are contained within the subject site.
- Effects of climate change on existing (pre development) conditions and proposed (post development) conditions will raise flood levels by as much as 0.5m based on sea level rise only, and by as much as 0.57 m based on sea level rise and a 10% increase in rainfall intensities.

There is no significant effect of the development on flood behaviour for climate change events modelled.

- FPL for the site should be set at 3.97m AHD based on 1 in 100 year ARI with climate change peak flood level in Moonee Creek adjacent to the site plus 0.5 m freeboard.

Figure 19 Flood extent pre-development – 1 in 100yr, climate change, 20 year sea level rise

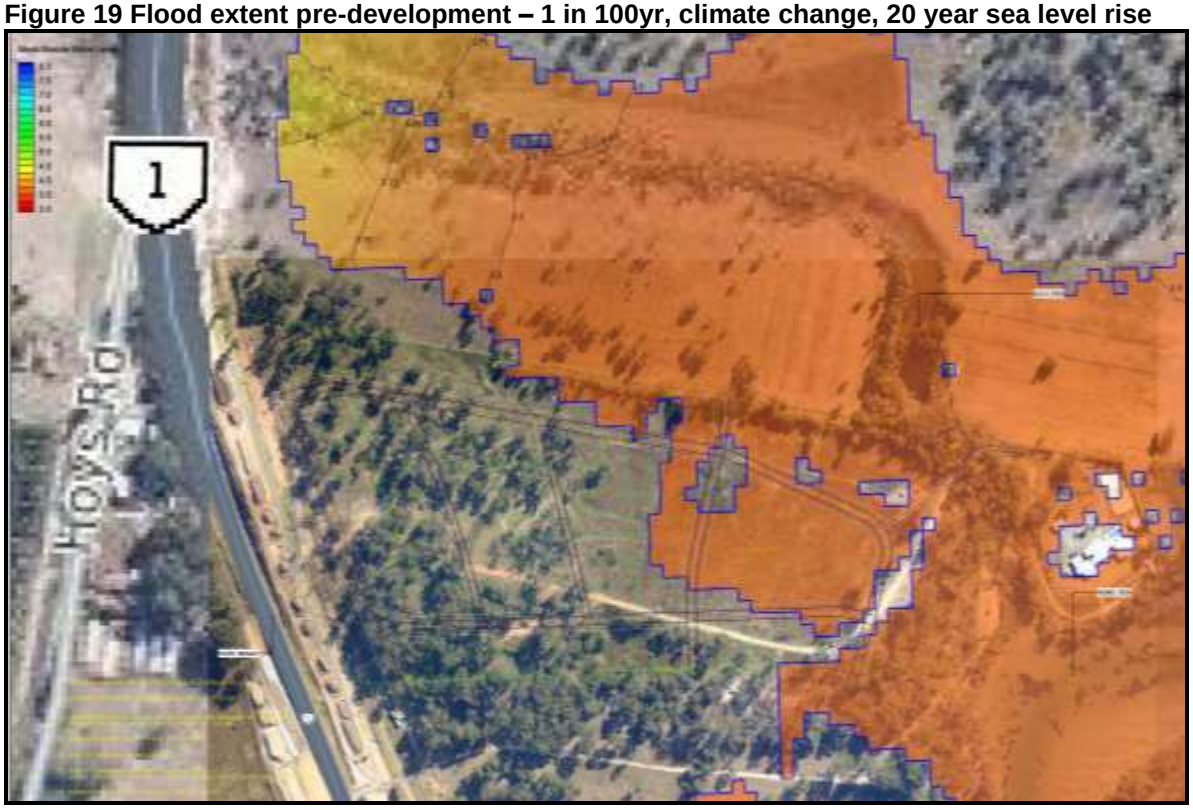


Figure 20 Flood extent post development – 1 in 100yr, climate change, 20 year sea level rise

3.8 Ground water

A hydrogeological (groundwater) study of the site and the proposed development was undertaken Martens and Associates Pty Ltd (refer **Attachment G**).

The purpose of the assessment is to provide details of the existing ground water regime, determine the site aquifer properties, develop a calibrated steady state finite difference ground water flow models for existing and developed conditions, and to assess any changes to ground water levels/flow directions due to development.

3.8.1 Previous Groundwater Investigations

A geotechnical assessment (Coffey, 2005) was undertaken immediately north of the site at the approved Glades Estate which included installation of 6 Groundwater Monitoring Bores (GMBs) and manual groundwater level monitoring (May, 2005 to December, 2005).

3.8.2 Field investigations

Fieldwork undertaken 26 July to 28 July 2010, and September 29, 2010 included the following:

- Walkover inspection of the site to assess existing site conditions and local topography, geology, soil conditions and vegetation;
- Excavation of 14 boreholes to between 0.6m – 9.2m depth using a hydraulic auger to allow for the characterisation of underlying soils and geology;
- Installation of GMBs at BH1, BH2, BH3, BH4, BH6, BH7, BH8 and BH13. GMBs were assigned an identification number which corresponded to the borehole in which the GMB was installed.
- Installation of data loggers.

Locations of subsurface investigations are shown in **Figure 16**.

Monthly residual rain analysis indicates that site groundwater monitoring period coincided with below average rainfall for August (38mm deficit) and above average rainfall for September (31 \mm surplus) and October (331mm surplus).

The two months prior to monitoring had above average rainfall (48mm and 34 mm surpluses). The period of groundwater monitoring is characterised by higher than average groundwater levels.

3.8.3 Drainage

The following drainage lines exist on/near the site and are depicted in **Figure 8**.

1. Cunninghams Creek.
2. Moonee Creek.
3. Man-made drainage channel A.
4. Man-made drainage channel B.
5. Man-made drainage channel C.

3.8.4 Hydrogeology

Water bearing strata in the vicinity of the site have been broadly classed into two distinct layers based on review of site borehole data, site GMB data, NSW Natural Resource Atlas public domain bore database data, site observations, LIDAR data and 1:25,000 topographic mapping.

The two aquifer layers are characterised as:

i. Layer 1 - alluvium/residual materials:
   - clays with interbedded sand and clayey sand layers.
   - extends from natural surface level to variable depths of approximately 2m to 20 m below ground level (BGL). This depth is likely to be shallowest in the area of the site's knoll.
   - Generally low hydraulic conductivity (K).
   - Level of confinement likely to vary from unconfined to semi-confined.
   - Base of layer comprises shale bedrock.

ii. Layer 2 - shale bedrock:
   - Comprised of fractured shale at depths greater than approximately 2m to 20 m BGL.
   - Low to moderate hydraulic conductivity (K).
   - Predominantly Confined.

Only Aquifer Layer 1 is considered relevant to the proposed-development.

Manual measurements from the 8 GMBs are provided in **Table 12** whilst continuous measurements from the 8 GMBs between July to September and September/October and November are provided in **Table 13**.

Table 12 Manual groundwater level measurements

Groundwater Levels Recorded by Martens and Associates					
GMB ID	**GMB Surface Level**	**27.07.2010**	**28.07.2010**	**29.09.2010**	**02.11.2010**
		mAHD	**mAHD**	**mAHD**	**mAHD**
1	3.582	1.01	-	0.75	2.60
2	2.717	2.16	-	2.28	2.18
3	3.373	3.22	-	3.35	3.22
4	3.621	-	3.30	3.02	3.33
6	6.908	-	4.39	4.03	4.86
7	1.271	0.77	-	1.17	1.12
8	5.692	4.22	-	4.28	4.80
13	1.611	-	0.61	0.92	1.39

Table 13 Results of continuous ground water measurements

GMB	**1**	**2**	**3**	**4**	**6**	**7**	**8**	**13**
Minimum	0.697	2.111	2.766	2.456	3.904	0.696	4.116	-1.775 1
25th%ile	0.895	2.279	3.077	2.839	4.083	0.868	4.276	0.855
Median	1.194	2.443	3.233	3.078	4.191	0.930	4.426	1.032
Mean	1.488	2.443	3.186	3.128	4.265	0.948	4.465	1.097
75th%ile	1.421	2.633	3.330	3.514	4.485	1.001	4.582	1.403
Maximum	3.380	2.695	3.396	3.668	4.640	1.275	5.011	1.680
Range	2.683	0.584	0.63	1.212	0.736	0.579	0.895	3.455
Minimum Depth to GW	0.202	0.022	-0.023	-0.047	2.268	-0.004	0.681	-0.069
Mean Depth to GW	2.094	0.274	0.187	0.493	2.643	0.323	1.227	0.514
Ground Level	3.582	2.717	3.373	3.621	6.908	1.271	5.692	1.611

Recharge - the mechanism for recharge is via direct rainfall infiltration. Recharge is expected to be somewhat limited given the low permeability of surface soils and high evapotranspiration (ET) in areas of shallow water table.

3.8.5 Groundwater Quality

Water samples from the GMBs were tested in a laboratory for water quality with the following results:

- Groundwater is acidic with pH values ranging from 4.3 to 5.1.
- Groundwater EC is indicative of brackish to saline water.
- Groundwater nutrient levels are low (generally below laboratory detection limits).

Continuous Electrical Conductivity measurements were taken using a data logger within GMB1 and GMB4 with results typically ranging from approximately 1000 to 3000 µS/cm at GMB1 and approximately 4500 to 5000 µS/cm at GMB4 – both ranges are indicative of brackish water.

3.8.6 Groundwater Modelling

Three steady state groundwater models were developed to assess potential impacts associated with the proposed-development. The models were developed based on the information detailed in Sections 2 to 3 of the Hydrogeological report and are summarised as follows:

- **Model 1 (M1**): Pre-development Conditions Using available site data, a calibrated single layered steady state model was developed. The primary purpose of the model was to provide a base case for impact assessment.
- **Model 2 (M2):** Post - development Conditions. This model was developed to assess the impact of the proposed-development. In particular, M2 reduced recharge rates over the proposed development. Proposed development terrain was also incorporated into the model.
- **Model 3 (M3):** Post-development Conditions – Sea Level Rise M3 was developed using the developed conditions as documented in model M2, but modified to examine the potential impact of climate change induced sea level rise (0.9 m sea level rise).

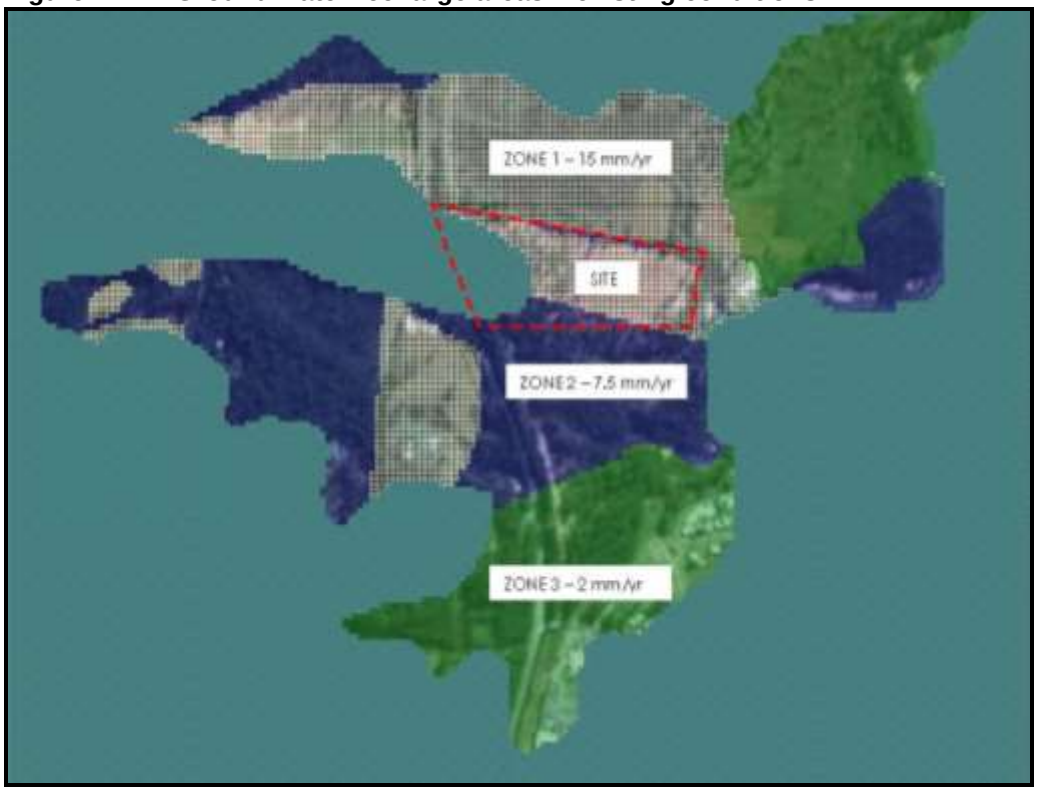
Based on modelling which only assumes development on Lot 1 DP1097743, the model's active domain was assigned to occupy the area below 10m AHD as this elevation was assumed to mark the boundary of the valley floor and therefore boundary of alluvial deposits. In areas of the model below 10m AHD, the active model boundaries were assigned along ridges which were assumed to form groundwater flow divides.

Model 1 (M1) - Initial recharge zones were established on the basis of aerial photography and comprised of 2 zones. After calibration three zones were identified (refer **Figure 21**) and are summarised in **Table 14.**

Table 14 M1 Statistical summary of existing ground water recharge areas

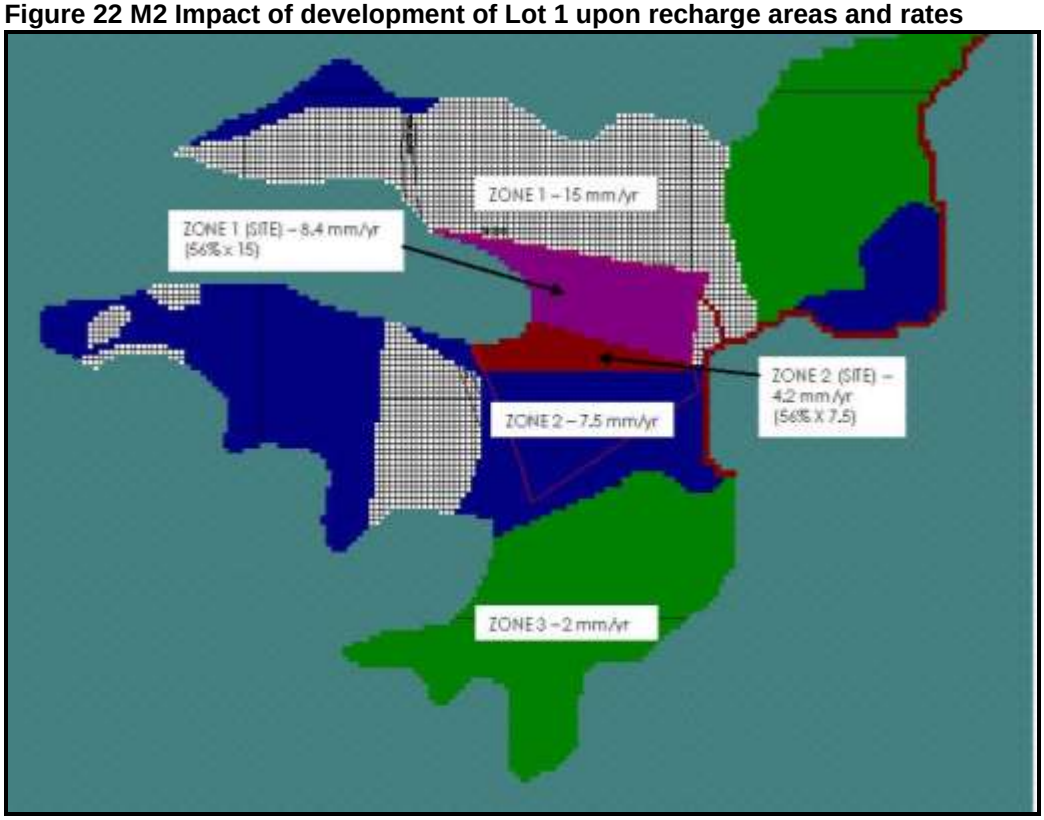
Parameter/Zone	Calibrated Value	Comment
Recharge Zone 1	15 mm/yr	Represents areas with relatively low vegetation coverage, assumed to have relatively lower ET and therefore relatively higher net recharge. Value arrived through manual calibration.
Recharge Zone 2	7.5 mm/yr	Represents areas with relatively high vegetation coverage, assumed to have relatively higher ET and therefore relatively lower net recharge. Value arrived through manual calibration.
Recharge Zone 3	2 mm/yr	Zone distribution and value arrived at during calibration as described.
Hydraulic conductivity (K)	0.01 m/d	Kept fixed throughout calibration process. Value equates to geomean and median of site K test data

Figure 21 M1 Ground water recharge areas – existing conditions



Model 2 (M2) – assumes development of Lot 1 for 101 residential lots and 6 roads. Recharge was reduced from 15mm to 8.4 mm/yr over portions of Zone 1 which covered the site, and, from 7.5mm to 4.2mm over portions of Zone 2 which covered the site. These reductions were based on the site's bulk pervious area percentage of 56% and account for reduced groundwater recharge due to impervious surfaces. Recharge zonation and rates are shown in Figure 22.

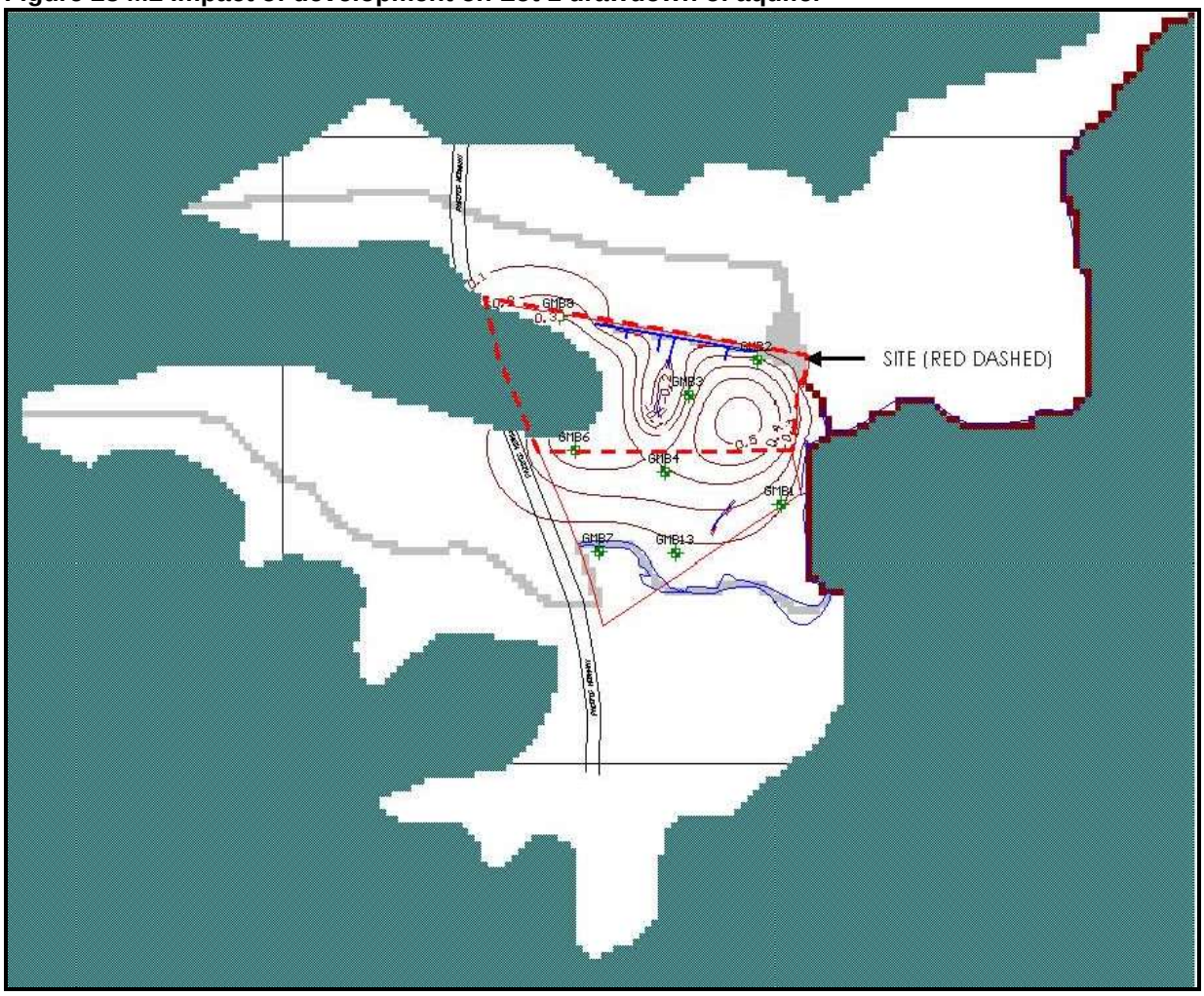
Figure 22 M2 Impact of development of Lot 1 upon recharge areas and rates



Modelling the reduced recharge of part Zones 1 and 2 due to impervious surfaces, has identified the following:

- Negligible change to groundwater flow direction;
- Maximum drawdown of 0.5 m (due to recharge reduction (refer Figure 23);
- Mounding of 0.2 m in area of Drain C (due its filling);
- Increase to water table depth due to simulated drawdown, and, proposed site filling.

Figure 23 M2 Impact of development on Lot 1 drawdown of aquifer

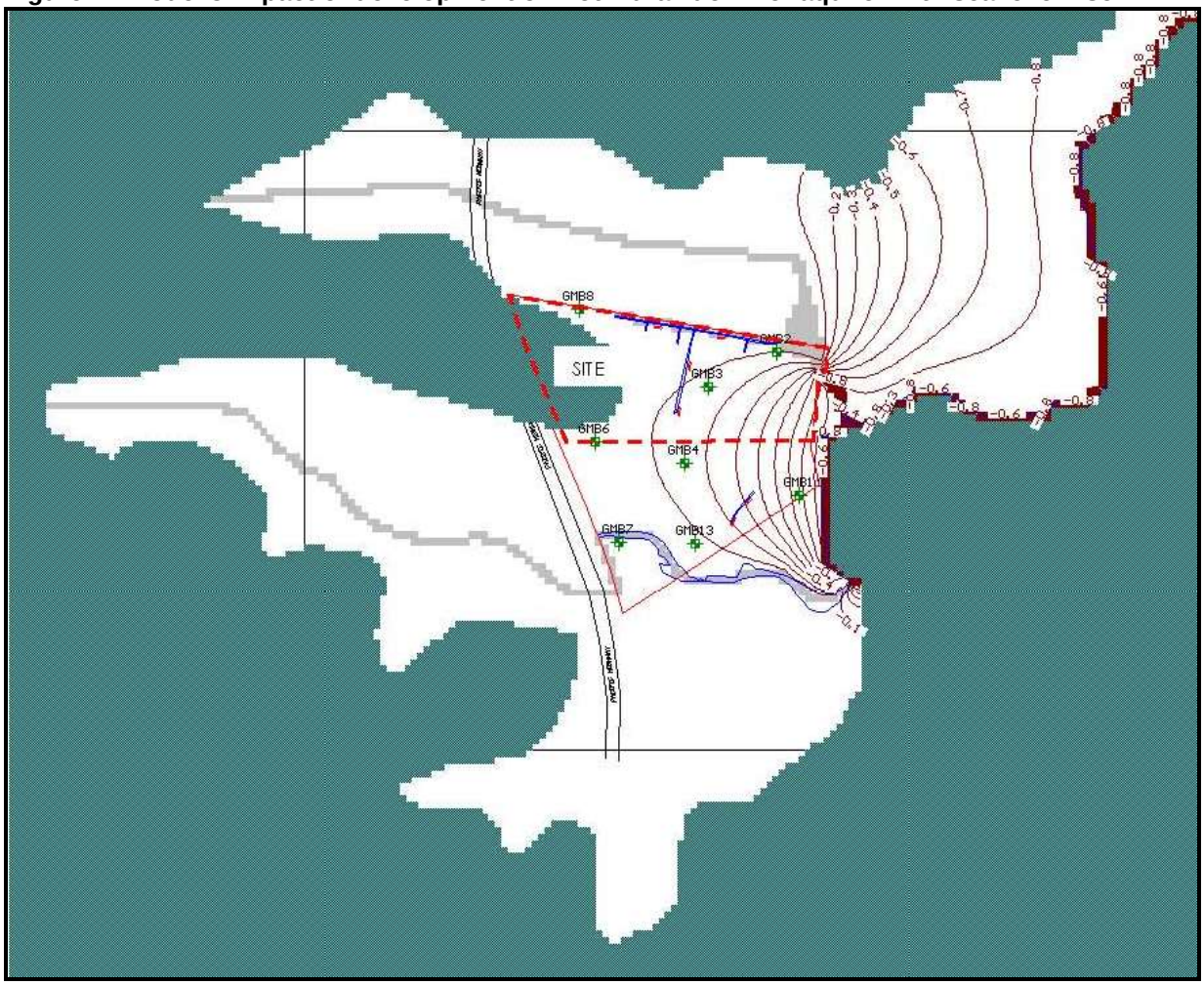


Model 3 (M3) - As per M2, however, the Moonee Creek constant head elevation was lifted by 0.9 m to 1.14m AHD. The 0.9 m rise aligns with the NSW Sea Level Rise Policy Statement (DECCW, 2009).

Under the potential sea level rise scenario, groundwater levels are modelled to increase 0.9 m (at Moonee Creek) to 0.1 m (340m inland from Moonee Creek) from those which occur under developed conditions with no sea level rise (M2) (refer **Figure 24**).

Stormwater basins are proposed to be lined and shall therefore not interact with groundwater.

Figure 24 Model 3 impact of development on Lot 1 drawdown of aquifer with sea level rise



The groundwater model results indicate that development on Lot 1 is likely to result in minimal change to existing observed hydrogeological conditions.

3.8.7 Groundwater Dependent Ecosystems

Modelling of the post development groundwater flows indicates that the drawdown under developed conditions will be minimal (see **Figure 23**), and within the range of natural groundwater level variations. Impacts on GDEs are not likely in these circumstances.

3.9 Flora and Fauna

Pacific Environmental Associates were engaged to undertake a terrestrial and aquatic ecological assessment of the site (refer **Attachment H**).

Surveys were conducted over a two year period (winter 2010 and March-October-December 2011) and included a range of detailed surveys. These surveys were designed to identify the ecology of the site, and if present, significant threatened species, populations, communities or their habitats.

Surveys were undertaken within lands proposed to be cleared (the “impact site”) and lands that are proposed for conservation.

The main findings are:

- The largest area to be impacted is grazed and slashed pasture with scattered trees, which are mostly regrowth trees of less than approximately 10 years of age;

- Fauna species recorded in cleared areas are common species that are often only associated with cleared land or farmland; and,
- Only 16 hollow bearing trees were recorded in the impact site, none of which were identified as significant.

No Endangered populations or Endangered Ecological Communities were recorded within the impact site. Although, some small areas of habitat were identified for a range of other locally occurring threatened species, these are not considered to be significant areas of habitat due to the small amount of habitat and small number of habitat elements recorded. Moreover, these habitat elements are considered relatively "common" and can be found throughout the local area.

There are areas of wetland onsite, which will be retained and buffered to limit edge impacts. A reserve will be established that increases habitat for Wallum froglet, Squirrel glider, Koala, Glossy-Black Cockatoo and micro-bats. Once established this reserve will be managed for a mutually agreed time before being dedicated to council.

The Coffs Harbour Council Comprehensive Koala Plan of Management identifies the impact site as part cleared and part secondary habitat. According to the KPoM, secondary habitat could support koalas. Development in this area would require referral to the Commonwealth Minister for the Environment if the development is likely to have a significant impact on Matters of National Environmental Significance pursuant to the EPBC Act, 1999. PEA advice that the Koala could potentially be impacted by the proposed development. It is recommended that a referral be made to the Minister based on its potential for harm. Nonetheless, based on the national plan for koala, interpretation of the impact assessment guidelines and the habitat onsite it is unlikely that this action would become a controlled action under the provisions of the EPBC Act 1999.

No areas of critical habitat were identified and the activity will not introduce any key threating processes that may impact on surrounding ecology. No significant species or communities identified in the Fisheries Management Act were recorded adjacent to the site in Moonee Creek, however the regional importance of the Moonee Estuary system is considered very high.

3.9.1 Survey Results

3.9.1.1 Flora

The flora was sampled in the winter, spring and summer of 2010 and winter of 2011. A total of 115 flora species were recorded within the site. No threatened flora species were recorded despite targeted surveys.

Of the 10 endangered ecological communities and protected marine communities identified to occur on the coastal plains of the Coffs Harbour LGA under the TSC Act 1995, 2 communities were found on the site:

- *Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* – a small area of 1.6ha that has been subjected to long term clearing and grazing and is located at the north eastern end of the site and identified as MU3 in **Figure 25**.
- *Riparian Mangrove Forest* - a small area at the eastern end of the site on the edge of Moonee Creek identified as MU4a and MU4b in **Figure 25**.

Of the 39 plant species listed under the TSC Act to occur within the region, none were found on site. However habitat for Floyd's Grass *Alexfloydia repens* and Spider orchid *Dendrobium melaleucaphilum* do occur on site.

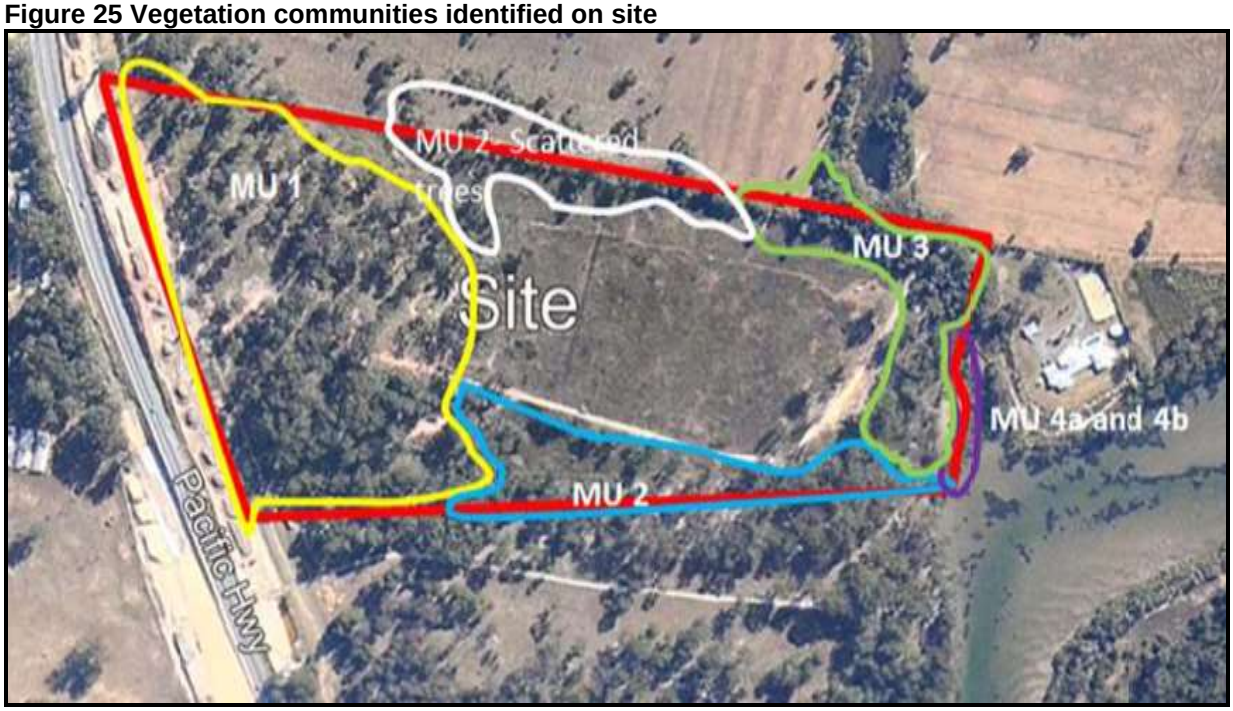
Of the plant species found on the site, 42 (37%) are introduced. Blackberry and Mother-of-Millions are listed as noxious under the Noxious Weeds Act 1993.

Four vegetation units were identified from the surveys (refer **Table 15 and Figure 28**) and are variations of those identified on the site under the draft Coffs Harbour Council Fine Scale Vegetation Mapping (CHCC 2012).

Table 15 Vegetation communities identified on site (refer to Figure 28)

Map Unit 1: Dry Sclerophyll Forest Dry Sclerophyll Blackbutt Pink Bloodwood modified Forest Community
Map Unit 2: Dry Sclerophyll communities on transitional soils Red Mahogany -Paperbark Swamp Sclerophyll Forest
Map Unit 3: Wetlands Broad leaved paperbark, She Oak, Red Mahogany Swamp Sclerophyll Forrest
Map Unit 4: Intertidal communities 4a: Twigrush Closed Sedgeland 4b: Grey Mangrove Riparian Forest

Figure 25 Vegetation communities identified on site



As is evident in **Figures 26 to 28**, the site has been used for grazing and is regularly slashed. The owner of Lot 1 has not used the land for grazing for some 18 months and has restricted slashing in the eastern edges of the site. The resultant regrowth evident in **Figures 30** and **31** indicates that there is plentiful native seed stock in the soil and hence good regeneration potential in this part of the site.

The most complex and sensitive vegetation ecosystems on the site relate to the MU3 and MU4a and 4b "wetland" communities and their interrelationship with the tidal affected Moonee Creek. This highly variable freshwater and saltwater ecotone was physically identified on site and then surveyed. With the advice of Martens and Associates, the extent of spring tide with and without flood conditions was mapped including a 20m buffer to the western edge of the wetland boundary (refer **Figure 32)**

Figure 26 Break in vegetation link to the west - view south-west

Figure 27 Dry Sclerophyll forest in background – view west Lot 1

3.9.1.2 Fauna

Conducted over the four seasons and over a two year period, the surveys recorded:

- 3 reptile species,
- 11 amphibian species ,
- 36 bird species (including 2 threatened species: the Glossy black cockatoo and the Osprey) and;
- 17 mammal species including six threatened species (including Squirrel Glider (*Petaurus norfolcensis*); Little Bentwing-bat (*Miniopterus australis*), Eastern Bentwing-bat (*Miniopterus schreiberrsii oceanensis*) and East-coast Freetail-bat (*Mormopterus norfollkensis*) are listed as Vulnerable under schedule 2 of the Threatened Species Act 1995.

The spatial distribution of the threatened fauna identified on the site is provided in **Figure 33.**

Figure 28 Dry Sclerophyll Forest (transitional soils) – view west Lot 1 southern boundary

Figure 29 Swamp Sclerophyll Forest looking north from eastern end of Lot 1

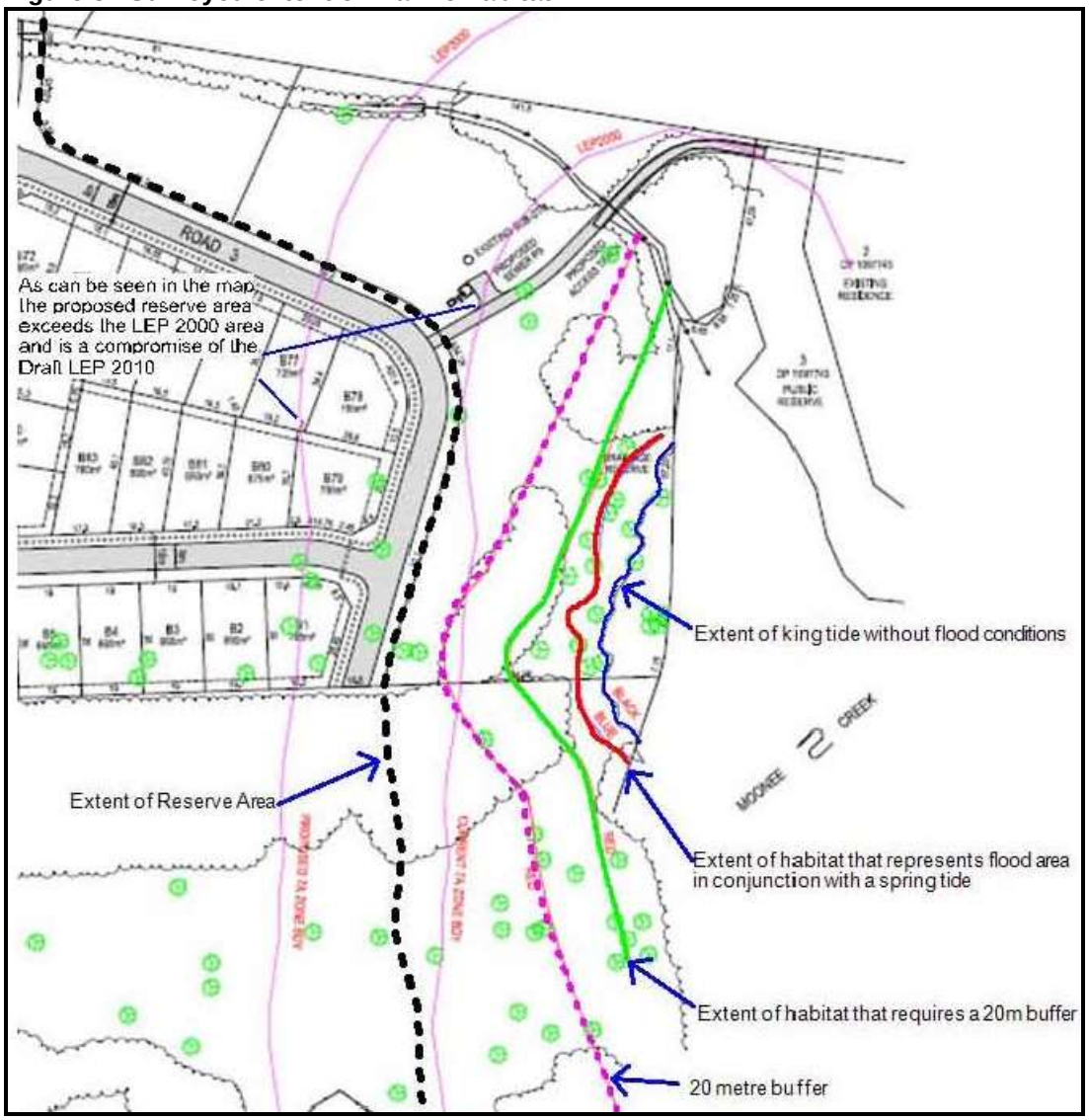
Figure 30 View of wetland ecotone looking south west

Note gradual sloping ground from right to left with wetland sedge species in foreground

Figure 31 View of wetland ecotone looking north from southern boundary of Lot 1

Note sedge and melaleuca wetland species in the fore and middle ground

Figure 32 Surveyed extent of marine habitat



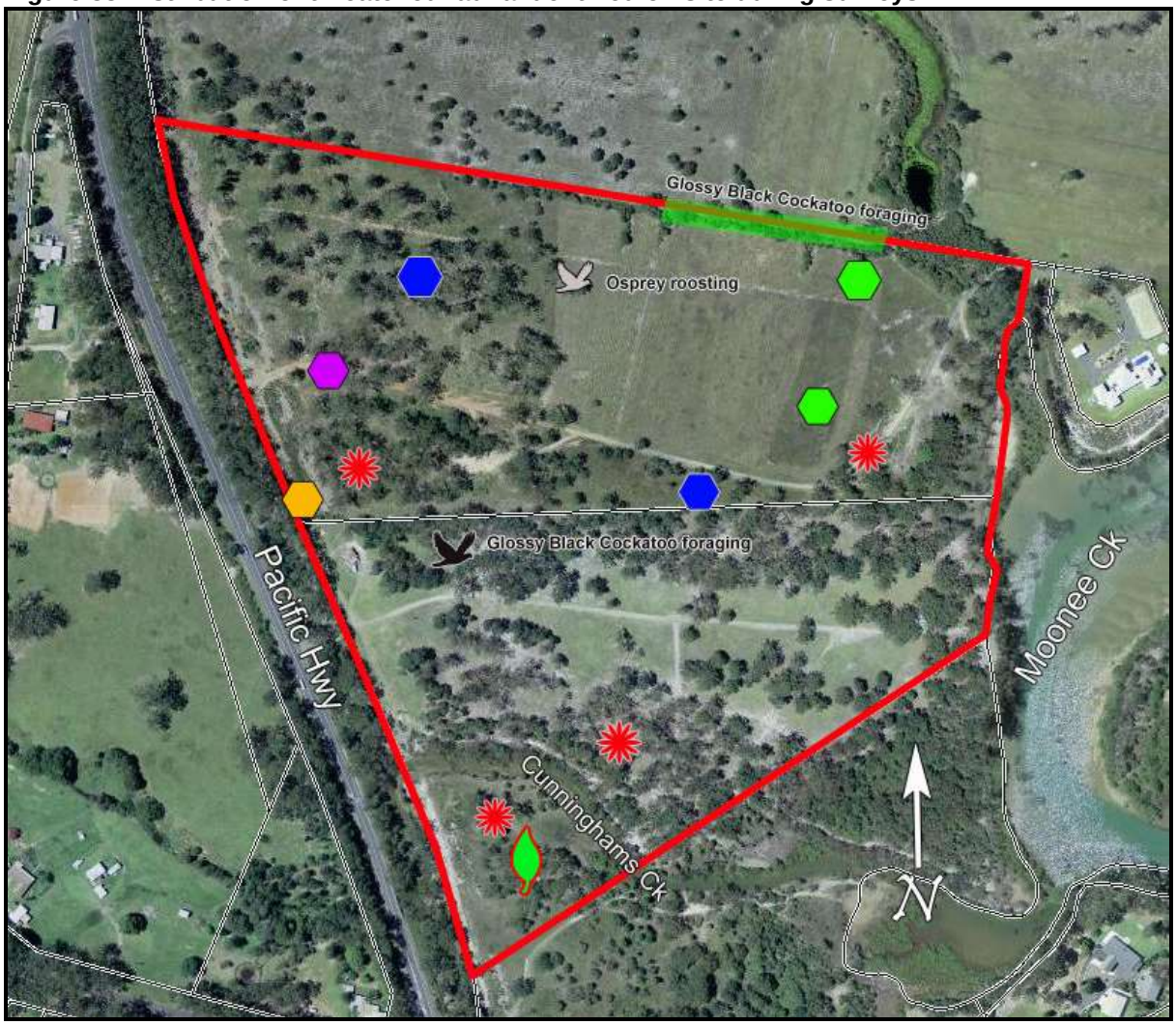
Discussion on significant findings – Wallum Froglet - previous surveys of the local area have identified that parts of the site and adjoining land provide potential habitat for the Wallum froglet (*Crinia tinnula*). Specific surveys were undertaken to test the value of habitat for this species on the site. It is concluded that the species has not been recorded within 1km of the site; it does not inhabit the local area, and has not been identified as occurring on site.

Other threatened frogs known to the local area were not recorded during surveys, do not have habitat on the site, were not recorded and would be unlikely to be in the vicinity of the site.

Discussion on significant findings - Glossy-Black Cockatoo – evidence of foraging was recorded along the northern boundary. Feeding had been quite heavy on *Allocasuarina torulosa* seed pods, and the area is considered to be used somewhat frequently by individuals from the local population. This species was recorded at all reference sites during surveys and heard from the Moonee Beach Nature reserve on several occasions during surveys. Two individuals were recorded on Lot 6 during surveys.

Discussion on significant findings – Osprey – an individual was recorded onsite roosting during a nocturnal survey but was not recorded on any other night during the four separate surveys for the ecological assessment. The stag in the nest tree for this species identified in the Moonee DCP 2004 along the northern border appears to have fallen down (refer **Figure 34** and **35**). The land owner has indicated that an Osprey and its mate appear to be nesting on the eastern banks of the Moonee Creek.

Figure 33 Distribution of threatened fauna identified on site during surveys



***Key**: Red star = Squirrel Glider; Yellow hexagon = East coast Freetail-bat (Mormopterus norfolkensis); Purple hexagon = Little Bent Wing Bat (Miniopterus australis) and Blue hexagon = Grey-headed Flying-fox (Pteropus poliocephalus) Green hexagon (Miniopteruschreibbersii oceanensis); Green leaf - Koala*

Figures 34 Former Osprey nest tree

Figure 35 Fallen stag - former Osprey nest tree

Discussion on significant findings – Squirrel Glider – two individuals were recorded on three occasions during surveys. The site provides breeding and foraging habitat for the species particularly in Lot 6 where there is a greater level of ground and midstorey vegetation that provides a greater level of foraging habitat.

Discussion on significant findings – Koala - an individual was found in the south west corner of the site 2 years ago. This area that has a greater density of larger trees with established understorey than the rest of the site. Therefore, the vegetated parts of the site with larger trees and an established understorey are of more importance and significance to the species as feed trees and as refuge trees.

3.9.2 Impact Assessment

3.9.2.1 Flora

Development will result in the loss of some vegetation for the construction of streets and lots and subsequent houses and associated infrastructure. However, development will be mainly confined to those parts of the site that are already cleared and under-scrubbed with scattered trees. The areas of vegetation occurring along the eastern and southern boundaries of the site are to be retained. In particular, *Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions EEC (MU3) and the Riparian Mangrove Forest* (MU4a and MU4b) mapped in **Figure 25** will be protected.

Approximately 6 hectares of thin, scattered and under scrubbed vegetation will be removed from Lot 1 to accommodate development, and a similar amount of clearing will be necessary in the development of Lot 6. The upgrade of the Pacific Highway, the associated clearing of remnant vegetation and the imposition of a separated dual carriageway in the landscape indicates that any conservation of vegetation in the western portions of the site would be counter-productive in the long term.

3.9.2.2 Fauna

Koala

The site is identified as secondary koala habitat under the Coffs Harbour Comprehensive Koala Plan of Management 2006 (CKPOM). Field survey and mapping by P.E.A in accordance with the methodologies established in the CKPOM has largely confirmed the distribution of koala habitat across the site as per **Figure 36**. This figure indicates that the secondary habitat located within the road reserve of the Pacific Highway has been removed through the upgrading of the highway to dual carriageway.

Under Part 3 of the CKPoM, the following management actions for secondary koala habitat apply:

> *The consent authority shall not grant consent to the carrying out of development on areas identified as Secondary Koala Habitat which will remove the following tree species: Tallowwood Eucalyptus microcorys, Swamp Mahogany E. robusta, Flooded Gum E. grandis (except when part of a forest plantation), Forest Red Gum E. tereticornis, or Smallfruited Grey Gum E. propinqua, unless the development will not significantly destroy, damage or compromise the values of the land as koala habitat. In assessing an application the consent authority shall take into consideration:*
>
> *i. that there will be minimal net loss of Secondary Koala Habitat;*

Response: There are potentially 50 trees that could be used by koala on the site, half of which are likely to be removed to accommodate development. These trees will be replanted within the reserve area where possible.

> *ii. the level of significance to koalas of the trees proposed to be removed;*

Response: Low level koala population recorded using small Swamp Mahogany. No large or extensive areas of habitat present.

iii. the number of trees proposed to be removed in relationship to the extent and quality of adjacent or nearby Primary and/or Secondary Koala Habitat;

Response: There are potentially 50 trees that could be used by koala on the site. The proposal will likely remove half of these trees. Land to the south of the site includes area of swamp mahogany forest that link to areas around Moonee Creek reserve that include large areas of swamp forest. This removal is small by comparison to the local area habitat.

iv. the threats to koalas which may result from the development.

Response: the proposal will not isolate habitats or disturb existing corridors (refer **Figure 11** concept plan). Street design encourages slow speed traffic whilst domestic dogs should be kept with fenced lots. The key threat is the loss of habitat trees which will offset by additional planting within the reserve.

v. all other options for protecting koala trees as listed above;

Response: See above.

vi. the impacts to existing or potential koala movement corridors;

Response: the proposal will not isolate habitats or disturb any corridors.

vii. whether the land is accredited under the Timber Plantation (Harvest Guarantee) Act 1995

Response: N.A

The consent authority shall not grant consent to the carrying out of development in areas identified as Secondary Koala Habitat unless it is satisfied that:

viii. the proposal will not result in significant barriers to koala movement;

Response: the proposed wildlife corridor along the eastern boundary will be supplemented with known koala feed trees to facilitate koala movement;

ix. boundary fencing does not prevent the free movement of koalas;

Response: within the reserve area fencing will be limited and when used it will allow free movement of koala.

x. lighting and koala exclusion fencing is provided where appropriate on roadways adjacent to koala habitat;

Response: at the edge of the reserve koala proof fencing may be used if it is required. However, the aesthetic acceptability of this weighed against the ecological benefits of such fencing should be considered in the preparation of a management plan for the rehabilitation and management of the wildlife corridor. However, it is noted that the Glades Estate does not appear to require koala proof fencing.

xi. tree species listed above under Secondary Koala Habitat are retained, where possible;

Response: The majority of secondary koala habitat is retained**.**

xii. new local roads are designed to reduce traffic speed to 40 kmh in potential koala blackspots;

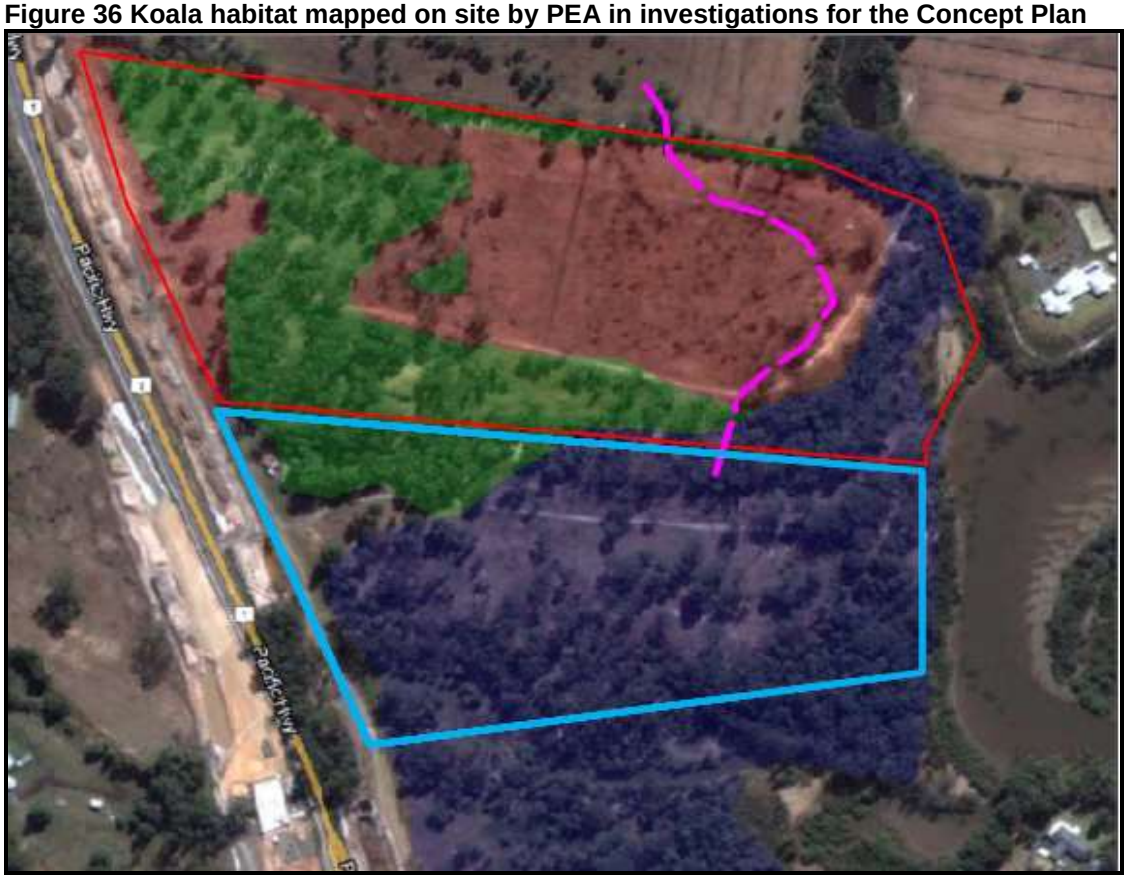
Response: This has been achieved.

xiii. preferred koala trees are used in landscaping where suitable;

Response: this has been achieved.

xiv. threats to koalas by dogs have been minimised ie. banning of dogs or confining of dogs to koala proof yards;

Figure 36 Koala habitat mapped on site by PEA in investigations for the Concept Plan



Key: Red cleared areas with no koala habitat. Green lines forest with some habitat but little to none (at some localities) of known koala feed trees, blue lines include known koala feed trees and in some localities they are the dominant trees. Also this blue area has greater density of larger trees with established understorey, is largely in the lower and far eastern half of this area (as can be seen by the aerial). The pink line roughly identifies the boundary for the recommended reserve area. Red polygon == lot 1 and Blue polygon = Lot 6.

Response: Lot owners with dogs may require koala proof yards but it is noted that the approved Glades Estate appears to not require such controls.

> *xv. fire protection zones, including fuel reduced zones and radiation zones, are provided generally outside of Secondary Koala Habitat.*

Response: The proposed perimeter road reserve and road and front setbacks of lots fronting onto this street will generally accommodate the APZ requirements for bushfire protection.

3.9.2.3 7 Part Test

Impacts are predicted to occur on Squirrel glider, and Glossy Black Cockatoo. The remaining species whilst being recorded on site have little interaction with the site and this is reserved to the area of the site that will not be impacted by the proposal.

The results of 7–part tests on the Osprey; Squirrel glider; Glossy-Black Cockatoo; Little Bent wing Bat; and Eastern Bent wing Bat concludes that the proposal will not have an significant impact on these species and **not** necessitate the preparation of a Species Impact Statement.

3.9.3 Corridors

Habitat mapping for the Coffs Harbour Council Biodiversity Strategy identified a regional biodiversity connection from Moonee Headlands into Wedding Bells State Park (No.5 in **Figure 37**). This connection passes south of the site.

Important habitats identified in the Moonee Estuary Management Strategy (WBM2006) include a Priority 1 (the highest) area to the north of Skinners Creek southward to Cunningham Creek including the site, as a key corridor and regeneration area (refer **Figure 38)**.

Figure 37 CHCC Biodiversity Strategy corridors

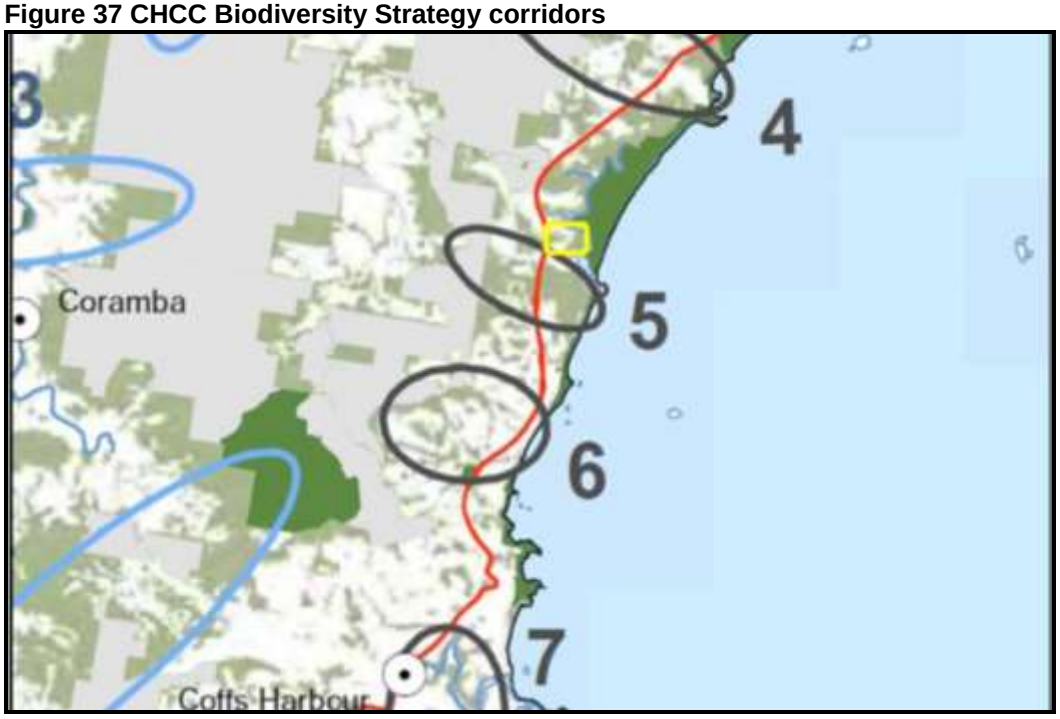
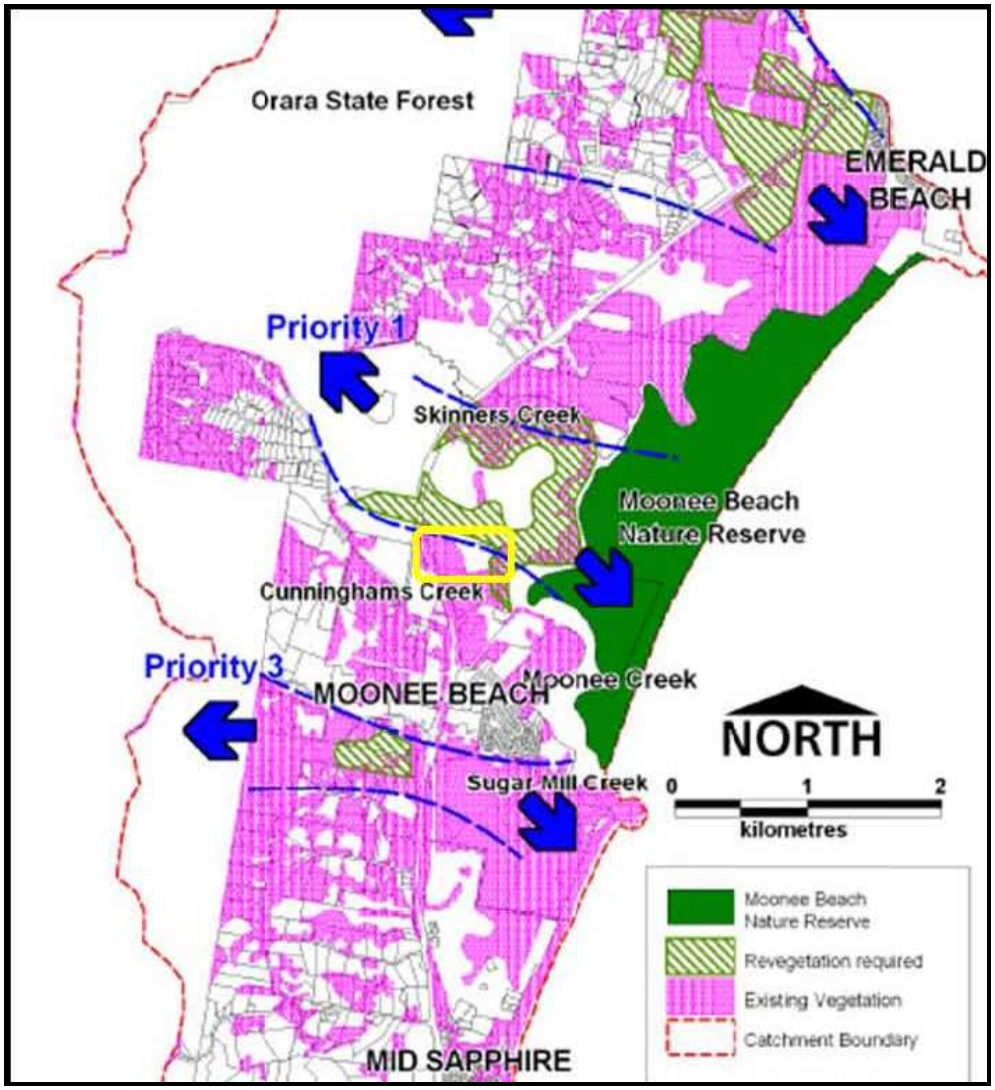


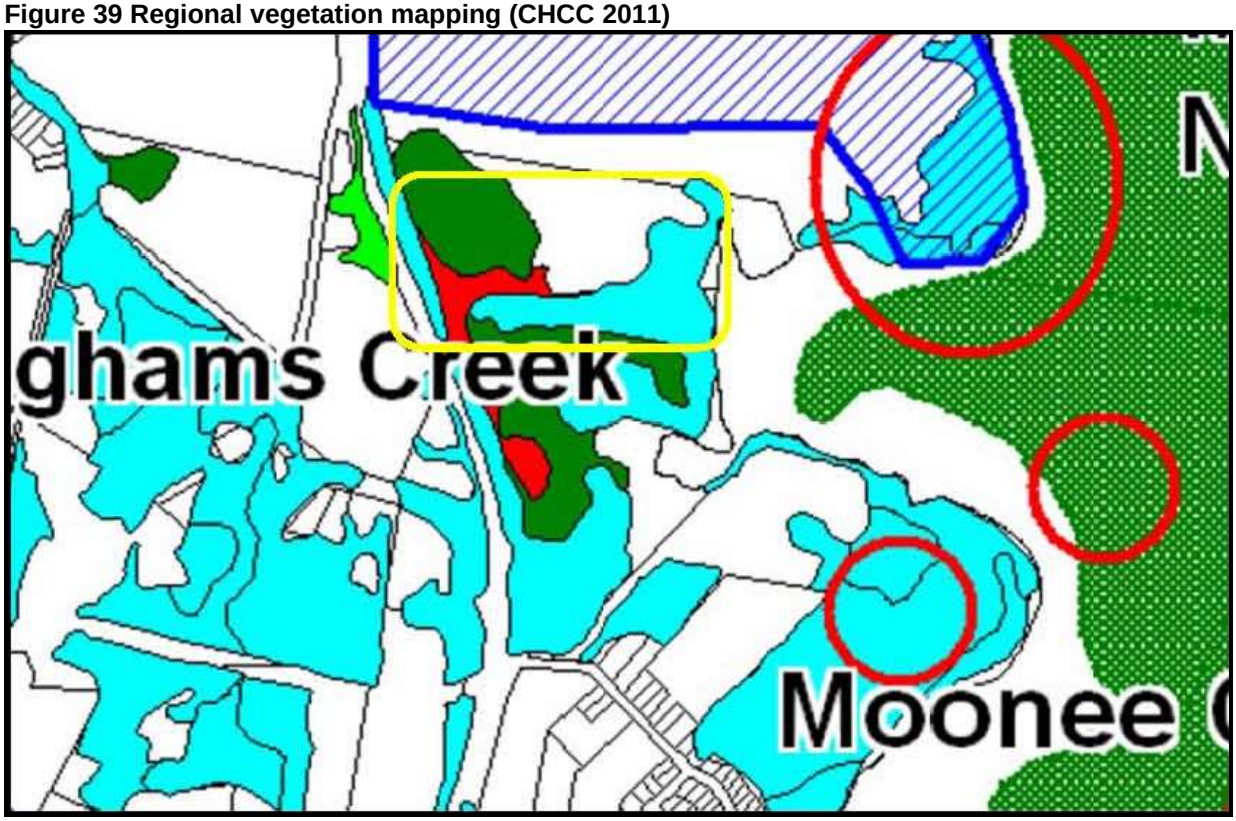
Figure 38 Corridor mapping undertaken for the Moonee Estuary Management Strategy



From the existing vegetation on the site, the upgrade of the Pacific Highway, the court approved collector road, and further isolation of the thin remnant vegetation in the west of the site, it is clear that the key movement potential is along Moonee Creek. This also has the advantage of including a buffer to Moonee Creek itself.

Moonee Estuary Management Strategy and the Coffs Harbour Biodiversity Strategy identify three nodes in the Moonee area that provided important ecological links related to habitat links important for the movement of genetic material through immigration and migration into adjoining habitats of similar qualities. The subject site is not included as an important link (refer **Figure 39**).

Figure 39 Regional vegetation mapping (CHCC 2011)



Note: Indicative site location (in yellow). Red nodes are the important connections with habitats separated by Moonee Creek

Ecological field investigations and mapping for the concept plan have identified local connections around and through the site (refer **Figure 40**). Whilst Moonee Creek poses some limitations to the dispersal of species (e.g. ground fauna), it is important to note the presence of the Pacific Highway and the location of two underpasses under this highway to facilitate species movements. The western edge of the site is an important link to the southern Highway underpass and through and around the approved Glades development to the underpass to the north.

3.9.4 Mitigation Measures

Section F of the Ecological Assessment report provides recommendations for the management of construction and operational impacts upon the site. Consultation with Council in November 2012 raised the issue of creating conditions within the development area to facilitate the movement of native species e.g. koala feed trees planted as street trees. Council clearly indicated that this is not preferred and desired that the development area and the ecological areas should be separated and clearly distinguished.

The following should be considered as the future ecological management actions for the site. However, the merit of each measure must be considered against the mitigation measures approved by the Minister for Planning for the Glades Estate for consistency and equity in financial costs and obligations and consistency of ecological management practices.

3.9.4.1 General

1. Placing of felled trees between areas of remnant bushland to provide runways of ground cover for the dispersion of animals;
2. Supplementary planting of locally occurring native species (using local provenance) in landscape areas;
3. Introduction of additional nest/roost boxes (>40);
4. Development of a clearing management plan by an experienced ecologist;

5. Development of a restoration plan by a suitably qualified ecologist;
6. Development of a best-practice erosion and sediment control plan.

Figure 40 Local biodiversity connections identified in the ecological investigations

7. Provide appropriate stormwater and nutrient control systems designed to reduce the effects of runoff and ensure water flowing from the site does not enter Moonee Creek directly and when it does get there it is of a suitable “best practice” quality.
8. The construction site should be managed to ensure that there is no accidental incursions into wetlands or any other areas which are not subject to the proposal.
9. Any landscaping associated with the proposal including street trees, should comprise endemic native plants and where possible these should be sourced from local seed stock to ensure that genetic viability is maintained.
10. Where possible suitable tree hollows removed from the Subject Site should be re-erected to retained forests on the subject site. In addition to this, supplementary habitat (nest boxes) should be installed to mitigate the loss of hollows which are unable to be re-erected. Hollows which cannot be re-erected should be placed on the ground within the retained forests on the subject site to provide habitat for terrestrial fauna.
11. A suitable structure proven for nesting of Osprey should be constructed within the buffer zone.

12. Glossy Black Cockatoo and Squirrel glider feed tree species should be planted within the buffer area and as street trees along the perimeter street.
13. The vegetation being retained on the subject site should be effectively managed to enhance and maintain the ecological integrity of this area.
14. The regeneration plan of the site should include habitats for koala, squirrel glider, glossy- Black Cockatoos and Osprey.
15. The approval and implementation of the restoration plan should be in place prior to the release of construction certificates.
16. The reserve habitats will be regenerated consistent with a detailed restoration plan specifically for Koala.

3.9.4.2 Management recommendations - specific to the reserve area - as per the DCP:

17. That all physical structures that can be removed from the reserve area are removed and placed within the development footprint;
18. Structures that are man-made "natural" structures, e.g. swales and detention basins must meet the like-for like test of the ecological communities being created;
19. These structures should also be a shape that does not prevent the movement of organisms through the corridor; ideally, these structures will be linear running north-south, thus, allowing for the creation of a continuous forested corridor.

3.9.4.3 Management recommendations - specific to the reserve area and Buffers for Wetlands

20. The edge shall be a mix of hard and soft natural and made-made structures of a width at least 4 metres wide that effectively limits access by means of deterrence and visual interference, that is, "a way in" cannot be seen.
21. No storm water or landfall (diffuse) flow should pass from the site across this boundary. To prevent this on the eastern edge of the perimeter road a higher swale will direct flow into the storm water system away from the edge.
22. There will be no "garden" edge to the boundary and this area can only be maintained by regenerators. Maintenance by mowing and slashing can only occur beyond the edge.
23. The restoration design and regeneration program within the reserve must include details of edge management and design, specifically targeting the minimization of movement across the barrier, including humans, nutrients, and water.
24. Vegetation establishment within the reserve must focus on limiting movement and providing fauna habitat, not to provide visual amenity for residents.
25. Once the rehabilitation is established it shall be managed by ongoing physical maintenance for a mutually agreed period consistent with an approved restoration and management plan.

3.9.4.4 Management recommendations - specific to creating Wallum froglet habitat

26. The wetland is designed to develop and maintain a pH of between 4 and 5.5 pH;
27. The wetland is designed so that the water level is influenced by groundwater movements;
28. There is access (creek imputes) to Dissolved Organic Matter from upland terrestrial forests, this is key to maintaining the water chemistry. The current placement of the wetland within the reserve follows this principle;
29. That the regeneration of the wetland is consistent with the local recorded species that are common to Wallum froglet habitat, regardless if we can't get the first three points correct these plants will not be able to compete with more aggressive floristic competitors;
30. The wetland includes an area that represents a suitable breeding pond habitat;

31. To achieve all of the above steps requires the restoration and management plan to be designed by a Wallum froglet expert.

3.10 Noise

Wilkinson and Murray were engaged to provide advice (refer **Attachment I**) on the impact of noise from the operation of the Pacific Highway on the western border of the site that is currently under construction to dual carriageway.

3.10.1 State Environmental Planning Policy (Infrastructure) 2008

This SEPP sets internal noise criteria which must be met by new developments to ensure that sustainable higher density living can occur along major transport routes whilst maintaining an acceptable level of amenity for residents. Clause 102 of the SEPP is self-explanatory:

> *102 Impact of road noise or vibration on non-road development*
>
> *(1) This clause applies to development for any of the following purposes that is on land in or adjacent to a road corridor for a freeway, a tollway or a transitway or any other road with an annual average daily traffic volume of more than 40,000 vehicles (based on the traffic volume data published on the website of the RTA) and that the consent authority considers is likely to be adversely affected by road noise or vibration:*
>
> *(a) a building for residential use,*
>
> *(b) a place of public worship,*
>
> *(c) a hospital,*
>
> *(d) an educational establishment or child care centre.*
>
> *The noise criteria is summarised below:*
>
> *(3) If the development is for the purposes of a building for residential use, the consent authority must not grant consent to the development unless it is satisfied that appropriate measures will be taken to ensure that the following LAeq levels are not exceeded:*
>
> *(a) in any bedroom in the building – 35 dBA at any time between 10pm and 7am,*
>
> *(b) Anywhere else in the building (other than a garage, kitchen, bathroom or hallway) – 40 dBA at any time.*

3.10.2 Development near Rail and Busy Roads – Interim Guidelines 2008

These guidelines, prepared by the Department of Planning, were produced to support the SEPP for developments near specific highly trafficked roads (daily traffic volume of more than 40,000 vehicles). The guideline recommends that it is advisable for new developments on moderately busy roads (where daily traffic volume of more than 20,000 vehicles) follow the design advice offered in the SEPP.

According to the Roads and Maritime Services Traffic Volume Data for the Hunter and Northern Regions (RMS website accessed 20th March 2013), the Pacific Highway just south of Moonee Beach achieved Annual Average Daily Traffic of 20,868 vehicles in 2004. The Pacific Highway is therefore deemed a "moderately busy road", and Wilkinson Murray has advised that the concept plan meets the requirements of the Infrastructure SEPP. The "Development near Rail and Busy Roads – Interim Guidelines 2008" confirms that the noise criteria are calculated as $L_{Aeq,9hr}$ for night and $L_{Aeq,15hr}$ for day.

The Pacific Highway past the site is currently being upgraded and is due for completion by 2014. It was not practical to conduct traffic noise measurements on site, as it would be corrupted by noise from the construction works.

RMS have prepared an operational noise management plan for the project which specifically identifies predicted traffic noise levels affecting the site to 2024 (10 years after completion of the upgrade). Noise levels have been predicted using the CoRTN traffic noise prediction algorithms as implemented in the

Soundplan noise model. The calculations were conducted by AECON. The results of site noise modelling are presented in **Figures 41 and 41** for day and night time, respectively.

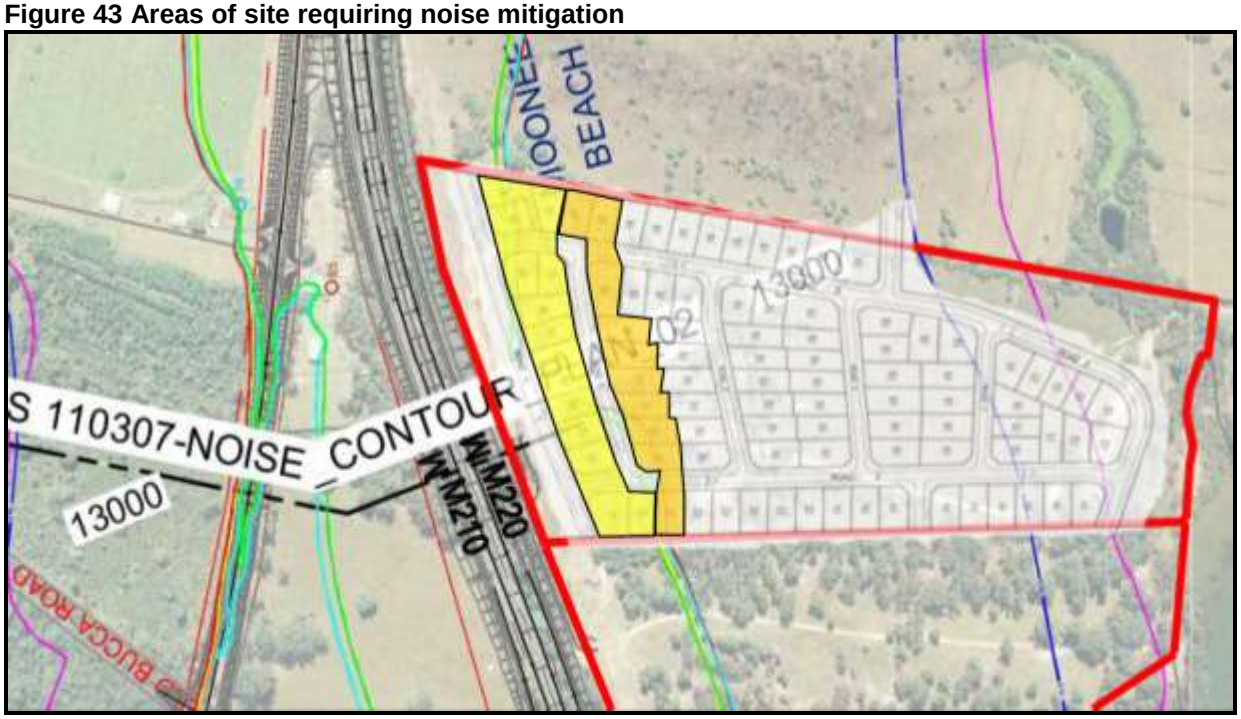
Figure 41 Predicted daytime noise levels affecting the site for 2024

Figure 42 Predicted night time noise levels affecting the site for 2024

The intrusion of noise into the site requires mitigation to achieve the day and night noise criteria established by the SEPP. The extent of Lot 1 requiring attenuation is provided in **Figure 43**. Lot 6 is expected to have similar requirements.

The conventional approach to mitigating road noise from residential dwellings is via a noise wall. However, under the SEPP, meeting the noise criteria in the bedrooms and habitable rooms - other than laundries and kitchens - between 10pm and 7am can also be achieved via building design and insulation. This also improves the thermal performance of the building.

Figure 43 Areas of site requiring noise mitigation



3.10.3 Noise Attenuation

Wilkinson Murray advise that typically the first row of houses provides up to 8dB to 10dB shielding. Once a row of houses is built near the Pacific Highway, the LAeq contours in **Figure 41** and **Figure 42** will be much closer to the highway.

The yellow zone in **Figure 43** shows the proposed lots bordering the Pacific Highway that would be limited to 1 storey and require noise treatments on the facades including walls windows, doors, roofs, eaves and slab on ground flooring. In the orange zone, houses can be two stories with the ground floor not needing acoustic treatment as it will be shielded by the houses in front.

The indicative costs for noise attenuation of dwellings in the yellow and to a lesser degree orange areas are as follows:

Glazing: 2 up graded windows - $2,500

Ventilators - $2,000 (not air conditioning)

Door - $500

Total $5,000

Noise attenuation will also provide thermal attenuation and a reduction in the use of electrical heating and cooling. It is also a more economical and aesthetically sensitive solution than to construct a noise wall along the western edge of the collector road.

Noise attenuation of the dwelling and the front yard of the affected lots can be achieved through the placing of masonry fences and gates (1.2m solid up to a maximum of 1.5m transparent) and landscaping.

3.11 Traffic

Better Transport Futures were engaged to provide traffic advice (refer **Attachment J**) for the concept plan, in particular the provision of access to the site from the Pacific Highway that is currently being upgraded to a dual carriageway, and a grade separated interchange at Moonee Beach Road, some 400m to the southwest of the site.

The upgrade works are intended to be completed by the Roads and Maritime Services department by 2014.

3.11.1 Access and Pacific Highway Upgrade

From BTFs review of the local road network, the works proposed along the Pacific and the future subdivisions proposed in the locality, the following advice is provided in regard to access to the site:

a) Direct access to the site from the Pacific Highway will be prohibited for residential development. A central median will also remove the opportunity for right turns to the site for residential development.

b) Where access is provided, these will be restricted to left in and left out typically and allow for limited access e.g. typically access to a rural property or similar. These access points allow for low traffic flows (typically less than 50 per day).

c) As part of the safety measures adapted by the RMS as part of the Pacific Highway upgrade, the RMS is working towards having service roads running parallel to the highway that allow for access to a number of lots that then gain access to the Pacific Highway via appropriate major intersections such as that proposed at Moonee Beach Road.

d) In line with Council's S94 plan and the Land and Environment Court proceedings for the land to the south, a network of local roads are proposed that will allow for future connection to the residential subdivisions proposed in the locality, including the site. This is considered appropriate as access to the Pacific Highway will then be provided via the new grade separated interchange at Moonee Beach Road. This intersection will provide the highest level of road safety for the connection between these two roads and there will be no capacity issues associated with the future operation of this grade separated interchange.

e) A review of the local roads to the immediate south of the site show that the collector road currently provides a stub that allows for a future road connection to the north. Therefore, the collector road will connect with Moonee Creek Drive to the south and then connect with Moonee Beach Road via a 4-way roundabout.

f) The collector road and the length of Estuary Drive that connects to Moonee Beach have been built to a local road standard with an overall carriageway width of 8.0m and an off road shared path.

g) Existing traffic flows along Estuary Drive and the collector road have been observed during both the morning and afternoon peak periods and the flows are reasonably low. The two way flow on the collector road, where it connects with Moonee Beach Road, are less than 100 vehicles per hour 2 -way.

h) According to the RMS Guide to Traffic Generating Developments, the capacity for a road such as the collector road is given as 500 vehicles per hour two -way. This is the maximum desirable traffic flow on this road but it is not the absolute maximum flow. The Guide also indicates that the maximum capacity for a single lane is 900 vehicles per hour. With the existing traffic flows on this road during the peak periods being less than 100 vehicles per hour, this indicates that this road has capacity for at least 400 additional traffic movements per hour two-way based upon the desirable criteria of 500 vehicles per hour.

The Guide to Traffic Generating Developments indicates that the typical peak hour generation rate for a residential subdivision is 0.85 trips per lot per hour. Using this rate, the spare capacity of 400 vehicle movements equates to some 470 residential lots that could potentially be developed off the collector road.

A review of the concept plan indicates that there will be in the order of 161 residential lots developed. This is well below the limit of 470 lots identified above, which equates to some 86 vehicle movements 2-way during the traditional morning and afternoon peak periods. This shows that the development of this land does not require any upgrade of the collector road.

The roundabout at the Moonee Beach Road and Estuary Drive intersection will have adequate capacity to cater for the additional traffic movements associated with the site. The roundabout will have capacity

beyond the requirements of the subject site and as such will not require any upgrade over the existing layout.

3.11.2 Public Transport

The site is on the Coffs Harbour to Grafton route serviced by Ryans Bus Services that detours into Moonee Beach. Restricted access to the upgraded Pacific Highway means that the entire public transport servicing of the Moonee Beach urban growth area is dictated by the grade separated interchange at Moonee Beach, currently under construction, and the court approved collector road.

Combined with the approved Glades Estate, the proposed development has the potential to improve the viability of public transport services in the area and with increasing population, the frequency of the service is likely to increase. However, uptake of a provided service is dependent upon not only frequency of services but also duration of journey in competition with that of a private motor vehicle. Hence, directness of bus routes between origin and destination is important.

Within this context, the concept plan proposes a bus route along the collector road only with a simple informal grid pattern of streets and footpaths to allow patrons an easy 5 minute walk to the proposed bus stop (see **Section 4.0**).

3.11.3 Pedestrians and Cyclists

The proposed pedestrian and cycle path network is illustrated in **Section 4.0** and includes:

- a shared pedestrian/cycle link to Council's Coastal Walk, connecting the site to Moonee village to the south and to the approved Glades Estate to the north;
- one footpath on each street to create a walkable street network to the collector road and to the Coastal Walk;
- a shared pedestrian/cycle route along the main collector road.

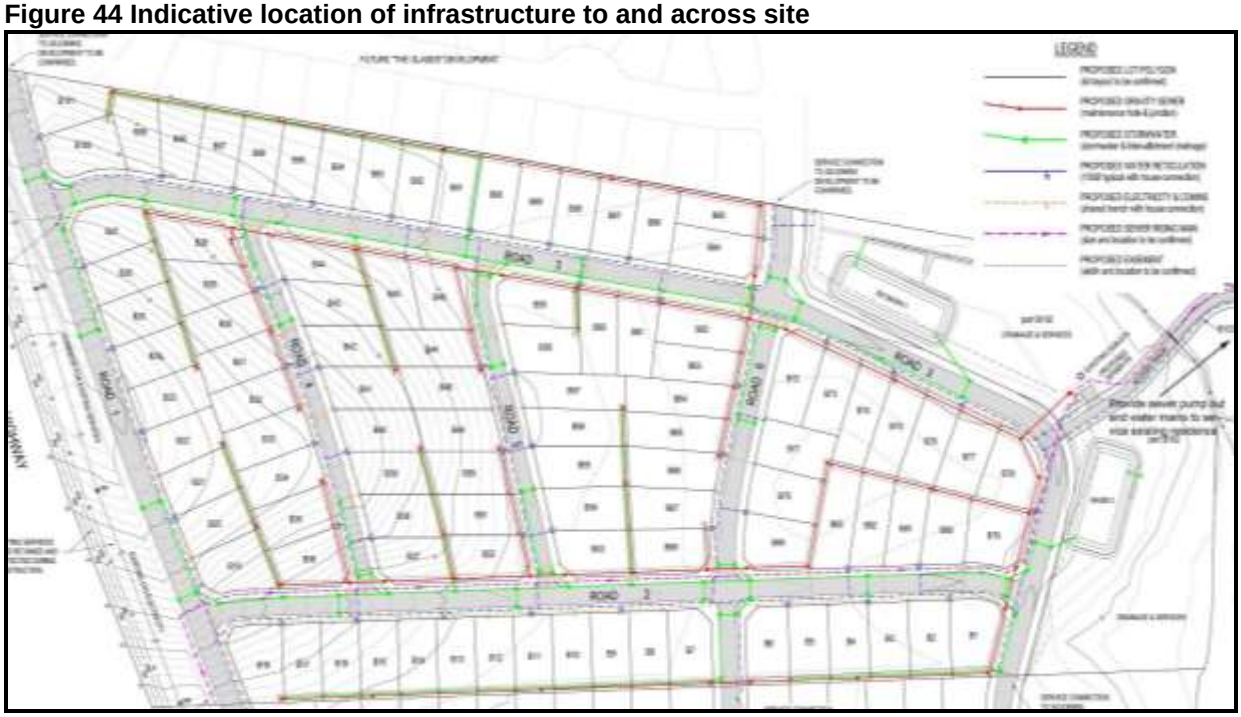
The Coastal Walk has been located outside of the conservation reserve and on the eastern edge of the perimeter road as this is the best location for residents to access this path. If the path was located in accordance with the DCP this would lead to residents creating their own path from the perimeter road to the Walk and hence impact upon the conservation values of the corridor. In this way, the ecologically sensitive banks of Moonee Creek are also avoided.

The proposed network of paths compliments Council's traffic and transport strategy for the Moonee area and is generally consistent with the Moonee DCP.

3.12 Services & Utilities

The approved 520 residential lot Glades Estate proposes to extend infrastructure northward from Moonee Beach through the subject site. The concept plan proposes to contribute to, and connect with, this infrastructure. The capacity for the site to be physically connected to services is illustrated in **Figure 44** (see also **Attachment K**).

Figure 44 Indicative location of infrastructure to and across site



3.12.1 Sewerage and Water Services

A gravity main will collect sewage from all lots to a proposed sewage pump station located at the eastern end of the site before being pumped via a rising main up to the south western corner of the site and then to the Moonee Beach pump station.

The Moonee sewerage scheme serves the Moonee and Emerald Beach areas. The scheme comprises a tertiary sewage treatment plant with a capacity of 7,000 EP and discharges reclaimed water to the reclaimed water system with excess going to the deep sea release in Coffs Harbour.

The *Coffs Harbour City Council Strategic Business Plan for Water Supply and Sewerage* (May 2012) indicates that current population of Moonee Beach area is 1,419 persons (2011) and is projected to growth to 4,931 persons by 2041 with a 5.17% average annual growth rate. This report indicates that water supply and sewerage services to Moonee Beach are both satisfactory and that any new development will have water supply and sewerage services provided and financed by the developer & S94 plans.

The dwelling on Lot 2 DP 1097743 is proposed to be connected to the Sewage Pump Station. The pump station is proposed adjacent to the existing electrical substation.

Water supply will connect to the existing water main and easement located along the western boundary of the site to Moonee Beach and to the existing reservoir at Maccues Road.

Construction of the sewer lines will involve some areas of cut to 4.5m deep on the elevated parts of the site. For the less elevated portions, this will have up to 2m fill. Therefore, some of the sewer lines will be up to 3.5m deep from the proposed levels or up to 1.5m below the existing surface level. The acid sulfate soil investigations (refer **Section 3.4.2**) indicated that excavation greater than 3m from the existing surface will require further investigations and testing. However, the excavation for the laying of sewer lines is unlikely to achieve this depth. Implementation of the Acid Sulfate Soils Management Plan (refer **Attachment D**), will manage the unlikely exposure of acid sulfate soils.

3.12.2 Electricity and Communications Utilities

Electricity and communications infrastructure are able to be extended to the site for the purpose of residential development. This was confirmed by both Country Energy and Telstra during the preparation of the Moonee DCP.

An electrical kiosk exists on Lot 1 and is connected via underground cable to the overhead powerlines located in an easement along the western boundary of the site. It is understood that this kiosk was installed as part of previous subdivision development proposals for the site. As part of the Construction Certificate, necessary details to upgrade the capacity of this kiosk will be provided.

Optical fibre and Telstra infrastructure are provided in easements along western boundary of the site.

It is expected that by mid-2013, Saphire just south of the site, will have access to the National Broadband Network. Extension of the network to the Moonee Beach urban growth area is likely to be brought forward with the approval and commencement of construction of the release area.

3.12.3 Waste Disposal

Coffs Coast Waste Services (CCWS) (partnership between Handybin Waste Services, Coffs Harbour City Council, Bellingen and Nambucca Shire Council) undertakes the collection of household waste on the Coffs Coast. The site and other urban zoned and undeveloped land will be serviced by CCWS.

3.13 Social & Economic Environment

The site is part of the Moonee Beach undeveloped urban area. As a consequence, the area has been strategically identified by Council and the NSW government for population growth and change.

3.13.1 Projected Dwelling and Population Increase

The projected population increase, household size, dwelling number and occupancy rates for Moonee Beach area to year 2031 are indicated in **Table 16**. The proposed creation of 160 lots will lead to the subsequent creation of 160 detached dwellings. At an average of 2.75 persons per dwelling this will total approximately 440 persons. This will positively contribute to population, household and dwelling growth for Moonee Beach.

The proposed lots will provide for the construction of single and two storey detached dwellings. This is generally consistent with the objectives of the Moonee Beach DCP where increased housing type and smaller size is focussed around the Moonee Beach village.

The trend of decreasing average household size is a national social and economic trend. The concept plan is a response to this trend and to accommodate market demands. Like with any green release area, the first residents are likely to be predominantly educated and qualified young families as first home buyers and families up grading to a new and larger dwelling and relocating from within Moonee Beach or other parts of the LGA. As the development ages over time relative to new stages being released, then the socio economic profile of residents will begin to diversify consistent with broader socio economic trends across Coffs Harbour and the north coast region.

Table 16 CHCC Population Forecast for Moonee Beach (source CHCC iD Forecast)

Moonee Beach	Forecast year				
	2011	2016	2021	2026	2031
Population	1,611	1,923	2,619	3,411	4,222
Change in Population (5yrs)	321	312	696	792	811
Average Annual Change (%)	4.54	3.6	6.37	5.43	4.36
Households	559	698	973	1,258	1,576
Average Household Size (persons)	2.88	2.75	2.69	2.67	2.65
Population in non private dwellings	0	0	0	50	50
Dwellings	601	750	1,045	1,352	1,694
Dwelling occupancy rate	93.01	93.07	93.11	93.05	93.03

3.13.2 Profile of Future Residents

Future residents of the development are likely to be educated; older families with parents between 40 and 60 years with teenage children; high household incomes; mobile; currently paying off their mortgage and looking to upsize or step up the housing investment ladder.

3.13.3 Impact of Additional Residential Lots

3.13.3.1 Market Supply

Once the site is developed, it will increase the available land stock by 161 lots and will supply the demand for residential land in Moonee Beach and in the Coffs Harbour LGA. The lot size and dimensions will facilitate mostly large single dwelling homes consistent with the objectives of the 2A Residential Low Density zone under the Coffs Harbour LEP 2000.

The proposed 159 residential lots is on top of the 523 residential lots that have been approved by the Minister for Planning and Infrastructure in the Glades development to the north. This land has not been able to be developed due to issues in achieving the construction of the collector road. The approval of the collector road by the Land and Environment Court in June 2012 - to run from the Glades across the site and southward to Moonee Beach village - and the approval of the additional lots in this concept plan will significantly increase the momentum of achieving land owner arrangements to commence construction of the road.

3.13.3.2 Employment

The proposed development will provide employment during the civil works and housing construction phases of the development

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 (HIA Economics Group Research Note: *The Economic Multiplier Effects of Housing, December 2006*). 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 $10 million, whilst the total housing construction cost is expected to be approximately $108 million (Washington Brown.com.au – medium quality finishes – site accessed 24th March 2013).

According to the Indicative Planning Council, every $1 million of construction generates 13 jobs - seven direct construction jobs, four jobs in material manufacturing and two jobs in industries that supply industries that supply construction.

For the concept plan, the capital investment value of $10million on subdivision construction will generate 130 jobs – 70 in direct construction, 40 jobs in materials manufacturing and 20 jobs in down the chain supply industries.

The $108 million spent on housing construction will generate some 1404 jobs – 756 jobs in construction, 432 jobs in building manufacturing and 216 jobs in industries that supply construction.

These employees will shop and use services at Moonee Beach village and hence increase profitability and capacity for expansion of existing businesses and generate new businesses.

3.13.3.3 Economic Multiplier

The *Economic Multiplier Effects of Housing Research Note* by the HIA Economics Group (2010) states that every $1 million injected into housing construction generates $2.9 million of demand for mining products; wood and wood products; non-metallic mineral products; fabricated metal products; other machinery and equipment; property and business services; and transport and storage services.

Likewise, for every $1 million injected into the economy as a result of the civil construction works, a similar multiplier effect can be expected.

3.13.3.4 Employment for new residents

Recent unemployment employment data for the Coffs Harbour LGA (Coffs Harbour Economic Profile 2010, CHCC 2010) indicates that the LGA is performing better than the Mid North Coast Region overall but underperforming against the state and national average unemployment figures. This data, somewhat typical of non-metropolitan coastal areas, indicates the increasing strength, diversity and resilience of larger towns over smaller towns and the corresponding increases in employment numbers and diversity of employment type.

For the initial stages of the development of the site and for the adjoining Glades Estate, employment opportunities for new residents (those 15yrs and older) will be elsewhere in the LGA with an obvious concentration in the Coffs Harbour city itself to the south and other towns through the LGA. As the construction of the site progresses, there will be a corresponding increase in the population of the primary trade area of the Moonee Beach village and hence an increase in the number and range of businesses and activities and employment opportunities to service this population growth and increase.

The location of the site relative to Coffs Harbour and its high quality amenity indicates that future residents are likely to be economically productive persons as opposed to economically dependent persons. The ratio of economically productive versus economically dependent persons is likely to be lower and hence there is less strain on the productive persons to the upbringing and pensions of the economically dependent. Again, like the unemployment rates, recent dependency ratio data in Coffs Harbour LGA has been lower than the Mid North Coast Region and higher than the State. (Coffs Harbour Economic Profile 2010, CHCC 2010).

The employment sectors that future residents are likely to be employed in includes; Healthcare & social assistance; Education & training; Public administration & safety; Professional, scientific & technical services; Accommodation & food services; Retail trade; Construction; and Manufacturing.

3.13.4 Impact of Additional Residents

Post construction, the impacts on the wider economy will be in retail, education and health, transport, recreation and finance. The 2009-10 ABS Household Expenditure Survey found the average Australian weekly household expenditure was $1236 and for non-metropolitan areas an average of $1107 per week. The annual household expenditure generated from 160 households in the concept plan is likely to be some $9,210,240. This will clearly provide positive economic benefits to the local economy.

3.13.5 Social Infrastructure, Recreation and Community Services

The concept plan 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.

Goodstart Early Learning Centre and *Moonee Beach Veterinary Surgery* with other services in the Moonee Beach Shopping Centre, will be the location for local facilities and services for future residents.

Consistent with the Moonee DCP 2004, the concept plan proposes a coastal walk along the eastern perimeter road and along the proposed access to Lot 2 DP 1097743.

No other recreation or community facilities are proposed within the concept plan. Consultation with council in November 2012 indicated that any facilities proposed on the site would be additional to that approved by the Glades Estate, would be a duplication and are undesirable for Council to own and maintenance. In particular, a park was initially considered in the north east corner of the site. However, council's views and prevailing ecological issues lead to the park being removed from the concept plan.

Therefore, future residents within the concept plan will use the facilities in the Glades Estate 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 proponent for the subdivision of the concept plan will pay section 94 contributions towards the provision of public facilities and services in accordance with Council's applicable Developer Contributions Plans.

4.0 Proposed Concept Subdivision Plan

While a number of external factors bear on the how the site may be developed (see **Section 1.3**), the underlying objectives of the concept plan are:

- to complement the Moonee Beach future urban area with a high amenity residential development, by responding to the lands physical and visual relationship with the natural environment to the east of the site;
- to respond to the fact that in the short to mid-term, the site's context will change from a rural coastal setting to a suburban coastal setting, with the plan providing a framework for the approval of some 161 residential lots; and
- to ensure the most efficient use of the residential land resource, responding to the spatial advantages of locating future population growth within walking distance on the Moonee Beach village centre.

The extent of development on the site is essentially governed by the location of the court approved collector road, the earthworks required to mitigate occasional flood risk in a sea level rise scenario, and the need to provide a buffer to Moonee Creek that serves as a long term sustainable wildlife corridor linking conservation areas to the north and south (refer **Figure 45**).

Figure 45 Concept Structure Plan in local context

4.1 Development Options

The land has been zoned for residential use since 1988. The Moonee DCP identifies the site as part of the North Moonee Precinct. The total population for this "village" precinct – which includes the area of the approved Glades concept plan - is identified to be 1,670 persons. The development density for this precinct is identified as 10 dwellings per hectare with a minimum target of 75 dwellings for the subject site.

The draft Coffs Harbour LEP 2012 was publicly exhibited during late 2012 and for the site indicated that the current 2(a) and 7(b) zone boundary should be moved westward and reducing the amount of residential zone applying to the site.

A submission was made to Council by JW Planning Pty Ltd on behalf of Moonee Parklands Trust objecting to this amending of the zone boundary as there was no environmental data to justify such an amendment.

On the 13th December 2012 Council resolved to adopt the draft LEP 2012 and recommend to the Minister for Planning and Infrastructure to defer that part of the draft LEP concerning Moonee release area until site specific environmental investigations associated with various Part 3A applications had been submitted to the Department of Planning and Infrastructure for consideration and determination. This would then inform the outcome for deferred matters.

The draft Coffs Harbour DCP 2012 was prepared, exhibited, reported and considered by Council jointly with the draft LEP 2012. In adopting the new DCP, Council deferred the relevant provisions applicable to Moonee Beach release area until the zoning issues in the LEP had been resolved. In the interim, the 2004 Moonee DCP continues to apply.

It can be seen that the predominant development options for the site from when the site was initially zoned for urban development and till now, is urban development. The technical studies prepared for the concept plan confirm the appropriateness of retaining the existing residential and environmental protection zone boundary.

A higher density of development in the form of smaller lots and/or different housing typologies is a possible development option for the site under the DCP. However, the location of the site relative to the Central Moonee Precinct (12 dwellings/ha) and the Village Precinct (40 dwellings/ha) and market considerations, indicates that achieving smaller lots, higher dwelling yield, greater diversity of dwelling typology and affordable housing on the site would not be a necessary proposition for this part of the Moonee release area.

Preferred Option

The proposal involves subdivision of the land to create 161 conventional residential lots (see **Figure 46**), and a conservation area consistent with the zone provisions and/or the recommendations of the site studies prepared to address the DGRs (see **Section 3.0**).

It is proposed that the subdivision of the land for low density residential purposes will involve:

- The dedication of land to Coffs Harbour City Council for the purpose of environmental conservation and community purposes. This includes the 7b zoned land along the western boundary that contains electrical and telecommunications infrastructure. This land should form part of the western reserve of the collector road;
- The provision of part of a collector road that will link approved residential development to the north of the site (Glades Estate) with the Moonee town centre and the Pacific Highway to the south; and
- The extension of sewer and water infrastructure to service the site and the proposed development to the north.

Figure 46 Concept Subdivision Plan

The residential lots are expected to be constructed in 15 or so stages, depending on market demand. Lot 1 is anticipated to be the first stage of development, and typical staging for Lot 1 is illustrated in **Figure 47**.

Figure 47 Development Staging for Lot 1

4.2 Stormwater Management

Martens and Associates Pty Ltd have prepared a Concept Stormwater Management Plan for the site (refer **Attachment L**).

A number of planning controls, principles and performance criteria were considered and implemented in the development of site stormwater management solutions and assessment. These include *Coffs Harbour City Council Development Control Plan (2013) – Parts B1 (Sub-division), C8 (Integrated (Natural) Water Cycle Management), D1 (Erosion and Sediment Control for Development) and E6 (Moonee); Coffs Harbour City Council*'s Development Design and Construction Specification (2008), *Coffs Harbour City Council Engineering Design Specification – 0074 Stormwater Drainage (2009) and Coffs Harbour City Council Water Sensitive Urban Design (2009) Policy*

4.2.1 Onsite Stormwater Detention Requirements

Martens and Associates advise that OSD is not necessary for the development for the following reasons:

- Council's (2009) engineering design specifications state that installation of Stormwater Detention is required on redevelopment sites within the Council area where under capacity drainage systems exist. As the site drains directly to Moonee Creek and is downslope of the Pacific Highway, no existing Council drainage infrastructure will be impacted by the development.

- Post-development peak site discharge is slightly reduced for the critical duration (9 hours) 1 in 100 year ARI Moonee Creek catchment flood event. Increases noted in other storm events modelled are minimal when compared with total discharge rates for the overall Moonee Creek catchment.

- The site's location near to the catchment outlet suggests that site peak discharges occur on the rising limb of the hydrograph for the overall Moonee Creek catchment and that detention of flows from the site may adversely impact on the peak catchment flows by releasing water closer to the peak which would otherwise have been released earlier in the flood event.

It is also reasonable to anticipate that the proposed rainwater tanks, as required by BASIX for individual dwellings, will have an attenuating effect on site peak stormwater discharges and are likely to reduce flood runoff volumes for short duration storm events, depending on antecedent storage levels.

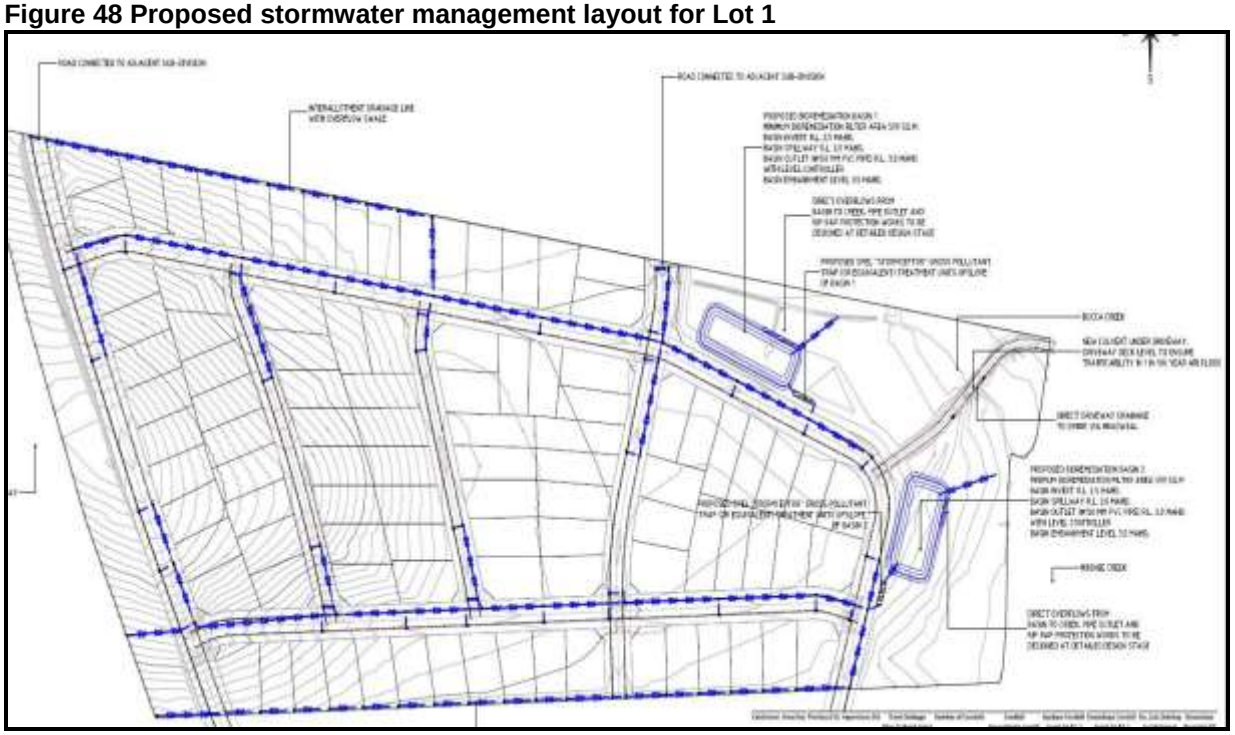
The above has been confirmed via email from Council (J. Park, 21/2/2013).

4.2.2 Proposed Stormwater Management System

The proposed stormwater management system for the site is provided in **Figure 48** and includes the following:

- Stormwater drainage network including pits, pipes, culverts and headwalls (where necessary) and associated outlet energy dissipation and erosion protection works.
- Stormwater bioremediation basins positioned to capture surface and piped stormwater flows from the site and upslope catchments for treatment and possible re-use. These shall be located as shown on the attached site plans.
- Rainwater tanks consisting of 5 KL (minimum) rainwater tank(s) per allotment to reduce stormwater runoff and provide non-potable re-use for landscaping, *etc.*
- Site earthworks and landscaping designed specifically to minimise the concentration of runoff, minimise flood hazard, direct runoff to proposed stormwater bioremediation basins and to minimise potential erosion from site surface flows and overflows from stormwater bioremediation basins.

Figure 48 Proposed stormwater management layout for Lot 1



4.2.3 Methodology and Assumptions

Using a conceptual layout, site survey data, LiDAR data and drainage information provided by Council, the following computer models were used to determine preliminary recommendations for site stormwater quantity and quality control measures.

- DRAINS hydrological and hydraulic modelling package to determine existing and post-development peak flow rates to size minor (pit and pipe) and major (overland flow path) stormwater system components for the critical duration 1 in 5 and 1 in 100 year ARI storms respectively. Design rainfall data used in the model were sourced from Council and are considered to be consistent with Council's (2009) Engineering Design Specifications.

- MUSIC 5.00.11 water quality modelling package to determine effects of proposed stormwater harvesting dams on site post-development water quality. Design pollutant generation rates are consistent with Council's WSUD (2009) guidelines and rainfall and evapotranspiration data were sourced from eWater (2013) and Bureau of Meteorology (2001) respectively.

The report and modelling also draws on findings from the site flooding assessment (refer **Section 3.7**) with respect to flood levels and behaviour in the Moonee Creek, Cunninghams Creek and Bucca Creek catchments. This data was used to set levels for site bioremediation basins and for designing site drainage infrastructure.

The flooding assessment utilised the following models:

- RAFTS hydrological modelling package to determine peak flow rates from sub-catchments within the Moonee Creek catchment for the 1 in 20 year ARI, 1 in 100 year ARI, Probable Maximum Flood (PMF) and 1 in 100 year ARI with climate change events (rainfall data used in the model sourced from Council and is consistent with Council's (2008) Engineering Specifications.

- Tuflow 11.0.10 1D / 2D hydraulic modelling package to determine existing and post-development flood characteristics and potential effects of proposed development on adjacent properties and infrastructure.

Results (in terms of total peak flow discharged from the site) are summarised in **Table 17**.

Table 17 Summary of results of DRAINS hydrological modelling for 1 in 100 year ARI storms

Duration (minutes)	Existing Peak Discharge (m3/s)	Post-Development Peak Discharge (m3/s)	Change in Peak Discharge (m3/s)
540(9 hr critical duration)	3.32	3.25	-0.07
720	3.49	3.35	-0.14
1080	2.50	2.41	-0.09
1440	2.42	2.35	-0.07

4.2.4 Site Stormwater Quality

Results of the MUSIC model are summarised in **Tables 18** and **19.** Results indicate that post development water quality objectives will be met by the proposed treatment train (i.e. an improvement in stormwater quality of discharges from the site and minimum pollutant retention targets). The model suggests that a significant amount of sediment and gross pollutants will be captured by the stormwater bioremediation basins and shall need to be periodically removed to maintain basin aesthetics and preserve treatment efficiency.

Table 18 Summary of MUSIC modelling results – NorBE (total residual loads)

Model	Total Suspended Solids (kg/year)	Total Phosphorus (kg/year)	Total Nitrogen (kg/year)	Gross Pollutants(kg/year)
Existing Conditions	16,300	17.2	140	102
Post-development Conditions	3,430	15.3	104	72.7
Reduction (%)	79.0	11.0	25.7	28.7

Table 19 Summary of MUSIC modelling results – Pollution retention rates

Model	Total Suspended Solids (kg/year)	Total Phosphorus (kg/year)	Total Nitrogen (kg/year)	Gross Pollutants (kg/year)
Post-development – generated	23,300	44.6	240	2,190
Post-development – discharged	3,430	15.3	104	72.7
Retention rate (%)	85.3	65.7	56.7	96.7

4.2.5 Minimum Basin Requirements – Site Flooding

Consultation with Council officers has established that the proposed site bioremediation basins should be flood-proofed to the 1 in 20 year ARI peak flood level for Moonee and Bucca Creeks adjacent to the site. The Tuflow model run for the site flood assessment (refer **Section 3.7**) was re-run to determine the 1 in 20 year ARI peak flood height adjacent to the site. The model was re-run with a downstream boundary condition of 1.8m AHD (1 in 5 year ocean level).

The peak 1 in 20 year ARI flood level adjacent to the site was modelled to be 2.43m to 2.50m AHD depending on site position.

Site bioremediation basins are therefore designed with base surface levels at 2.50m AHD, spillway and surface pipe outlet levels at 3.00m AHD and top embankment levels of 3.50m AHD. This will ensure that the basins have no adverse impacts (e.g. backwater effects) on the proposed trunk drainage network and will flood-proof the basins to at least the 1 in 20 year ARI level.

4.2.6 Construction Phase Sediment and Erosion Control

A Soil and Water Management Plan (SMP) has been prepared for the construction phase of works at the site (refer **Attachment L)**. Council's (2009) policy requires that sediment basins be provided with a minimum volume of 250m3/ha of disturbed area with upslope diversion bunds/swales in place to divert surface flows around the works area.

The draft SMP proposes the following measures:

a) Proposed site clearance and bulk earthworks are to be undertaken in three stages and allow for a maximum of 4.8 ha to be disturbed at any given time and for proposed bioremediation basins to be configured as sedimentation basins during the initial earthworks phase.

b) Proposed bioremediation basins are to be configured as sedimentation basins during site earthworks. Proposed spillway and embankment levels are to be set 0.5 m higher than eventual design level with internal and external batters steepened to 1:3 internal and 1:2 external respectively. This shall give basins a minimum volume of 600 m3 each, allowing for 2.4 ha of disturbed area to be treated during each stage.

c) Diversion bunds / swales are to be constructed as shown on the plans to direct surface flows around disturbed site areas.

d) Sediment fencing is to be used at the downslope end of the site for the duration of all earthworks. Where concentrated surface flows are expected (such as at downslope end of diversion swales, basin outlets and at the driveway crossing over Bucca Creek) and straw bales supported by 1.0 m star pickets driven a minimum of 0.6 m into the ground are to be included and remain in place until vegetation is established.

e) All site stockpile areas are to include diversion bunds upslope and sediment fencing downslope of them.

f) Stabilised site access is to be used at all times during construction phase. The existing site access is to be used where feasible.

4.2.7 Management of the Riparian Zone

Figure 10 identifies the riparian areas along the eastern and north eastern boundaries of the site reflecting the presence of Moonee Creek and the unnamed creek respectively. The top of bank was derived from detailed ecological investigations identifying riparian vegetation and survey data (refer **Figure 32**) and measured 40m wide from top of bank in accordance with the Water Management Act.

Outside of the riparian areas are proposed two bioremediation stormwater basins. These basins are oriented parallel to the wildlife corridor and allow for the increase in the eventual tree canopy over the basins and native ground cover around the basins. Tables 18 and 19 identify that the performance of these two basins will improve water quality currently achieved under existing conditions. This demonstrates that the proposed buffer to Moonee Creek and the unnamed creek and to the Solitary Islands Marine Park to protect water quality and riparian processes is adequate.

Access to the dwelling to the east of the site will be improved by placing a culvert within the riparian area over the unnamed creek and accommodate flood levels up to 1:100.

The proposed conservation areas include the riparian areas and ensure that this sensitive part of the site is protected from urban development.

The landscape plan identifies the conservation/riparian areas to be revegetated via a Vegetation Management Plan (VMP). The VMP is to be required as a condition of consent for subdivision that will identify the rehabilitation, planting, monitoring and ongoing maintenance of the riparian areas as part of the North/South wildlife corridor.

4.3 Open Space Network

The open space network is generally in accordance with the Moonee DCP, namely the protection of the environmental areas in the NE corner and along the eastern boundary (Moonee Creek and riparian vegetation).

An underappreciated element of conventional subdivision that forms an important component of the proposed open space network is the proposed street network. Based upon the premise of slow speed streets with regular/frequent intersections, footpaths, drainage swales, minimum driveway widths over the road reserve and the encouragement of low fences delineating the front property boundary of

residential lots, the street network and the streetscape are designed to encourage residents to walk and cycle around their neighborhood and socially interact to create a sense of place and community.

4.4 Built Environment

4.4.1 Public Streets

The proposed development consists of 12 street blocks that are mostly 150-190m in length and 70m in depth to achieve a regular street network. This creates a street network that is then differentiated by widths and landscaping according to its role in the street hierarchy. The intent is to achieve a unified streetscape throughout but subtly and sufficiently varied to create identity and way finding for residents, cyclists and pedestrians.

4.4.2 Private Buildings

All residential dwellings requiring consent will be in accordance with Coffs Harbour Local Environmental Plan 2000 (or draft LEP 2013 when adopted) and Moonee DCP 2004. All complying dwellings will be in accordance with either council's existing complying development controls) or SEPP Exempt and Complying Development 2008 and the Residential Housing Code.

To ensure market sensitivity, it is proposed that design guidelines be issued at the point of sale for each individual lot. These guidelines are aimed at ensuring a high standard in the development of the built form and associated landscaped areas visible from public streets or parks.

The guidelines will cover elements such as:

- building form;
- setbacks;
- vehicle accommodation;
- external finishes;
- driveways;
- fencing and retaining walls;
- landscaping to front gardens;
- letterboxes.

4.5 Recreation Facilities

Moonee DCP identifies a park located near the northern boundary of the site. The approved Glades concept and project plan identifies Recreation Node 1. Due to this approved park, and based upon Council advice, a park for the site is not required. Furthermore, whilst there is some merit for a small park as a focus point for the future residents of the site as a suburban neighbourhood, this would conflict with the ecological mitigation measures recommended concerning land to the east of the proposed perimeter road.

The Moonee to Skinners Creek Coastal Walk has been incorporated into the proposed development (refer **Figure 49**) to link via a shared cycle pedestrian path future development from the south and through the site and connect to Recreation Node 1 in the approved Glades development.

4.6 Landscaping

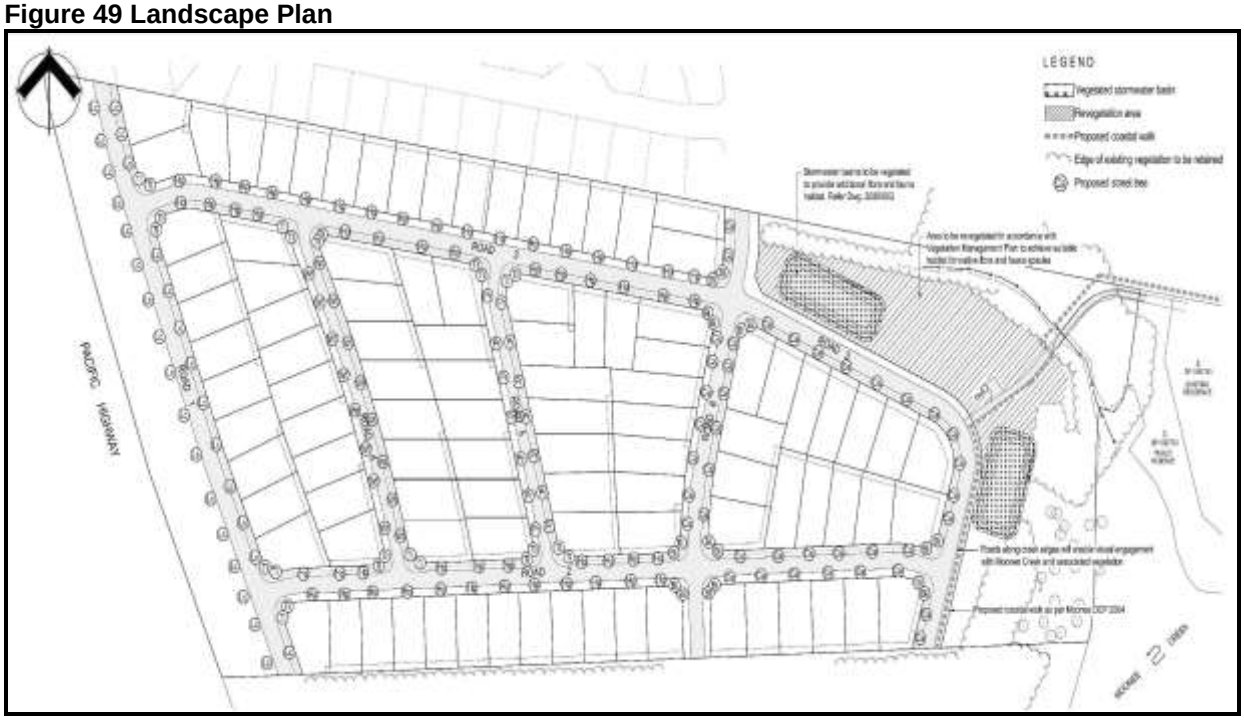
Geolink were engaged to prepare a landscape plan for the site (refer **Attachment M**). The landscape plan was required to:

- address the site's location in the landscape and ecology;

- provide shade for pedestrians;
- frame the street for pedestrians, cyclists and drivers, emphasise view corridors along streets;
- where appropriate, achieve a partially closed canopy over the street to contribute to creating a slow vehicle speed environment;
- replace trees lost by the proposed development both physically and to offset increased carbon emissions; and
- contribute to creating a desirable amenity for individual lots and future residents.

The Landscape Plan (refer **Figure 49**) identifies the landscaping of the public streets plus the rehabilitation of the conservation area and detention basin, and the subsequent management program to ensure these assets are suitable for dedication to council.

Figure 49 Landscape Plan



Moonee Parklands Trust will construct all landscaping and undertake necessary rehabilitation of the conservation area identified in the Landscape Concept Plan. All works will be maintained by the Trust until dedicated to Council. The dedication of the conservation area will take place upon registration of the linen plan at the relevant stage of the subdivision.

The outcomes of the landscape are as follows:

1. The use of appropriate native species;
2. A simple low maintenance scheme;
3. Each street has tree species and habit that reflects the street hierarchy in dimensions and movement (refer **Figure 52**):
    - Collector road (Road 1) is proposed as a formal avenue of tall trees (12m high) at regular intervals to emulate the existing landscape character and define the road;
    - Local streets (Roads 2, 3 and 6) are proposed as avenues of medium sized trees (7 to 8m high) provided at regular intervals within the verge on both sides;
    - Access streets (Roads 4 and 5) avenues of small to medium size trees.

Figure 50 Proposed revegetation of wildlife corridor

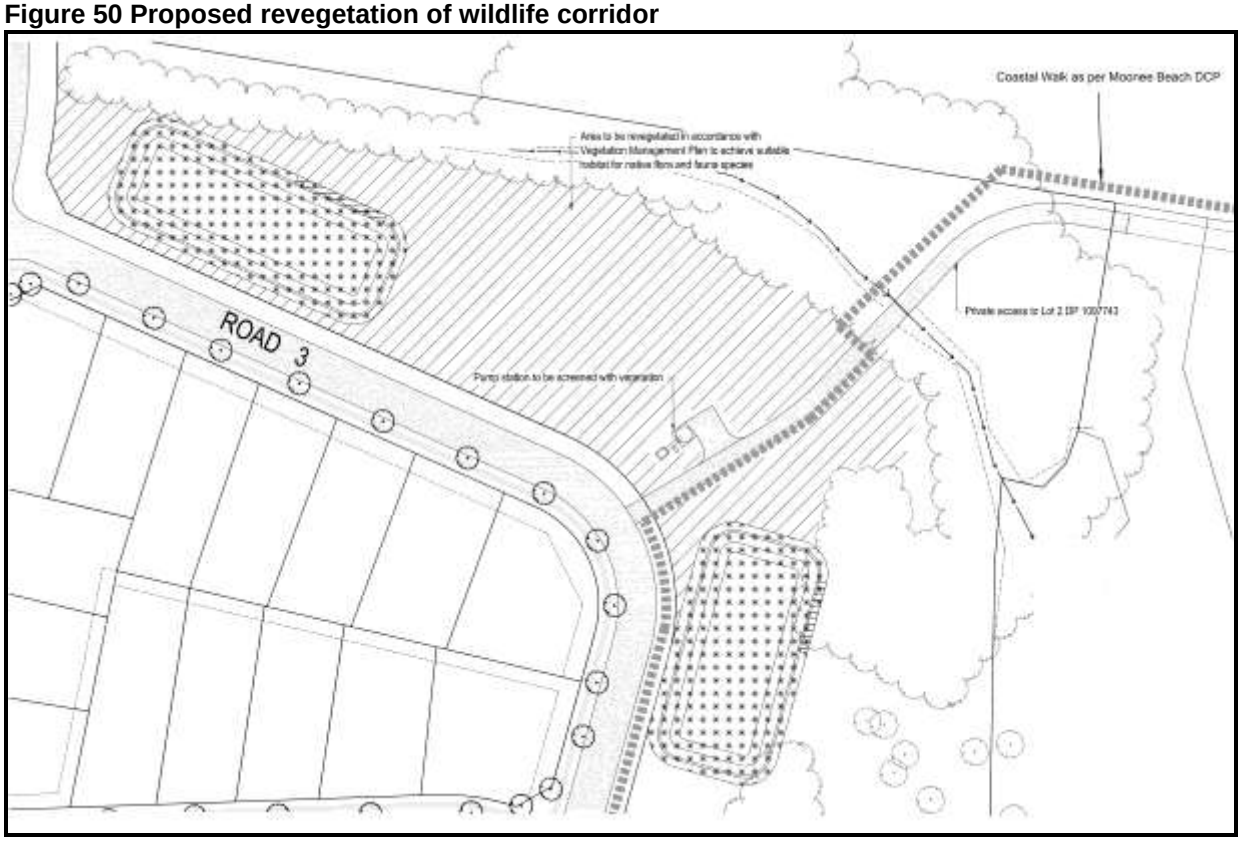
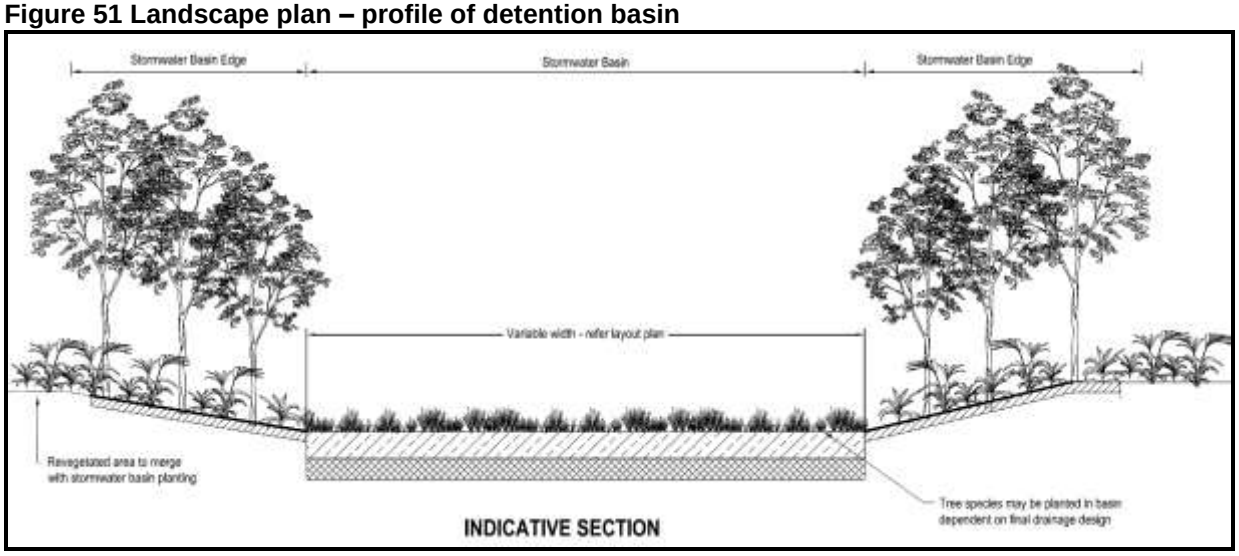
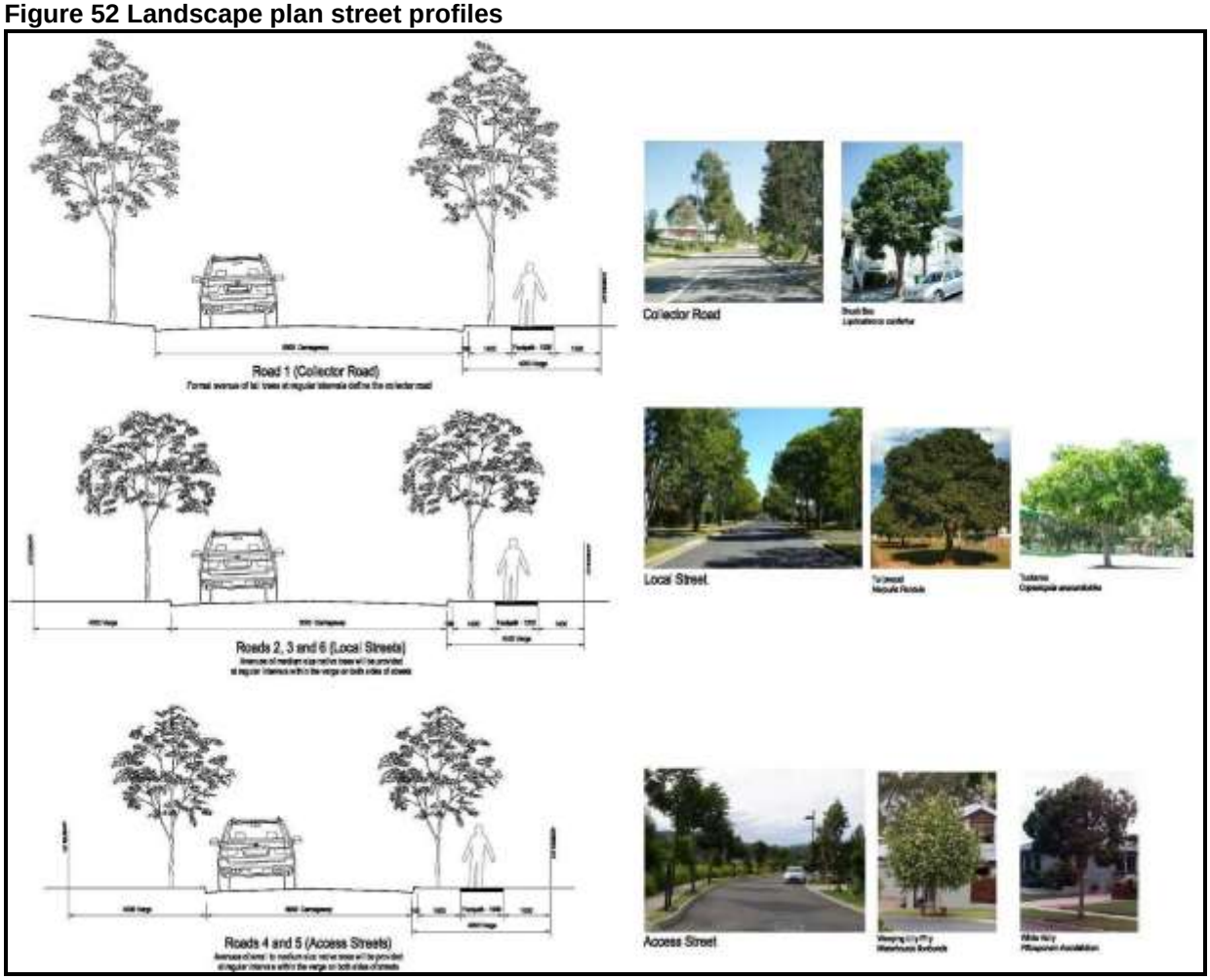


Figure 51 Landscape plan – profile of detention basin



4. Entry planting Gateways to the site;
5. Subject to a Vegetation Management Plan, revegetate the eastern portion of the site for a wildlife corridor (refer **Figure 50**);
6. Treatment of detention basins that allow them to achieve their hydrological function within the wildlife corridor (refer **Figure 50**);
7. Incorporate the coastal walk into the road reserve of Road 3 and the proposed public right of way for the access to Lot 2 DP 1097743 to connect with coastal walk in the approved Glades Estate.

Figure 52 Landscape plan street profiles



4.7 Bushfire Threat Management

Road specifications need to achieve the minimum carriageway widths for Public Roads as detailed in section 4.1.3(1) of *Planning for Bush Fire Protection* 2006. The bushfire assessment notes that there is sufficient scope within the Concept Plan to be able to achieve the minimum required carriageway for Public Roads.

No new dwellings are proposed as part of this application. An independent assessment will be required under s79BA of the *Environmental Planning and Assessment Act* 1997 at the time of any future application for the construction of dwellings. It should be noted that the provisions of the Asset Protection Zones as incorporated in the Concept Plan will not expose any future dwelling to a Bushfire Attack Level higher than BAL 40 (i.e. Flame Zone).

The proposed access provisions and water supply must satisfy the requirements of section 4.1.3 under *Planning for Bush Fire Protection* 2006. The proposed subdivision lot layout has been reviewed and compliance can be achieved.

The APZs incorporated in to the Concept Plan will provide a reasonable and satisfactory level of bushfire protection to the subject development.

4.8 Aboriginal Cultural Heritage

The following management of Aboriginal heritage values is proposed:

- A post approval management plan to be prepared for the Aboriginal objects as per Aboriginal community requirements with ongoing consultation with Aboriginal community throughout the development process.
- The management plan is to be prepared in consultation with the Aboriginal stakeholders to consider preservation and protection of key Aboriginal heritage values and to deal with measures to be taken in the event that new Aboriginal objects of significance or a nature not anticipated, such as burials or ceremonial items are discovered during construction.

This plan may include and not be limited to:

- The bagging, tagging and collection of any artefacts that may be unearthed during the construction process and kept with CHLALC until an appropriate keeping place is determined by the management plan;
- An Aboriginal Cultural Education Program e developed by the proponent for the induction of personnel involved in the construction activities in the project area in consultation with KLALC.

It is noted that all known areas, objects and features of value to the Aboriginal community are outside footprint of the proposed development.

4.9 Mosquito Management

The management of mosquitos will be undertaken as follows:

- All dwellings will be some 50m away from Moonee Creek and the unnamed creek and potential mosquito breeding areas.
- All dwellings will be equipped with effective screens on all windows, doors and openings.
- All rainwater tanks and fabricated water storage structures will be equipped with effective screens on all openings.
- The bio remediation basins will have edges with a minimum 45 degrees slope;
- Site preparation to ensure that no ponding of water can occur after rain events.

5.0 Strategic and Statutory Planning Provisions

Site studies responding to the DGRs, and the resulting concept plan, are considered in the context of the following statutory planning framework, where relevant:

RELEVANT COMMONWEALTH LEGISLATION

5.1 Environment Protection & Biodiversity Conservation Act 1999

Under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), actions that have, or are likely to have, a significant impact on a matter of national environmental significance require approval from the Australian Government Minister for Sustainability, Environment, Water, Population and Communities (the Minister). The minister will decide whether assessment and approval is required under the EPBC Act.

The eight matters of national environmental significance protected under the EPBC Act are:

i. world heritage properties
ii. national heritage places
iii. wetlands of international importance (listed under the Ramsar Convention)
iv. listed threatened species and ecological communities
v. migratory species protected under international agreements
vi. Commonwealth marine areas
vii. the Great Barrier Reef Marine Park
viii. nuclear actions (including uranium mines)

The matters of NES relevant to the site are listed in **Table 20.**

The EPBC Act incorporates an assessment and approvals system for actions that have a significant impact on matters of national environmental significance (NES) and actions that have a significant impact on the environment of Commonwealth land. An action that needs Commonwealth approval is known as a 'controlled action'.

Table 20 Relationship of the Site to Matters of National Environmental Significance

Matter of National Environmental Significance	Application to the Project	Relevant Section
World Heritage Areas	No World Heritage Sites were identified in the MNES search on the site or within the regional area.	Not Applicable
Wetlands protected by international treaty (RAMSAR)	No RAMSAR sites were identified by the MNES search on the site or within the regional area.	N/A
Nationally listed threatened species and ecological communities	This species could potentially be impacted by proposal. Although recommended a referral be made to the Federal Minister for the Environment, it is unlikely that this action would become a controlled action under the Act. This is based upon the national plan for koala, interpretation of the impact assessment guidelines, and the condition of habitat on the site	Refer to Section 3.9
Nationally listed migratory species	A number of listed migratory species are known or likely to occur occasionally in the study area, No area of important habitat occurs in the study area for listed migratory species.	Refer Section 3.9
All nuclear actions	Not relevant to this project	N/A
The environment of Commonwealth Marine Areas	The Solitary Islands Marine Reserve (State Park) is located to the east that includes Moonee Creek itself. The closest section of the Commonwealth Reserve is approximately 7 kilometres to the east of the site out to sea surrounding the Solitary Islands.	Refer Section 3.9

RELEVANT STATE LEGISLATION

5.2 Environmental Planning & Assessment Act 1979

The principal State planning legislation for NSW is the *Environmental Planning and Assessment Act 1979* (**'the Act'**), administered by the NSW Department of Planning and Infrastructure.

On 27 September 2009, the Minister for Planning formed a view that the proposal is a project to which Part 3A of the Act applies, and authorised the submission of a Concept Plan.

Despite the repeal of Part 3A by the State government in 2011, the project has the status of a "transitional major project" and the provisions of Part 3A are still applicable to the proposal via Schedule 6A of the Act.

Section 75P(1) provides that the Minister may make any (or any combination) of the following determinations when giving an approval for a concept plan for a project:

(a) the Minister may determine the further environmental assessment requirements for approval to carry out the project or any particular stage of the project under this Part (in which case those requirements have effect for the purposes of Division 2),

(b) the Minister may determine that approval to carry out the project or any particular stage of the project is to be subject to the other provisions of this Act (in which case the project or that stage of the project ceases to be a project to which this Part applies),

(c) the Minister may determine that no further environmental assessment is required for the project or any particular stage of the project (in which case the Minister may, under section 75J, approve or disapprove of the carrying out of the project or that stage of the project without further application, environmental assessment or report under Division 2).

5.2.1 Objects of the Act

- The concept plan proposes the proper management, development and conservation of the site and promotes the social and economic welfare of the community and a better environment;
- The concept plan integrates with the Minister approved Glades Estate and the Land and Environment Court approved collector road and is a balanced and orderly economic use, part development and part conservation of the site;
- The site can easily be connected communication and utility services at the expense of the developer;
- The concept plan proposes to rehabilitate, manage and dedicate land for public purposes in the form of a wildlife corridor;
- The concept plan has identified and protected parts of the site and ensures that impacts are not likely to have a significant effect upon threatened species, population, ecological communities and their habitats;
- The concept plan proposes the ecologically sustainable development of the land;
- The concept plan does not propose affordable housing as to do so would be contrary to the Moonee DCP 2004 and market expectations that higher density and hence more affordable housing should be located closer to Moonee Village;
- Public exhibition of the EA report and concept plan will allow for public involvement and participation in the environmental planning and assessment of the proposed development of the site.

With the exception of affordable housing, the concept plan is consistent with the objects of the Environmental Planning and Assessment under Section 5.

5.3 Threatened Species Conservation Act 1995

Schedules 1, 1A and 2 of the *Threatened Species Conservation Act 1995* (TSC Act) list species, populations or ecological communities of native flora and fauna considered to be threatened in New South Wales as either:

- Endangered (Schedule 1);
- Critically Endangered (Schedule 1A); or
- Vulnerable (Schedule 2).

Section 5A of the EP&A Act specifies that for the purposes of the Act, and in particular the administration of sections 78A, 79B, 79C, 111 and 112 of the Act, in deciding whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats, seven factors must be taken into account along with any assessment guidelines. This assessment is referred to as the '7 part test'.

If a 7 part test concludes that a proposal is likely to significantly affect critical habitat of a threatened species, population or ecological community, or is in critical habitat, as defined by Part 3 of the TSC Act, a species impact statement must be prepared to accompany the development application.

An assessment of the impact of the proposed development on threatened species, populations and ecological communities has been undertaken in accordance with the *Guidelines for Survey for the Assessment of Ecological Impacts 2009* prepared by the Department of Environment and Climate Change (now Office of Environment and Heritage) and is provided in *Volume 2*.

The proposal is likely affect four threatened species:

- Koala - *Phascolarctos cinereus*;
- Squirrel Glider - *Petaurus norfolcensis*;
- Glossy Black Cockatoo - *Calyptorhynchus lathami*; and
- Osprey - *Pandion cristatus*.

A 7 part test for each of these species was undertaken and, provided that short and long term mitigation measures are implemented, the tests conclude that the proposed development is unlikely to have a significant effect on these species.

5.4 State & Regional Planning Instruments and Policies

5.4.1 Relevant State Environmental Planning Policies (SEPPs)

5.4.1.1 State Environmental Planning Policy (Major Projects) 2005

SEPP (Major Projects) identifies certain developments that are major projects under Part 3A of the EP&A Act. These projects are determined by the Minister for Planning and Infrastructure. The Minister has formed a view that the proposal is of a kind that is described in the Schedules to the SEPP and has authorised submission of a Concept Plan for the proposed development.

5.4.1.2 State Environmental Planning Policy (Infrastructure) 2007

SEPP Infrastructure establishes the planning framework for the permissibility and assessment and consultation requirements for specific infrastructure and services across NSW.

Clause 101 Development with frontage to classified road requires the consent authority to not approve development on land that has a frontage to a classified road, in this instance the Pacific Highway, unless it is satisfied that vehicular access is provided by a road other than a classified road and that the ongoing safety, efficiency and operation of the classified road will not be adversely affected by the development.

The approved Glades development to the north of the site is required to achieve access to the Pacific Highway by way of a collector road running southward through the site to the Moonee Interchange that is now being constructed as part of the upgrade of the Pacific Highway as a dual carriageway through Moonee. The approval for the collector road itself was made by the Land and Environment Court in July 2012. The concept plan provides for the collector road along the western boundary of the site and therefore satisfies Clause 101.

Clause 102 Impact of road noise or vibration on non-road development requires residential development on land adjacent to a road corridor with an annual average daily traffic volume of more than 40,000 vehicles. Under the *Development near Rail and Busy Roads – Interim Guidelines 2008* (PS 08-016 – DoPI) and advice from Wilkinson Murray (refer to Section 3.10), lots on the western side of the site that front and are near to the Pacific Highway can be attenuated. The attenuation required is so that LAeq levels in any bedroom do not exceed 35dB(A) between 10pm and 7am and to not exceed 40dB(A) elsewhere in the dwelling at any time. Therefore Clause 102 is satisfied.

Clause 104 Traffic-generating development requires development of specific type and size and type listed in Schedule 3 of the SEPP is likely to generate significant traffic and is to be referred to the Roads and Maritime Services. Schedule 3 Column 2 lists subdivision of land creating 200 or more lots and the opening of a public road. The concept plan proposes the creation of 163 lots and therefore referral to the RMS is not required.

Column 3 of Schedule 3 lists the subdivision of land to create 50 of more lots is to be referred to the RMS if the site connects to a classified road if access is within 90m of connection measured along the alignment of the connecting road. The distance of the site from Moonee Creek Drive that connects to Moonee Beach Road is some 600m. Therefore, referral to the RMS is not required.

5.4.1.3 State Environmental Planning Policy 44 – Koala Habitat Protection and Coffs Harbour City Koala Plan of Management

SEPP 44 encourages the proper conservation and management of areas of vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline.

This policy applies to all local government areas within the known state-wide distribution of the koala, including the Coffs Harbour local government area. However, with the Director of Planning endorsing the *Coffs Harbour Comprehensive Koala Plan of Management* (CKPOM, 1999 and prepared under Part 3 of the SEPP) the plan of Management now applies instead of the SEPP.

Site investigations did not record the presence of koalas on the site.

An assessment of the impact of the proposed development on Koala habitat has been undertaken (refer Section 3.12). The ecological value of some 50 koala habitat trees of the 200 trees in the western and southern areas of the site has been significantly compromised by the presence of and the upgrade to the Pacific Highway now underway. This major barrier prevents the east/west movement of fauna. Therefore, the retention of vegetation in this part of the site (albeit scattered trees with little to no mid storey or ground storey native vegetation) with land zoned for residential development to the north and south of the site, would have limited long term value for koalas.

The focus therefore, is upon long term habitat reconnection and management in accordance with the CKPoM and includes:

- compensatory planting of koala habitat trees in the eastern portion of the site as part of the revegetation and establishment of the north to south wildlife corridor that connects the approved Glades concept plan ecological areas and environmental protected areas to the south through to Moonee village;
- no restricting fencing along the western boundary of the wildlife corridor; and
- street network particularly along the eastern portion of the proposed development area where traffic speeds are no greater than 40kph;

5.4.1.4 State Environmental Planning Policy 55 – Remediation of Land

Clause 7 of SEPP 55 requires a consent authority to consider the likely contamination of land before consenting to an application for development that would involve a change of use of land that may be contaminated. In such a case, the consent authority is to consider the findings of a preliminary investigation of the land concerned carried out in accordance with the *Contaminated Land Planning Guidelines*.

Agricultural activities are listed as an activity that may cause contamination in Table 1 of the *Guidelines.* A preliminary investigation was undertaken by Martens (refer Section 3.5) and they concluded that the site is unlikely to be contaminated and warrant remediation.

5.4.1.5 State Environmental Planning Policy 71 – Coastal Protection

SEPP 71 aims to ensure that development in the NSW Coastal Zone is appropriate and suitably located and that there is a consistent and strategic approach to coastal planning and management. SEPP 71 applies to the site as the site is located within the 'coastal zone' of New South Wales.

Part 2, clause 7(a) of SEPP 71 specifies the matters listed in Clause 8 that should be taken into consideration by a consent authority when it determines a DA to carry out development on land to which the SEPP applies. These matters for consideration are listed in **Table 21** and are considered with respect to the project.

Table 21 SEPP 71 Matters for Consideration under Clause 8

Consideration	Comments
(a) Clause 2 Aims of the SEPP	
(a) To protect and manage the natural, cultural, recreational and economic attributes of the New South Wales coast.	Residential development of the site would enhance the cultural and economic attributes of the Moonee area through the provision of new dwellings and associated increase in population. The eastern portion of the site is proposed to be protected and revegetated in accordance with the environmental zone and to facilitate a wildlife movement corridor.
(b) To protect and improve existing public access to and along coastal foreshores to the extent that this is compatible with the natural attributes of the coastal foreshore.	Residential development of the site will not provide direct access to the Moonee Creek. It is considered inappropriate and undesirable to encourage human activity across the proposed wildlife corridor to the sensitive riparian zone. A public coastal walk will connect with the approved Glades development to the north through the site and southward to Moonee Village in accordance with the Moonee D.C.P.
(c) To ensure that new opportunities for public access to and along coastal foreshores are identified and realised to the extent that this is compatible with the natural attributes of the coastal foreshore.	Refer above.
(d) To protect and preserve Aboriginal cultural heritage, and Aboriginal places, values, customs, beliefs and traditional knowledge.	An Aboriginal Cultural Heritage Assessment (refer Section 3.2) identifies some aboriginal artefacts have been detected on site. The report, including aboriginal consultation, concludes that these artefacts are not significant but will be subject to a management plan that either leaves them in situ or relocates them to an area on site that will not be impacted by the proposal.
(e) To ensure that the visual amenity of the coast is protected.	The expected visual impacts of the proposed residential development will generally restricted to within the site. The development will be partially visible from the Pacific Highway but not visible from Moonee Village or Emerald Beach to the north. Glimpses of the site from Moonee Beach Nature Reserve would be distant and obscured
(f) To protect and preserve beach environments and beach amenity.	Site is approximately 1.25kms west of Moonee beach with the Moonee Beach Nature Reserve intervening. The development will not facilitate access to Moonee Beach and hence the amenity and environment of the beach will not be impacted.

(g) To protect and preserve native coastal vegetation.	Refer Section 3.12. Sensitive coastal vegetation is proposed to be protected along the Moonee Creek riparian area that includes an EEC separated by a wildlife corridor and perimeter road and dwellings facing onto this area. This and the coastal path provide casual surveillance over this area and assist in preventing dumping and other inappropriate activities within the environmental zone. The concept plan will impact on grassland and scattered trees but this loss is minor.
(h) To protect and preserve the marine environment of New South Wales.	Stormwater management measures are proposed to minimise impacts on receiving environments. Runoff will be directed to bio-retention swales where it will pass through vegetation filters prior to being released into natural drainage lines. (refer Section 3.8)
(i) To protect and preserve rock platforms.	No rock platforms are located within the vicinity of the site.
(j) To manage the coastal zone in accordance with the principles of ecologically sustainable development (within the meaning of section 6(2) of the Protection of the Environment Administration Act 1991).	The proposed development seeks to optimise the site's potential whilst protecting environmentally sensitive areas.
(k)To ensure that the type, bulk, scale and size of development is appropriate for the location and protects and improves the natural scenic quality of the surrounding area.	Housing within the development will be of the type, bulk, scale and size that complements the coastal setting of the Moonee area and be in accordance with Moonee D.C.P.
(l)To encourage a strategic approach to coastal management.	Site zoned for residential development in the Coffs Harbour City LEP 2000 and is identified in the Mid North Coast Regional Strategy and Our Living Settlement Strategy for urban development.. This strategic approach is maintained in the Draft Coffs Harbour LEP 2012 (deferred for the site and the Moonee undeveloped urban areas).
(b) Existing public access to and along the coastal foreshore for pedestrians or persons with a disability should be retained and, where possible, public access to and along the coastal foreshore for pedestrians or persons with a disability should be improved.	There is no existing public access to the foreshore for pedestrians or persons with a disability.
(c) Opportunities to provide new public access to and along the coastal foreshore for pedestrians or persons with a disability.	The proposed coastal walking path is likely to be of an acceptable grade to facilitate access by persons with a disability. Actual alignment and grade will be determined in the Construction Certificate.
(d) The suitability of development given its type, location and design and its relationship with the surrounding area.	Council has reconsidered the zoning of the site under the draft Coffs Harbour LEP 2012 and has deferred the site from the draft LEP until the completion of this Part 3A concept plan. The ecological and environmental investigations undertaken for the Concept Plan confirm the site's suitability for residential development (including the zone boundary in the eastern portion of the site) These assessments are included in the technical reports in Volumes 2 and 3 of this EA.
(e) Any detrimental impact that development may have on the amenity of the coastal foreshore, including any significant over-shadowing of the coastal foreshore and any significant loss of views from a public place to the coastal foreshore.	The development of the site for residential purposes is of sufficient distance from Moonee Beach and of a low scale so that it would not affect the amenity of the coastal foreshore.

(f) The scenic qualities of the New South Wales coast, and means to protect and improve these qualities.	Apart from the Pacific Highway, the site is not visible or only partially visible from Moonee Beach one kilometre to the east. The intervening Moonee Beach Nature Reserve has a width and length such that the scenic qualities of the coast are sufficiently protected and will not be significantly impacted on by the proposed development.
(g) Measures to conserve animals (within the meaning of the Threatened Species Conservation Act 1995) and plants (within the meaning of that Act), and their habitats.	Refer Section 3.12. The proposed development is unlikely to have a significant effect on threatened species or their habitats. Proposed mitigation measures
(h) Measures to conserve fish (within the meaning of Part 7A Fisheries Mgmt Act 1994) & marine vegetation (within the meaning of that Part) and their habitats.	The proposed development will not impact on fish and marine vegetation. (Refer Sections 3.8 and 3.12). This includes the proposed stormwater management system and the treatment of water quality.
(i) Existing wildlife corridors and the impact of development on these corridors.	The site itself occurs within the Wedding Belles – Moonee Beach Regional Corridor which links Moonee Beach Nature reserve and Skinners Creek. The northern and eastern revegetated parts of the site will revegetated to re-established the wildlife corridor.
(j) The likely impact of coastal processes and coastal hazards on development and any likely impacts of development on coastal processes and coastal hazards.	The flood study (Section 3.7) has identified likely flood events including Probable Maximum Flood and projected sea level rise. The proposed filling of low hazard flood affected land is required to achieve flood freeboard for lots and dwellings. This will not adversely affect flooding upstream and downstream and will not significantly impact upon groundwater levels on the site. The current and future coastal processes and hazards have been considered in the concept design.
(k) Measures to reduce potential for conflict between land-based and water-based coastal activities.	The proposal would not result in any conflict between land-based and water-based coastal activities as the proposed development is located a sufficient distance from the coastal foreshore.
(l) Measures to protect cultural places, values, customs, beliefs and traditional knowledge of Aboriginals.	A management plan that either leaves Aboriginal artefacts in situ or relocates them to an area on site that will not be impacted by the proposal.
(m) Likely impacts of development on the water quality of coastal waterbodies.	The likely development impacts on the quality of ground and surface water has been assessed and considered to be acceptable (refer Section 3.8
(n) The conservation and preservation of items of heritage, archaeological or historic significance.	A post approval management plan will be prepared for the artefacts detected on site as per Aboriginal community requirements with ongoing consultation with Aboriginal community throughout the development process
(o) Only in cases in which a council prepares a draft local environmental plan that applies to land to which this Policy applies, the means to encourage compact towns and cities.	Not applicable to this proposal.
(p) Only in cases in which a development application in relation to proposed development is determined:	
i. The cumulative impacts of the proposed development on the environment.	Loss of remnant vegetation supplemented by the re-establishing of the wildlife corridor by revegetation with appropriate native species and its management. The long term impacts are likely to be an improved biodiversity corridor superior to that currently on the site.
ii. Measures to ensure that water & energy usage by the proposed development is efficient.	Residential development on the site will comply with BASIX requirements.

Part 3 relating to significant coastal development applies as the proposal involves the construction of buildings or development within 100 metres below mean high water mark. The development is in the form of the perimeter road, two detention basins and a raised access road to Lot 2 DP 1097743.

Part 4 relates to development control on land to which the SEPP applies and contains the following provisions:

iii. ***flexible zone provisions*** *of an environmental planning instrument are not to apply to development within the coastal zone*. The proposed development is not relying on flexible zone provisions and is permissible with consent within the existing 2(a) zone;

iv. ***public access*** *is not to be impeded or diminished to or along the coastal foreshore.* The proposed development will not provide physical public access to Moonee Creek but the wildlife corridor is proposed to be dedicated to Council in accordance with Moonee DCP;

v. ***effluent*** *is not to be disposed of by a non-reticulated system if it is likely to have a negative effect on the water quality of the sea or any nearby beach, or an estuary, a coastal lake, a coastal creek or other similar body of water, or a rock platform.* Effluent is to be disposed by way of a reticulated system; and

vi. ***untreated stormwater*** *is not to be discharged into the sea or other coastal water body or onto a rock platform.* Stormwater will be treated in the 2 bio remediation basins proposed before slowly discharging into Moonee Creek. **Table 28** indicates that the post development quality of stormwater discharge will be significantly higher than stormwater discharge for existing conditions.

Part 5 relates to master plans. Clause 18 specifies that a consent authority must not grant consent for certain forms of subdivision within the coastal zone unless the Minister for Planning has adopted a master plan for the land.

Planning Circular PS05_008 states that the transitional provisions in the Act construe any requirement for a master plan in an environmental planning instrument in force at the Act's commencement to be a requirement for a DCP under section 74D of the Act. The need for a D.C.P. can be satisfied by the approval of a concept plan under the now repealed Section 75M(4).

5.4.2 New South Wales Coastal Policy 1997

The site is located within the Coastal Zone and the NSW Coastal Policy applies. The Coastal Policy establishes the following actions apply:

- *Development proposals will have to conform with specified design and planning standards to control height, setback and scale to ensure public access and to ensure that beaches and foreshore open spaces are not overshadowed;*
- *The use of good design principles… to ensure more compact human scale towns are developed with their own character within the constraints of existing infrastructure;*
- *Identify and consider significant views and vistas within and from towns, including street patterns and layout and items of heritage significance;*
- *To promote compact and contained planned urban development in order to avoid ribbon development, unrelated cluster development and continuous urban areas on the coast;*
- *To provide for choice in housing and lifestyles; and*
- *To increase public access to foreshores when feasible and environmentally sustainable options are available.*

These Actions have been considered during the design of the proposed subdivision. The proposed development does not impact on the nearby coastal foreshore area, the layout takes into account the natural constraints of the site such as vegetation and bushfire hazard and the street and lot layout is consistent with the street and lot pattern of coastal towns.

5.4.3 Coastal Design Guidelines for NSW

The Coastal Design Guidelines for NSW was adopted by the NSW government in 2003 to ensure that future developments are sensitive to the unique natural and urban settings of coastal places in NSW.

The Guidelines establish five principles for coastal settlement structure, namely:

- defining the footprint and boundary of the settlement;
- connecting open space;
- protecting natural edges;
- reinforcing the street pattern; and
- appropriate buildings in a coastal context.

Consistency of the concept plan with the desired future character for new coastal settlements described on pages 32 and 33 of the Guidelines is provided in **Table 22**.

Table 22 Coastal Design Guidelines for NSW

Desired Future Character	Comments
1. Relationship to the environment *a. New development avoids areas of ecological value and respects setbacks between natural areas.*	**1. Relationship to the environment** a. concept plan respects the ecological limits of the site and generally avoids ecologically sensitive areas. The proposed lots are setback from the proposed wildlife corridor and public reserve by a perimeter road. The corridor will be revegetated to re-establish a vegetation link from the south to the corridors to the north as approved in the Glades Estate.
b. Wildlife corridors, existing mature trees, rivers, streams, lakes and natural features are incorporated into green space networks, reserve areas, riverine and foreshore corridors.	b. Trees within the development foot print cannot be retained as the requirement to fill the lower levels of the site will source fill from the upper levels of the site. It is impractical to retain these trees with such works as well that these trees will die from changes to the root and trunk systems of each tree through excavation and filling around these trees. A wildlife corridor has been incorporated into the concept plan to protect sensitive riparian corridor of Moonee Creek, provide a buffer to the creek itself and to connect to the wildlife corridor in the approved Glades development to the north and to the corridor to the south of the site identified in the Moonee Beach DCP.
c. Aboriginal and European places, relics and items are protected.	c. The artefacts found on the site, whilst likely transported to the site in the road base that forms the access to Lot 2 DP 1097743, - will be moved and relocated to a more appropriate area within the site in accordance with a recommend management plan.
d. Foreshore and estuarine vegetation is protected.	d. The riparian habitat and top of bank of Moonee Creek and subsequent ecological buffer area have been identified by the ecologist and mapped by the surveyor. This has then supplemented with more land to the west to form a north/south wildlife riparian corridor. This corridor – which requires supplementary planting – provides adequate protection to the estuarine vegetation of Moonee Creek.
e. The potential disturbance to acid sulphate soils is managed.	e. The lower elevated parts of the site are proposed to be filled to 1 to 1.5m. Likelihood of disturbing acid sulfate soils (particularly for construction of gravity and rising sewer mains) is unlikely to expose such soils at 2.5 to 3m below surface.
f. Original native landscape is maintained and reinstated.	f. The vegetation on site has been significantly modified such that 200 trees will be impacted. These trees, scattered across the site, are predominantly on the southern and western edges. Develop-ment requirements do not allow the retention of trees and their long term survival. However, the corridor on the eastern edge of the site is proposed to be reinstated through revegetation.
g. Waterways and coastal lakes are protected through water sensitive urban design and total cycle water management.	g. A buffer to Moonee Creek from the eastern lot boundary is proposed. The buffer ranges from 60 to 82m wide to the eastern side of perimeter road and protects the riparian zone. Two bio retention basins are proposed to be located adjacent to the perimeter road to retain and treat stormwater from the entire site.

	Martens have advised that Onsite Stormwater Detention for each proposed lot – in addition to the BASIX requirement for 3000 litre rainwater tanks for each dwelling - is not required.
h. Degraded natural areas are rehabilitated.	h. Approximately 1.01ha of cleared and underscrubbed land along the eastern boundary is proposed to be rehabilitated through replanting and managed for conservation purposes. 9920m2 of residential zoned land that partly contains an EEC will be revegetated. The total land to be revegetated and managed to restore the wildlife corridor and be dedicated to council totals 2ha.
i. Vegetation is maintained whilst managing asset protection areas for bushfire protection.	i. The placement of a perimeter road along the eastern boundary acts as a buffer to the proposed rehabilitation area and Moonee Creek but also as an APZ for bushfire.
j. Land swaps, community stewardship programs, transferable development rights and voluntary conservation agreements provide opportunities to sensitively locate development and protect ecosystems and views	j. The conservation area is proposed to be dedicated to council consistent with the requirements of the Moonee D.C.P.
k. Native vegetation is preferred on public and private land.	k. Cut and fill to achieve flood free development levels for the lower parts of the site does not provide opportunities for vegetation retention. However, 9920m2 of 2A zoned land is proposed to be dedicated to council in addition to 10120m2 of 7A zoned land.
l. Land is revegetated with species native to the local area.	l. The revegetation is proposed to be revegetated with species native to the Moonee Beach area
2. Visual sensitivity *a. Views to and along the foreshore align with streets.*	**2 Visual Sensitivity** a. Streets 2 and 3 allow views eastward down and over Moonee Creek. Streets 4 and 5 allow lots and dwellings to step down the slope in a consistent and orderly manner. The perimeter road provides; the public with the amenity of Moonee Creek; a strong edge to the wildlife corridor; and bushfire protection to the dwellings.
b. Views and vistas of the foreshore and natural features in or surrounding the site are aligned with public streets.	b. Streets 2 and 3 align with the low hill in the western portion that is the only elevated natural feature of the site.
3. Edges to the water and natural areas ***a. In new coastal settlements the centre and surrounding residential areas are separated from the foreshore by a parkland or roadway or nature reserve.***	**3 Edges** a. the Moonee Creek riparian zone is separated from the development by the proposed conservation area and perimeter road.
b. Setbacks from the coastal edge and other surrounding natural areas, such as reserves and lakes, respect environmental constraints and protect properties from coastal hazards.	b. The layout respects the constraints (refer **Figure 10**), particularly flooding and ecology. The proposed filling of the lower portion of the site will protect properties from flooding and projected sea level rises as well as integrate with the levels of the approved Glades Estate to the north.
c. Public access along the foreshore is generally located on the boundary between public and private land and along streets.	c. No public access is proposed into the riparian zone for safety and ecological reasons. However, the perimeter road and the coastal walk as required by DCP are generally located along the public and private land boundary and along the perimeter road.
d. Pathways through foreshore vegetation are restricted to ensure the ecological integrity is not degraded.	d. No pathways to Moonee Creek.
e. Foreshore vegetation is not removed to create views.	e. No vegetation is proposed to be removed in the riparian zone.
f. Land is not filled to promote views.	f. The filling of the lower portions of the site is to achieve road and dwelling floor levels above 1:100 flood events including projected sea level rise only and to integrate with the levels of the approved

	Glades Estate and the Collector.
4. Streets *a. New coastal settlements have a street pattern similar to coastal hamlets or coastal villages. They present an ideal opportunity to provide a street pattern responding to the landform, views and permitting a high level of visual, pedestrian, cycle and vehicular permeability.*	**4 Streets** a. Street layout responds to the landform and allows pedestrians to gain views to areas outside of the site – opposite to the effect of curvilinear streets in conventional development. Relatively short street blocks and intersections create desire lines to encourage walking and cycling and control traffic speed to acceptable levels within the street hierarchy.
b. The street pattern also: *- creates public neighbourhood centres and a main street* *- avoids privatised enclaves by providing direct access to the foreshore* *- provides an interconnected and permeable street pattern* *- responds to pedestrian and cycle distances and connects to a local and regional network.*	b. - N/A - Wildlife corridor will be publicly owned and visual access to it will be via public streets and coastal walk. - Street network connects from that approved in the Glades development through the site and upto the collector road. - Streets are cycle and pedestrian friendly and connect to the designated cycle path on the collector road to Moonee Beach village only 1000m away.
5. Buildings *a. The pattern of land development within the settlement is designed to provide amenity.*	**5. Buildings** a. Street layout and dimensions, whilst satisfying various engineering standards, have been designed to facilitate walking and amenity.
b. The settlement has a compact footprint to reduce land take.	b. The development footprint and lot yield are an efficient use of land based upon environmental constraints and engineering and planning legislation requirements and market.
c. Blocks and streets are walkable and safe.	c. Street blocks are mostly 70 x 170m in length with inter sections for choice in desire lines and encourage walking and cycling. Street dimensions, intersections and the curve radius of the perimeter road are to slow traffic down and subsequently create safe streets for pedestrians of all ages.
d. The neighbourhood centre has commercial, retail, education and civic buildings and some shop-top housing.	d. N/A – residential development only.
e. Buildings address the street.	e. Lots have been oriented to the higher order streets and the perimeter road so that dwellings address the street.
f. Tourist developments integrate into the settlement's street pattern and define the edge between public and private land.	f. N/A tourist development not proposed.
g. Lot sizes and configurations are designed to support a range of housing types that integrate into the street pattern and the location of functions throughout the settlement.	g. Diversity of lot sizes and housing type should increase relative to the proximity of a centre and its physical, social and economic size for transport and services. Moonee DCP states target densities of 75 and 40 lots for Lot 1 and Lot 6 respectively at 10 dwellings per ha. Concept plan achieves an average of 12.8 dwellings per ha.
h. Residential areas consist of coastal cottages, detached and semi-detached houses, town houses and terraces. *i. A diversity of lot and housing types are developed to accommodate various household sizes and types.*	h. Concept plan proposes lots from 650 to 795m2 to accommodate detached dwellings. This is considered appropriate for the site given its location from the Moonee village centre. i. Proposed lot type and size is appropriate for the site and is consistent with the Moonee D.C.P.
j. Buildings are designed to suit the climate and use environmentally sustainable building design and materials.	j. N/A k. N/A

k. Housing types optimise visual and acoustic privacy, integrate passive solar design principles, minimise water use, and seek to achieve architectural distinction and excellence. ***6. Height*** *a. Residential buildings are one to two storeys.* *b. The neighbourhood centre or the main street has buildings up to two storeys.* *c. Where visual prominence is not apparent three storey buildings may be appropriate.* *d. Heights are subject to place-specific urban design studies.*	6 **A.** N/A – dwellings subject to separate applications and in accordance with state and local planning controls for housing applying to the site. **B.** N/A **C.** N/A **D.** N/A

5.4.4 North Coast Regional Environmental Plan 1988 (now deemed State Environmental Planning Policy (SEPP))

One of the aims of the North Coast REP is to "develop regional policies for the control of development in the north coast region that protect the natural environment, encourage an efficient and attractive built environment and guide development into a productive yet environmentally sound future". However, the SEPP specifically refers to Council as the consent authority for development control purposes.

As the Minister for Planning and Infrastructure is the approval authority for concept plans under Part 3A of the Act, the provisions of the REP do not apply.

5.4.5 Mid North Coast Regional Strategy

The *Mid North Coast Regional Strategy* was adopted by the NSW Government in 2009 to guide local planning in the region including the Coffs Harbour LGA.

The main purpose of the Strategy is to support sustainable growth by ensuring that adequate land is available and appropriately located to accommodate the projected housing and employment needs of the Region's population over the next 25 years. For the Coffs Harbour sub region, the Strategy expects growth of an additional 19,200 dwellings for this period. The Strategy identifies the site as part of the Moonee Beach urban "growth area".

The Strategy makes reference to Settlement Planning Guidelines (2007) and to the North Coast Urban Design Guidelines (2009) as resource documents to assist councils to achieve the planning outcomes of the Strategy and advance quality urban design in the region respectively.

The concept plan has been prepared consistent with the principles and intended outcomes of these guidelines and therefore, will contribute to achieving the projection and desired outcomes of the Regional Strategy.

5.5 Local Planning Instruments

5.5.1 Coffs Harbour Local Environmental Plan 2000

As indicated in **Figure 5**, the site is part zoned 2(a) Residential Low Density, part 7(b) Scenic Buffer Zone and part 7(a) Habitat and Catchment Zone.

On 13th December 2012, Council adopted the draft Coffs Harbour LEP 2012 as the principal LEP for the LGA based on the NSW Standard Instrument LEP. In adopting the draft LEP, and as a consequence of

Moonee Parklands Trust objecting to the proposed zone boundaries of the draft LEP, Council resolved to defer that part of the draft LEP applying to the site and other sites in the Moonee Beach area.

Council's deferral is to accommodate the detailed investigations of the concept plan process and assessment and approval by the Minister for Planning and Infrastructure of the concept plan.

Whilst the site is a deferred matter under the draft Coffs Harbour LEP 2012, the provisions of Coffs Harbour LEP 2000 apply.

5.5.1.1 Clause 9 Permissibility

Clause 9 of the LEP specifies the aims and permitted uses in each zone as follows:

2(a) Residential Low Density

Aim:
To provide for the low density housing needs of the population.

1 The objectives of this zone is to

- *to enable housing development and other development that is compatible with a low density residential environment.*
- *to provide for development that is within the environmental capacity of a low density residential environment and can be adequately serviced.*

2 Without development consent

Development for the purpose of:
agriculture; bed and breakfast establishments; environmental protection works; home industries; home occupations; special care homes.

3 Only with development consent

Development for the purpose of:
aquaculture; attached dual occupancies; boarding houses; camp or caravan sites; child care centres; communications facilities; community facilities; dams; demolition; detached dual occupancies; ***dwelling-houses****; educational establishments; forestry; general stores; group homes; multi-unit housing; places of worship; recreation areas; recreation facilities;* ***roads****; seniors housing;* ***utility installations****; veterinary clinics.*

Subdivision of land.

4 Prohibited
Any development not included in item 2 or 3.

Response - the concept plan proposes the **subdivision of land**, and the provision of **roads** and **utility installations** which are permissible with consent under the LEP. The concept plan purposes creating a low density residential environment that can be serviced by infrastructure. The concept plan satisfies the aim and objectives of the zone.

7A Environmental Protection - Habitat and Catchment Zone

Aim: To protect and enhance sensitive natural habitat and waterway catchments.

1 Objectives of zone

- *to protect habitat values and water quality and enable development which does not adversely impact upon these.*
- *to enable development that is within the environmental capacity of the land and can be adequately serviced.*
- *to enable protection of archaeological sites of Aboriginal significance.*

2 Without development consent
Development for the purpose of:
agriculture (which does not involve the clearing of bushland or construction of buildings); environmental protection works; home industries; home occupations.

3 Only with development consent
Development for the purpose of:
agriculture (which involves the clearing of bushland or the construction of buildings); aquaculture; attached dual occupancies; bed and breakfast establishments; dams; demolition; dwelling-houses; eco-tourism facilities; environmental facilities; forestry; recreation areas; ***roads****;* ***utility installations****.*

Subdivision of land.

4 Prohibited
Development that is not included in item 2 or 3.

Response: no residential lots or dwellings are proposed within the 7(a) zone. Based upon technical investigations and a balanced consideration of flooding and ecology issues, the development footprint of the concept plan is away from the 7(a) zone boundary. This widens the wildlife corridor advocated by Moonee DCP and widens the buffer to Moonee Creek and the Solitary Islands Marine Park.

The perimeter road is entirely within the 2(a) zone whilst two detention basins are proposed to be located within the 7(a) zone.

The **subdivision** of the 7(a) portion of the site would be bordered by the eastern boundary of the perimeter road to enable its dedication to council in accordance with the Moonee DCP. It is also proposed to create a second lot within the boundary of the site to secure future access to an existing dwelling on Lot 2 DP 1097743 across Lot 3 DP 1097743 to perimeter Road 3. These lots will be consolidated to ultimately provide road access to Lot 2 (which currently relies on access via a Right of Carriageway over Lot 1.

Prior to dedication to council, the lot proposed to contain the 7(a) zoned land will be revegetated to re-establish a wildlife corridor in accordance with the Moonee DCP.

The concept plan is consistent with the aim and objectives of the 7(a) zone.

7B Environmental Protection - Scenic Buffer Zone

Aim: To protect the scenic qualities of the Pacific Highway.

1 Objectives of zone

- *to enable development that does not adversely impact on the scenic qualities of the Pacific Highway.*
- *to enable development that is within the environmental capacity of the land and can be adequately serviced.*

2 Without development consent
Development for the purpose of:
agriculture (which does not involve the clearing of bushland or the construction of buildings); environmental protection works.

3 Only with development consent
Development for the purpose of:
agriculture (which involves the clearing of bushland or the construction of buildings); aquaculture; dams; demolition; environmental facilities; forestry; recreation areas; recreation facilities; roads; utility installations. Subdivision of land.

4 Prohibited
Development that is not included in item 2 or 3.

Response: no development or lots are proposed in this zone – an 18 metre strip along the western boundary of the lot adjoining the Pacific Highway. This part of the site is currently used for infrastructure

services including overhead powerlines and underground sewer lines and water mains within associated easements. Connection to these services by the proposed residential lots and streets will be required.

The 20m wide north-south collector road approved by the Land and Environment court in July 2012 is located on the eastern side of the 7(b) zone within the 2(a) zone.

It is noted that construction of the Pacific Highway upgrade has removed significant amounts of vegetation that may have previously screened the site from the highway. While now deferred, the zoning that was proposed under draft LEP 2012 removed the environmental zone buffer to the highway and proposed to rezone this portion of the site to a residential zone.

5.5.1.2 Clause 12 Koala habitat

Objective of provision
To provide for the protection of koalas and their habitat.
Consent shall not be granted to development on land to which this Plan applies unless the development is in accordance with a koala plan of management.

Response: Refer to Section 3.12

5.5.1.3 Clause 13 Landform modification

Objective of provision

To control soil erosion, sedimentation, tree loss and drainage impacts associated with landform modification.

(1) A person shall not, without development consent, carry out a work or any other development on land to which this Plan applies for any purpose where the work or other development has the effect, in the opinion of the consent authority, of significantly adversely affecting the natural environment, through either filling or excavation.

Response: The concept plan proposes to fill parts of the site that are flood liable in a 1 in 100 year flood event allowing for sea level rise. The filling is to mitigate the threat of very occasional, minor flooding where the land is otherwise unconstrained and would enable a more efficient urban form.

To avoid the need to transport fill to the site (and a corresponding reduction in financial and energy costs) and to benefit from the preparation of the upper levels of the site for development, the bulk earth works plan (refer **Figure 18**) proposes to shift earth from the upper levels down on the lower levels of the site. The corresponding changes in finished site levels:

- Will prevent the retention of trees within the development footprint as either tree root zones will be compromised by exposure and soil drainage changes or the trunks will be subject to fungal attack and disease;
- Have considered impacts along the northern boundary to ensure that stormwater onto and potential flooding of the adjoining lot to the north is not exacerbated whilst accommodating the approved residential subdivision on this lot;
- Will not have adverse impacts upon flooding upstream of downstream of the site. This is based upon flooding data and advice from Martens (refer Section 3.7) that has also lead to reducing the overall development footprint in the north eastern portion of the site;
- Will be achieved whilst controlling soil erosion and sedimentation during construction through the implementation of a soil and water environmental management plan.

The proposed modification to the landform on the site will not adversely affect the natural environment.

5.5.1.4 Clause 14 Services

Objective of provision

To ensure that all development has adequate water and sewage services.

Consent shall not be granted to the carrying out of any development on land to which this Plan applies unless:

(a) a water supply and facilities for the removal or disposal of sewage and drainage are available to that land, or

(b) arrangements satisfactory to the consent authority have been made for the provision of that supply and those facilities, or

(c) the consent authority has formed the opinion the development proposed does not require that supply or those facilities.

Response: Water and sewage infrastructure easements are located along the western boundary within the site (refer **Figure 6** where water, sewer, electrical and telecommunication easements are identified within the western boundary).

A sewer pump station is proposed to be located adjacent to the existing electrical substation on the site just north of the proposed lot that will provide access to Lot 2 DP 1097743. The pump station will pump sewage collected by gravity feed from the proposed lots up Road 2 to the sewage line along western boundary to discharge to existing pump station at Moonee Beach Road some 815 metres to the south. The presence of sewer and water infrastructure easements and the subdivision services plan (refer **Attachment K**) confirms that this infrastructure is available and satisfies the clause objective.

5.5.1.5 Clause 18 Subdivision and erection of dwellings within rural and environmental protection zones

Objective of provision

To allow the subdivision of land in accordance with the land's environmental capacity and zone objectives.

(1) This clause applies to land in Zone 1A, 1B, 1F, 7A or 7C.

(2) Consent shall not be granted to the subdivision of land within a zone specified in the first column of the table to this clause which will enable creation of an allotment smaller than the area specified for that zone in the second column of the table.

(4) Regardless of subclause (2):
(b) if land in Zone 7A adjoins land in Zone 1B, 2A, 2B, 2C, 2D or 2E, consent may be granted to a subdivision of the composite parcel provided:

(i) each resultant allotment contains an adequate (in the opinion of the consent authority) building envelope outside the land in Zone 7A, and

(ii) the consent authority considers that the subdivision is desirable for achieving long term management of the land within Zone 7A, and

(iii) if the composite parcel contains land in Zone 1B and 7A, each resultant allotment has an area of at least the greater of the following:

(c) if land in Zone 7A adjoins land in Zone 2A, 2B, 2C, 2D or 2E, consent may be granted to a subdivision of the composite parcel provided:

(i) each resultant allotment contains an adequate (in the opinion of the consent authority) building envelope outside the land in Zone 7A, and

(ii) the consent authority considers that the subdivision is desirable for achieving long term management of the land within Zone 7A.

(5) Consent shall not be granted to a subdivision pursuant to subclause (4) (a) where additional riparian access rights to streams, creeks, rivers and other waterways may be created.

Response: The minimum lot size 7(a) zoned land is 40ha. However, the conservation reserve is proposed on both 2(a) and 7(a) zoned land that is proposed to be dedicated to Council in accordance with the Moonee DCP. No dwelling entitlement is sought for the proposed lot. Therefore consent may be granted to the subdivision of the proposed conservation area as it is necessary for achieving the long term management of this land.

The proposed Lot 103 is to ensure; legal access to Lot 2 1097743 (via right of way over Lot 3 DP 1097743 – a public reserve); service authority access to the proposed sewer pump station and a public Right of Way to allow the implementation of the coastal walk as per the Moonee DCP.

5.5.1.6 Clause 21 Heritage

Objective of provision
To conserve the environmental heritage of the area to provide continuity with the past.

Archaeological areas

(6) Where the consent authority receives an application for consent to carry out development on land which is identified by the Council as an archaeological site or potential archaeological site, consent must not be granted until the consent authority has considered:

(a) a conservation plan which includes an assessment of how the proposed development would affect the conservation of the item, and

(b) written evidence that the applicant has complied with the provisions of Division 9 of Part 6 of the Heritage Act 1977 in relation to any proposed excavation arrangements on the site.

(7) A person shall not carry out development on land within an archaeological site or potential archaeological site, shown on the map, unless an archaeological survey or study has been carried out after the person has consulted the Council and the Department of Environment and Climate Change about the content of the survey or study.

Response: The map *Archaeological sites of Aboriginal significance* contained in the Coffs Harbour LEP 2000 (council web version) does not identify that the site has aboriginal significance.

5.5.1.7 Clause 22 Waterways

Objective of provision

To protect the amenity of waterways and the Solitary Islands Marine Park and provide protection from coastal hazards.

Land adjoining the Solitary Islands Marine Park

(4) Consent must not be granted to the subdivision of, or the erection of a building or the carrying out of a work on, land adjoining the Solitary Islands Marine Park unless:

(a) the consent authority has taken into account the following objectives of the Marine Parks Act 1997:

(i) to conserve marine biological diversity and marine habitats by declaring and providing for the management of a comprehensive system of marine parks,

(ii) to maintain ecological processes in marine parks,

(iii) where consistent with the preceding objectives:

• to provide for ecologically sustainable use of fish (including commercial and recreational fishing) and marine vegetation in marine parks, and

• to provide opportunities for public appreciation, understanding and enjoyment of marine parks, and

(b) where the use of the land after subdivision, erection of the building or carrying out of the work is likely to, in the opinion of the consent authority, have an effect on the plants or animals within the Marine Park and their habitat, it has consulted with the Solitary Islands Marine Park Authority.

(5) The consent authority has consulted in accordance with this clause if it has given that Authority details of the development proposal and taken into account any submission made by that Authority about the proposed development within 28 days of providing the details to it.

Response: refer Section 5.6.2

5.5.1.8 Clause 23 Environmental hazards

Objective of provision

To ensure development of land subject to environmental hazards is conducted in a manner which does not adversely affect the environment.

Potential acid sulfate soils

(1) A person must not, without development consent, carry out works on land to which this Plan applies shown as being Class 1, 2, 3, 4 or 5 land on the map marked "Potential Acid Sulfate Soils", being the works specified for the class of land in the following table, except as otherwise provided in this clause:

Acid Sulfate Soils Table

Class of land	***Works to which this clause applies***
1	*Any works*
2	*Works below the ground surface* *Works by which the watertable is likely to be lowered*
3	*Works beyond 1 metre below the natural ground surface* *Works by which the watertable is likely to be lowered beyond 1 metre below natural ground surface*
4	*Works beyond 2 metres below the natural ground surface* *Works by which the watertable is likely to be lowered beyond 2 metres below natural ground surface*
5	*Works within 500 metres of adjacent Class 1, 2, 3 or 4 land which are likely to lower the watertable below 1 metre AHD on adjacent Class 1, 2, 3 or 4 land*

*(2) For the purposes of subclause (1), **works** includes:*
(a) any disturbance of more than one tonne of soils (such as occurs in carrying out agriculture, the construction or maintenance of drains, extractive industries dredging, the construction of artificial water bodies (including canals, dams, and detention basins) or foundations, or flood mitigation works), or
(b) any other works that are likely to lower the watertable.

(3) Subclause (1) does not require consent for the carrying out of those works if:
(a) a copy of a preliminary assessment of the proposed works, undertaken in accordance with the Acid Sulfate Soil Manual, has been given to the Council, and
(b) the Council has provided written advice to the person proposing to carry out the works confirming that results of the preliminary assessment indicate the proposed works need not be carried out pursuant to an acid sulfate soils management plan prepared in accordance with the Acid Sulfate Soil Manual.

(4) The consent authority must not grant a consent required by subclause (1) unless it has considered:
(a) the adequacy of an acid sulfate soils management plan prepared for the proposed development in accordance with the Acid Sulfate Soil Manual, and
(b) the likelihood of the proposed development resulting in the discharge of acid water, and
(c) (Repealed)

(5) Subclause (1) requires consent for development proposed by the Council, another council, a county council or a drainage union despite:
(a) clause 7, and
(b) clause 10 of State Environmental Planning Policy No 4—Development Without Consent.

Response Refer Section 3.4.2. A draft Acid Sulfate Soils Management Plan is provided in **Attachment D.**

5.5.1.9 Clause 23A Development on flood prone land

(1) The objectives of this clause are:

(a) to maintain the existing flood regime and flow conveyance capacity, and

(b) to enable safe occupation of flood prone land, and

(c) to avoid significant adverse impacts on flood behaviour, and

(d) to avoid significant adverse effects on the floodplain environment that would cause avoidable erosion, saltation, destruction of riparian vegetation or a reduction in the stability of the river bank or watercourse, and

(e) to limit uses to those compatible with flow conveyance function and flood hazard.

(4) Consent required by subclause (3) must not be granted unless the consent authority is satisfied that the development:

(a) will not adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties, and

(b) will not significantly alter flow distributions and velocities to the detriment of other properties or the environment of the floodplain, and

(c) will enable safe occupation of the flood prone land,

(d) will not significantly detrimentally affect the floodplain environment or cause avoidable erosion, saltation, destruction of riparian vegetation or a reduction in the stability of the river bank or watercourse, and

(e) will not be likely to result in unsustainable social and economic costs to the flood affected community or general community, as a consequence of flooding, and

(f) is compatible with the flow conveyance function of the floodway, and

(g) is compatible with the flood hazard within the floodway.

Response: Refer to Section 3.7 Flood Assessment prepared by Martens and Associates. The concept plan will not:

- adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties;
- significantly alter flow distributions and velocities to the detriment of other properties or the environment of the floodplain;
- significantly detrimentally affect the floodplain environment or cause avoidable erosion, saltation, destruction of riparian vegetation or a reduction in the stability of the river bank or watercourse;
- be likely to result in unsustainable social and economic costs to the flood affected community or general community, as a consequence of flooding, and
- is compatible with the flow conveyance function of the floodway,
- will enable safe occupation of the flood prone land; and
- is compatible with the flood hazard within the floodway.

5.5.1.10 Clause 25 Public infrastructure in urban release areas

*(4) **Designated State public infrastructure***
Development consent must not be granted for the subdivision of land in an urban release area if the subdivision would create a lot smaller than the minimum lot size permitted on the land immediately before the land became, or became part of, an urban release area, unless the Director-General has certified in writing to the consent authority that satisfactory arrangements have been made to contribute to the provision of designated State public infrastructure in relation to that lot.

Response: Not applicable as the site has not been identified as an urban release area in the Coffs Harbour LEP 2000 or in the Draft Coffs Harbour LEP 2012.

(9) ***Development control plan***
Development consent must not be granted for development on land in an urban release area unless a development control plan that provides for the matters specified in subclause (10) has been prepared for the land.

Response: Planning Circular PS05_008 states that the transitional provisions in the Act construe any requirement for a master plan in an environmental planning instrument in force at the Act's commencement to be a requirement for a DCP4D of the Act. The need for a DCP can be satisfied by the approval of a concept plan under the now repealed Section 75M(4).

5.6 Relevant Development Control Plans, Council Guidelines and Policies

5.6.1 Development Control Plan

The proposed development complies with the relevant planning controls as follows:

Table 23 Moonee DCP 2004

Planning Controls	Concept Plan
Density	
Target density for North Moonee area is 10 dwellings per hectare and the minimum dwelling yield required for Lot 1 is 75 lots and Lot 6 is 40 lots.	161 residential lots – 101 lots for Lot 1 and 60 lots for Lot 6 at a density of approximately 10.3 dwellings per hectare
Timing of development	
No development is to occur until reticulated water & sewerage services & road access are available to land	Site will be serviced by reticulated water and sewerage & connected to approved collector road.
Water Quality	
Development involving earthworks or vegetation removal shall be accompanied by a Sediment and Erosion Control Management Plan	Refer Section 3.4
Water quality – Moonee Creek requires a 100m buffer as measured from the mean high water mark to protect water quality	A buffer 64-85 m from MHWM achieved. Treatment of stormwater in 2 bioremediation basins will significantly improve quality of stormwater currently entering the creek from site. Refer Section 4.2.4
Buffer areas are to be rehabilitated and revegetated using endemic species and dedicated as public open space	Wildlife corridor to be revegetated and dedicated to Council with a vegetation management plan detailing works required as a condition of approval.
Subdivision DAs to be accompanied by water quality modellings to assess the impact of development on water quality compared to water quality targets in Council's Urban Stormwater Management Plan	Water quality modelling provided in Section 3.8
DA's for low lying areas to be accompanied by groundwater monitoring over 12 months and an assessment of the impacts of the proposed development concerning placement of fill, drainage and stormwater facilities on groundwater quality and levels and impacts on the estuary	Groundwater monitoring boreholes allowed monitoring – refer Section 3.8
Energy efficient design	
Minimum of 75% of lots for single dwellings shall be orientated so that long axis of the lot is within the range of the solar lot orientation diagram.	Avoidance of curvilinear streets and cul de sacs mean that all proposed lots sit within the 20-30° of the North/ south and East/west solar lot orientation.
Floodplain management	
All lots shall generally be contained on land above the 1% flood level	Flood planning level is proposed at 3.97 mAHD including freeboard of 0.5 m. Refer Section 3.7
Where development involves landform modification below 1%, a flooding analysis is to be submitted with the DA	Refer Section 3.7
No filling will be permitted within the High Flood Risk Precinct	No filling proposed in High flood risk precinct.
Minor filling maybe permitted within the 1% flood extent subject to an engineer report certifying the development	Refer Section 3.7 - development will not adversely impact on flood behaviour and proposed lots

will not result in increased flood affectation elsewhere and results in a better planning solution. Minor filling being regarded as filling resulting in the 1% flood line having a more regular shape and/or to facilitate a more practical and/ or efficient development	susceptible to flooding can be made suitable for residential development with minor filling to raise lots above the 1% flood level;
No adverse change to the flood behaviour permitted on properties upstream or downstream of the site including level and velocity of the full range of flood events.	Section 3.7 concludes that filling of the site will not adversely affect flood behaviour upstream or downstream of site in the full range of flood events.
Perimeter roads should be above the 1% flood level	Yes.
Road and subdivision design shall consider flood evacuation issues for pedestrians and vehicles.	Regular east west streets allow direct evacuation to higher ground to the western half of the site.
Roads across waterways are to be to council standards	N/A
Dwelling floor levels should be 500mm above 1%AEP.	FPL proposed at 3.97 including 500mm freeboard.
Flood liable land unable to be developed to be dedicated to Council	2 ha of land proposed to be dedicated to Council.
Natural and habitat areas	
Many natural and habitat areas will be protected through the provision of creek buffers and excluding development from flood liable land.	Buffer to Moonee Creek plus unnamed creek in NE corner of site provided.
Land within 100m of any Osprey nest shall be dedicated to council as development occurs	2ha of land including the former osprey nest tree – since fallen down – will be dedicated to council.
DAs to have regard for Council's Vegetation Strategy	Noted.
Any development or works on identified Wallum Foglet habitat (Map 5) require assessment under TSC Act with actual habitat areas to be dedicated to council	Wallum froglet or habitat not found on site. Refer Section 3.9
Perimeter roads shall be provided that separate residential development from natural and protected areas	Road 6 and 12 are perimeter roads.
Development shall have regard to the Koala Habitat Information Sheet	Refer Section 3.9
For all lands to be dedicated to Council • *A rehabilitation principles plan to be submitted with DA incorporating any bushfire management measures* • *Rehabilitation plan of works for each stage is to be submitted and approved prior to construction certificate* • *Works are to be completed prior to release of the plan* • *Works may be staged but must be commensurate with staging of subdivision*	It is recommended that a Vegetation Management Plan be conditioned in the approval to be prepared and submitted by proponent prior to CC
Archaeology	
DA's involving landform modification shall be accompanied by an archaeological report.	Refer Section 3.2
All consents involving earthworks shall be subject to standard conditions requiring action to be taken if any artefacts are unearthed.	Noted.
Bushfire Hazard	
All DAs must be accompanied by a bushfire assessment in accordance with council's Bushfire Information sheet.	Refer Section 3.1
All DAs within 300m of Pacific Highway will be required to be accompanied by an acoustic report	Refer Section 3.10
Road Design and Access Control	
Development shall incorporate the collector roads shown in Map 2	Concept plan integrates with Court approved collector road preliminary engineering design.
Land required for a local road shall be dedicated to council	All local roads are proposed to be dedicated to council.
Threshold and pavement treatments are to be provided through the subdivision	Landscaping and street and intersection design achieve slow speed environment.
Road are to be constructed as per Table	Road 1 Collector Road Roads 2, 3 and 12 (perimeter road), 7 and 6 = 16m reserve, 8m carriageway. Roads 4 and 5 = 14m reserve and 6m carriageway
Road Design for Bus Access	
Development is to provide for *Safe & efficient movement of buses through subdivision;* *Appropriate road widths likely to form part of a bus route* *Bus shelters as indicated on Map 2*	Collector Road proposed bus route. Approved collector Road is 20m wide. Shelter proposed on corner of Street 2 and collector Footpaths on Streets 2, 3, 7 and 12 direct

Linking bus routes & bus stops to pedestrian network.	pedestrians to the bus route and stop.
Pedestrian and Cycleway Paths	
The developer is to provide local share paths where they pass through the development in accordance with Map 5.	Refer Attachment K
Subdivision DCP	
Subdivision and Road Design Subdivisions should be designed consistent with the Moonee Development Control Plans (DCP) and Information Sheets:	*Refer to Moonee DCP responses above.*
Koala Habitat;	*Refer Section 3.12*
Habitat Links	*Site not located on the Habitat links map*
• *Acid Sulfate Soils;*	*Refer to Section 3.4.2*
• *Contaminated Land;*	*Refer to the Section 3.5*
• *Flood Prone Land;*	*Refer to Section 3.7*
• *Landform Modification; and*	*Refer to Section 3.6*
• *Fire Hazard.*	*Refer to Section 3.1*
Road hierarchy of subdivisions should reflect road function designed in accordance with Sch 1.	Street hierarchy is consistent with Schedule 1.
The layout of new roads should be designed so as to:	
• *provide road links to adjoining properties;*	Road 6 connects to the approved Glades Estate
• *facilitate the use of public transport;*	Collector Road is bus route with bus stop located at intersection of Road 2. Some 90% of lots are 400m of the bus stop.
• *achieve efficient access to all lots;*	All lots have direct access to streets.
• *encourage safe levels of vehicle speed;*	Street alignments, widths and intersections
• *provide adequate sight distances (particularly at intersections);*	Regular street alignments& ltd curvature provide adequate sight distances for all streets. All inter sections with priority streets have adequate site distances for vehicles travelling 40km/h
• ***provide efficient access for service*** *vehicles (bushfire and garbage trucks);*	Refer Section 3.1. Garbage trucks can easily service all proposed lots.
• *provide for safe and functional vehicle and pedestrian movement; and*	Short street lengths, regular intersections & foot paths provide safe vehicle & pedestrian movements.
• *provide for landscaping, utility services, driveways, mailboxes, street lighting, etc.*	Refer Section 4.
The layout of main roads should also, where possible, provide road networks based on a grid pattern so as to:	
• *provide for more memorable places, making it easier to find one's way around (legible);*	Informal grid pattern applied for pedestrian, cyclist & driver orientation.
• *provide persons with a high degree of directional choice (permeable).*	See above.
Cul-de-sacs should be avoided, but if used should be short in length.	No cul de sacs are proposed.
Lots are to be designed to allow the construction of a dwelling which does not involve more than 1m cut or fill,	Cut and fill is proposed in subdivision to achieve appropriate Flood Planning Level.
Subdivisions should be designed to minimize impacts on the natural environment and retain significant landscape features.	Proposed finished levels of site integrate with finished ground levels of approved Glades Estate and Collector road and achieve FPL.
Energy Efficiency – Lot Orientation	
• *Subdivisions should be designed to maximise solar access.*	Road alignments are mostly on a N/S and E/W alignment and allow
• *Where possible roads are to be orientated so that the majority of their length are within the range N20oW to N30oE or E20oN to E30oS.*	

• *Residential Subdivisions are not to produce vacant lots significantly smaller than other lots in the neighbourhood. .* • *Where small lots are proposed, applications will need to be for subdivision and housing, with housing to commence before the Subdivision Certificate is issued.* • *The minimum area for lots is 400m2, and 500m2 for lots fronting the head of a cul-de-sac.* • *All lots are to have a minimum 4m frontage * to public road ** , except: -where two 'battle axe handle' shaped lots in a (Torrens title) subdivision will share a single driveway, then the combined widths of the 'handles' of the lots are to be at least 4m wide, and each lot is to have room at its frontage for a water meter and letter box, in addition to accommodating a driveway; -lots which have frontage to a cul-de-sac head; these lots are to have a minimum frontage of 10m. ** = not including a lane.* • *A subdivision which will involve a lot having vehicular access to a lane will only be permitted after the lot has been substantially developed*	All lots range within 640m2 to 795m2. No small lots are proposed. N/A All lots have frontage greater than 4m. No lanes proposed.
• *Where a subdivision will create more than two lots or two dwellings using a common driveway, then the subdivision is to be either strata or community title.*	No common driveways proposed.
• *Subdivisions are not permitted where three or more 'battle axe handles' will directly adjoin.*	*No battleaxe lots proposed.*
• ***Business, Industrial, Special Use and Open Space***	
There is no minimum lot size within these zones. Lot size is determined having regard to the merit of the subdivision.	Proposed wildlife corridor results from consideration of the ecological and hydrological issues for this part of site and requirements of the Moonee DCP.
• ***Environmental Protection 7A***	
The minimum lot size is 40 hectares.	*N/A – no dwellings proposed.*
• ***Environmental Protection 7B***	
There is no minimum lot size within this zone. Lot size is determined having regard to the merit of the subdivision.	*7B portion of site to be dedicated to council and form part of the collector road reserve.*
SERVICES	
• ***Urban Areas***	
Subdivisions in urban areas are generally required to provide infrastructure to all lots including: -road; -footpath; -kerb and gutter; -drainage; -reticulated sewer and water; -telecommunications; -street lighting; and -electricity.	Refer Section 4.
Stormwater Drainage	
Stormwater drainage shall be designed and provided in accordance with Council's Development Design and Construction Specification.	Refer Section 4
The design details will need to be approved by Council before the drainage is provided, and will need to be completed to Council's satisfaction prior to the issue of the Subdivision Certificate. Stormwater is to be gravity drained to Council's drainage system.	*Refer Section 4*
Drainage from sites should reflect pre-existing or natural situation in terms of location, quantity, quality & velocity.	*Refer Section 4*
Utility Services	
Erosion and Sediment Control *Subdivisions should be designed to minimize the disturbance of lands with topographical constraints.*	*Refer Section 3.4*
Consent conditions will indicate whether erosion and sediment controls will be necessary, and to be in place before site works commence.	*Noted*
Street Tree Masterplan	*Refer to Section 4*

Developer Contributions	*Noted.*
Low Density Housing DCP	All lots have dimensions and orientation that allow future dwellings to comply with DCP requirements

5.6.2 Marine Parks Act and the Solitary Islands Marine Park Management Plan

According to the DCP, urban development should be excluded from within 100 metres of Moonee Creek to protect riparian vegetation, maintain water quality and provide habitat linkages. It is understood that the 100m buffer control is derived from Marine Park Authority advice to council concerning the protection of the Solitary Islands Marine Park.

In the DGR advice to the DoPI, the MPA indicate that a 100m buffer is ideal but acknowledge that a lesser buffer may be appropriate if the objects of the Marine Parks Act and Solitary Islands Marine Park Management Plan can be met.

The protected vegetation within the creek buffers is protected from urban development (refer **Table 21**).

The concept plan for the perimeter road and residential lots are set back further from Moonee Creek than identified by the 7A zone boundary under the Coffs Harbour LEP 2000. The distance is 84.95m along the southern boundary and 64m at its narrowest point. The effect of the setting back of the development ensures that there is no disturbance to the riparian corridor of Moonee Creek. The distance of a riparian corridor is recognised in guidelines under the Water Management Act as being 40m measured from the top of the bank for a Level 4 river.

Within the wildlife corridor are located two bioremediation basins for the capture and treatment of stormwater. The quality of stormwater exiting the site via the basins will improve existing water quality for; phosphorous by 11%, nitrogen 25%, total suspended solids 79% and gross pollutants by 28%.

Hence the ecological processes within the Solitary Island Marine Park are maintained and are not interfered by the proposed development such to be contrary to the objects of the Marine Park Act.

5.6.3 Developer Contributions Plans

The Moonee *Developer Contributions Plan 2008* applies a levy per residential lot to fund the provision of public facilities including open space and recreational facilities, transport and traffic facilities, conservation protection and community facilities.

The total Section 94 contribution for each lot to fund these facilities is $15,773.59. An additional $4023.45 is levied with 85% of this amount to fund the acquisition of land for the collector road from Moonee Beach village to the approved Glades development to the north. This is identified as Road No. 1 on the subdivision plan. Therefore $19,797.04 is to be levied for each of the residential lots, that is, 161 of the 163 lots, totalling some $3,187,323.44 in s94 contributions.

5.6.4 Our Living City Settlement Strategy to 2031 (2008)

The *Our Living City (OLC) Settlement Strategy* was prepared in accordance with the requirements of the former North Coast Regional Environmental *Plan (REP) 1988 to provide an approved urban* land release strategy to guide future rezoning for urban purposes within the Local Government Area to 2031.

The site - already zoned for urban development under the Coffs Harbour LEP 2000 – is recognised in the Strategy. Development of the site as per the concept plan is consistent the objectives and principles of the Strategy and will contribute to the supply of residential lot to meet current and future demand.

6.0 CONSULTATION

6.1 Agencies and Other Authorities

During preparation of the Director General Requirements, the Department of Planning and Infrastructure 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 and Infrastructure 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 **Section 1.4**. It is understood that this EA will be referred to the above agencies for comment during the public exhibition period.

6.2 Proponent Consultation

6.2.1 Coffs Harbour City Council

Representatives of JW Planning and the proponent consulted with the Technical Liaison Committee of the Coffs Harbour City Council on the 22nd November 2012. A working version of the concept plan layout was tabled and issues were discussed accordingly. The terms of reference for the Committee in discussing the draft concept plan was primarily the Moonee DCP 2004. The views of the committee have been incorporated, where appropriate, into the concept plan and this EA report.

6.2.2 Department of Planning and Infrastructure

Four meetings have been undertaken with the Major Assessments Section of the Department on the concept plan during 2012 and 2013. This consultation concerned the repeal of Part 3A and administrative, policy and consultation issues surrounding the transitional arrangements for Part 3A concept plans where DGRs have been issued.

On the 22nd November 2012, JW Planning met with representatives of the Department's Grafton office. The Departmental officers indicated that Council had been advised during the draft LEP 2012 process that the Part 3A process is the preferred process for determining zone boundaries and that Council should adjust its LEP to ensure consistency with Part 3A approvals by the Minister for Planning and Infrastructure. In the interim, the Grafton office of the Department would wait for the submission of the concept plan and EA report and the Department's own internal processes in due course.

6.2.3 Office of Environment and Heritage

OEH were provided a draft copy of the concept plan including early working draft ecological and aboriginal cultural heritage reports in early March 2013. OEH comments and a response to these issues

are provided in **Table 24.** These reports were early working drafts that had not been thoroughly reviewed to confirm accuracy and consistency.

Table 24 Preliminary Consultation with OEH

Issue raised	Response
Ecology	
Consideration of excluding development from Coastal Floodplains and Swamp Oak Floodplain Forest EEC	No development is proposed in the EEC. Perimeter road is at a minimum of 50m from the EEC boundary.
Implement 100m buffer to Moonee Ck would ensure consistency of OEH support of Moonee DCP and exclude urban development from within the buffer to • *protect riparian vegetation,* • *maintain water quality and* • *provide habitat linkages.*	Refer Section 5.6.2. • No urban development proposed within the proposed buffer; • No riparian vegetation proposed to cleared within 40m of the creek (from the top of the bank for a fourth order river as per NSW Office of Water Guidelines for riparian corridors on waterfront land; • 2 bio remediation basins will treat stormwater and significantly improve stormwater quality to that currently entering the creek (refer **Table 14**) • Habitat linkages are provided by the setting back of the development from the eastern and northern boundaries greater than that established by the environmental protection zone boundary.
Create a setback from Solitary Islands Marine Park and consider increasing the buffer to 100m.	See above.
Current proposal does not adequately address the avoidance of significant impacts: it does not justify how these impacts will be adequately mitigated and does not propose any offset for the proposed impact.	The ecological report 7 part test concludes that the proposed development is unlikely to have a significant effect on threatened species, populations or ecological communities, or their habitats.
The sites connectivity values have been addressed in part; however the development layout does not incorporate existing vegetation areas which form part of the broader wildlife corridor network.	The presence of the upgraded dual carriageway Pacific Hwy and the identified fauna habitat linkages to the north and along the southern end of the site, cancels out the feasibility of an east/west corridor. The remnant vegetation (MU1) in Lot 1 has been slashed and grazed and its size, location and floristical structure has been severely compromised. Incorporating this vegetation into a North/south corridor would not be sound ecological landscape planning and would be contrary to the objectives of the 2A Residential zone under LEP 2000.
There is greater importance on providing further extended buffers to the environmentally sensitive areas of the subject property and to the adjoining properties which also contain significant biodiversity values.	The environmentally sensitive areas of the site have been identified as the EEC in the NE corner and the riparian corridor to Moonee Creek along the eastern boundary. Extending the proposed buffer further westward would be into mostly cleared land with a small number of remnant trees. The biodiversity values of the adjoining property to the north have been assessed and determined by the Minister for Planning and Infrastructure in approving the Glades Estate concept plan and project plan. The setbacks and wildlife corridors in that concept plan integrate with that under the proposed concept plan.
All development infrastructure such as APZ, playgrounds and access tracks should be located outside of the 7A area	A 20 metre APZ is located within the 16m perimeter road reserve and within the 5m front setback of adjoining lots. No playground is proposed within the 7A nor within the current 2A zoned land that is to form part of the wildlife corridor to be dedicated to council.
The proposal should include a rehabilitation and maintenance plan	As a condition of approval, this to be prepared by a suitably qualified and experienced ecologist at Construction Certificate.
Aboriginal Cultural Heritage Assessment	
Incomplete Aboriginal site records. Additional site recordings required by the proponent.	These comments refer to a draft report that has now been updated and finalised.
Incomplete preparation of preferred management strategies in the likely event that Aboriginal objects will be impacted by the development proposal	
Incomplete evidence of the Aboriginal community consultation process. Additional information is required in support of the consultation process.	

6.2.4 Solitary Islands Marine Park – Department of Primary Industries

On the 27th March 2013, the Solitary Islands Marine Park provided comments to JW Planning (refer **Attachment N).** The issues raised and response are provided in **Table 25**

Table 25 Preliminary issues raised by MPA

Issue raised	Response
Flood assessment	
Concern on location of SPS and bioremediation basins and flooding and sea level rise and within an area set aside for environmental protection.	The SPS is proposed to be located adjacent to an existing electrical substation. Martens have advised that the location of the proposed infrastructure is acceptable in terms of risk from flooding and sea level rise. Engineering details at CC stage can ensure that switch gear, wet well roof slab and electrical switchboard cabinet are appropriately placed above the 100 year flood level plus sea level rise. The location of infrastructure in this location is outside of the 7(a) environmental protection zone (refer **Figure 10).**
Modelling in the flood assessment is likely to give a false idea of the effects of flooding on the development site and in particular the pump station and water quality basins.	Martens are recognised experts in flood modelling and stormwater management. The site is proposed to be filled to a level above the 1:100 year flood event plus sea level rise and accommodate the pump station and water quality basins.
Flood modelling has not considered the impact of flooding and sea level rise upon the riparian zone and require a 100m buffer to allow riparian zone retreat.	Martens have demonstrated that this will not impact on flood volumes or behaviour upstream or downstream from the site. An adequate buffer (wider than the existing environmental protection zone) has been established to protect the riparian zone and water quality to Moonee Creek (refer Section 5.6.2). The *NSW Coastal Planning Guideline: Adapting to Sea Level Rise* (DoPI, Sept 2010) makes no reference to "riparian zone retreat".
Ecology	
Confusing references to Solitary Islands Marine Park and Solitary Islands Marine Reserve (Cth Waters)	EA report refers to the Solitary Islands Marine Park under the jurisdiction of the NSW Department of Primary Industries.
Ecology report – species list includes fish that are not likely to be found in Moonee Creek whilst some species have been left out.	Noted. No urban development proposed within the riparian zone and there is unlikely to be impacts upon Moonee Creek ecosystem. The proposed bioremediation basins have been modelled to significantly improve water quality post development to that experienced under existing conditions.

6.2.5 Fisheries NSW – Department of Primary Industry

On the 27th March 2013, Fisheries NSW provided comments to JW Planning (refer **Attachment N).** The issues raised and response are provided in **Table 26**

Table 26 Preliminary Issues raised by Fisheries NSW

Issue raised	Response
Site adjacent to key fish habitats and a Habitat Protection Zone in Solitary Islands Marine Park warrants a 100m buffer zone	Refer to Section 5.6.2
ICOLL Entrance Management	Noted.
Waterway crossings – Bucca Creek	Upgraded crossing of creek to Lot 2 DP 1097743 will satisfy fish passage requirements at CC stage.
Foreshore access	No foreshore access proposed.

6.2.6 Adjoining landowner consultation

The integration of the concept plan subdivision design has required consultation with the Rothwell Boys Pty Ltd - owners of the approved Glades Estate – and their consultant to ensure that fill levels along the northern boundary between the two lots are consistent for stormwater drainage, fencing and street connections and that Streets 2 and 3 and lots connecting and fronting the collector road have the correct alignment and elevation to integrate with the Court's approval.

6.2.7 Draft Coffs Harbour LEP 2012

During October and November 2012, Council publicly exhibited the draft Coffs Harbour LEP 2012 based upon the Standard Instrument. The draft LEP applying to the site proposed to rezone the part Residential 2A Low Density and part Environmental Protection 7B Scenic Buffer zone along the Pacific Highway frontage to R2 Low Density Residential zone and the part Environmental Protection 7A Habitat and Catchment zone to part E2 Environmental Conservation, with the zone boundaries aligning with those proposed under draft LEP Amendment No. 24 (i.e a wider buffer to Moonee Creek).

The submission to council objected to the widening of the Moonee Creek buffer as the current environmental protection zone applying to the site under LEP 2000, supported by the detailed studies in this EA report, is adequate in protecting the Moonee Creek riparian corridor. On the 13th December 2012, under Resolution No. 2, Council resolved to adopt the report recommendation and recommend to the Minister for Planning and Infrastructure to defer the draft LEP from applying to the site plus other lands in the Moonee Beach area.

It should be noted that the report to Council, states that draft LEP 24 was never made by the Minister for Planning. However, under resolution No.3 council resolved that "*a further report be presented to Council early in 2013 which outlines appropriate environmental investigations (including details on the timeframe, method and anticipated cost) for the deferred areas which will help to inform and enable a Planning Proposal to be progressed to establish the final zone configuration*".

6.3 Community

Extensive community consultation was undertaken by Council during the preparation of Moonee DCP 2004. 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.

Draft LEP No. 24 to amend the Coffs Harbour LEP 2000 that was then incorporated into the Draft LGA wide LEP 2012, which has been publicly exhibited. On behalf of Moonee Parklands Trust, JW Planning submitted an objection to the proposed widening of the Moonee Creek buffer without site specific evidence and justification. Council's resolution to recommend that the Minister for Planning and Infrastructure defer the site and other land in the Moonee urban growth area that was also subject to submissions, indicates Council's intended departure from the intended controls in the Moonee DCP, has raised land owner and community concerns.

6.4 Public Exhibition

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

7.0 STATEMENT OF COMMITMENTS

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 Moonee Parklands Trust 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.

7.1 DRAFT STATEMENT OF COMMITMENTS

7.1.1 Subdivision Design and Layout

The proposed development will be carried out in accordance with the Environmental Assessment (EA) prepared by JW Planning dated March 2013 and supporting documents, except where amended by this Statement of Commitments.

7.1.2 Statutory Requirements

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.

7.1.3 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.

7.1.4 Dedication and Management of Wildlife Corridor

Prior to the issue of a Construction Certificate for the subdivision, a Management Plan will be prepared by a suitably qualified and experienced ecologist - and endorsed by the relevant planning authority - to rehabilitate and manage the wildlife corridor. The Management Plan will establish when the wildlife corridor is to be dedicated to council.

7.1.5 Traffic Management and Access

The Moonee Parklands Trust will enter into a formal agreement with Council to part forward fund the construction of the proposed collector road between the site and Moonee Beach Road. An agreement will be entered into prior to the release of the construction 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 in the Coffs Harbour City Council Subdivision Development Control Plan. Should an inconsistency arise between the approved concept plan and the subdivision DCP, then the concept plan shall prevail to the extent of the inconsistency.

7.1.6 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 phone services to each residential lot prior to the release of the Subdivision Certificate.

8.0 Conclusion

The Moonee Beach urban growth area is identified in the Department of Planning's *Mid North Coast Regional Strategy* (MNCRS) and the Coffs Harbour Our Living City Settlement Strategy 2008 to accommodate future population growth to 2031.

In accordance with the regional and local strategies, the Moonee Parklands Trust seeks the Minister's approval for a concept plan to subdivide the site for residential purposes. The application for approval is sought in accordance with the Environmental Assessment report.

Site specific technical studies have informed the Concept plan and support the application that the site is suitable for, and capable of, residential development.

The site is adjacent to the Minister's approved concept and project plan for the Glades in between two (2) adjoining sites already declared Part 3A projects, one of which has subsequently obtained Concept Plan approval and more recently, Project Approval. Importantly, the recently approved development relies on the subject site for access.

Obtaining the Minister's approval will expedite the provision of access to the approved Glades Estate and in turn, the provision of additional housing supply for the site and location and product choice and competition between both development sites.