APPROVED DEVELOPMENT PLAN SUMMARY

The following development plan has been approved by the Chief Executive Officer and signed by a Director of East Gippsland Shire Council. The development plan runs with the subject land into perpetuity however is able to be amended in part or in full, subject to Council approval. This document serves a summary and document control function.

Address	189 Palmers Road, Lakes Entrance (Stage 2 – Subdivision)
Approval date	3 October 2018

This development plan is comprised of the following documents

	Document	Date	Version	No of Pages
1	Development Plan Report (Crowther & Sadler)	April 2017	-	35
2	Site Analysis Plan (Crowther & Sadler)	8 August 2016	1	1
3	Proposed Subdivision Plan (Crowther & Sadler)	24 February 2017	2	1
4	Plan of Vegetation Removal (Crowther & Sadler)	24 February 2017	2	1
5	Road Hierarchy Plan (Crowther & Sadler)	9 October 2017	3	1
6	Staging Plan (Crowther & Sadler)	13 October 2017	3	1
7	Letter Addendum Information	13 October 2017	-	5
8	Traffic Impact Assessment (Sustainable Transport Surveys)	2 December 2017	-	19
9	Geotechnical Risk Assessment (Simon Anderson Consultants)	6 December 2013	-	9
10	Habitat Hectares Assessment (Ethos NRM)	April 2016	1	100
11	Hydrology Report (Crossco)	14 July 2018	2	14
				Total :187

This development plan has been amended as follows

Document	Date	Version	Date of approval	No of pages

Approved Development Plan
Planning and Environment Act 1987
East Gippsland Planning Scheme

Development Plan Overlay Schedule 8
(Lakes Entrance Northern Growth Area)

Signed:
Director, East Gippsland Shire Council
Date: ....3 October 2018...

Crowther & Sadler Pty. Ltd. A.B.N. 38 288 260 053

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Development Plan

189 Palmers Road, Lakes Entrance
Lot Z on PS 538571E

Our reference: 16870

18 April 2017

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(Lakes Entrance Northern Growth Area)

Signed:
Director, East Gippsland Shire Council
Date: 3 October 2018

BSI ASINZS ISO 9001
Consulting Surveyors Victoria MEMBER FIRM

Principal: Michael J. Sadler, L.S., Dip Surv., M.I.S. (Vic.), MSSSI., MAICD

Report Register

This register documents the development and issue of report entitled Development Plan – 189 Palmers Road, Lakes Entrance prepared by Crowther & Sadler Pty Ltd in accordance with internal quality management systems.

Issue date	Version No.	Description	Issued to
30/11/2016	1	Development Plan	EGSC
18/04/2017	2	Development Plan – includes references to Brookfield Gas proposal to be read in conjunction with this document	EGSC

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1. Introduction

This Development Plan is prepared in accordance with Clause 3.0 of Schedule 8 to the Development Plan Overlay as contained within the *East Gippsland Planning Scheme*. This document applies to the property located at 189 Palmers Road, Lakes Entrance, formally described as Lot Z on Plan of Subdivision 538571.

Clause 3.1 to Schedule 8 of the Development Plan Overlay details specific components for any Development Plan in accordance with the *Lakes Entrance Northern Growth Area Outline Development Plan* (October 2013) ('LENGA ODP'). This document provides a response to those requirements as appropriate.

Proposed Gas Daughter Station

This document is to be read in conjunction with the Development Plan documentation associated with the proposed Gas Daughter Station to be developed within the north-eastern corner of the subject land.

Based on discussions with the proponent, Brookfield Regional Networks, their Planning Consultant, Echelon Planning, and the East Gippsland Shire Council, we understand the intention is for both documents to form a combined Development Plan, which Council will consider and assess concurrently.

For all information pertaining to the proposed Gas Daughter Station, please refer to documentation prepared by Echelon Planning.

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2. Site Analysis

The subject land is an irregular shaped parcel approximately 14.89 hectares in area. The subject land adjoins Palmers Road to the east, and has an abuttal to Country Club Drive to the south.

The property is currently developed with a nine-hole golf course with driving range, clubhouse and various outbuildings associated with green-keeping activities. A dwelling is developed above the clubhouse at first floor level, oriented to maximise expansive southerly views.

A patch of vegetation comprising some large gums, understorey species, large pine trees and various weed species, is positioned within the north-western portion of the subject land, located on the northern alignment of Country Club Drive to the immediate east of recent residential development.

The subject land is undulating in form, predominantly falling in a south-westerly direction towards a gully system which leads ultimately into Eastern Creek to the south. Levels vary across the site by up to 32 metres, from a height of 72.0m to the north-east down to 40.0m adjoining the drainage line to the south-west.

A Site Analysis Plan (Figure 1) provides information derived via field survey regarding the topography of the site and the location of existing vegetation.

The Site Analysis Plan also depicts existing easements over the subject land which are associated with overhead electricity lines adjacent to Palmers Road in the east, and the large telecommunications tower to the east of the existing dwelling. Electricity is provisioned to the balance of the property via underground means.

Existing easements are all contained within the balance allotment and will have little impact on the development of the subject land as proposed herein.

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SITE ANALYSIS PLAN

PARISH OF COLQUHOUN
CROWN ALLOTMENT 124 & 31 (PARTS)

LOT Z ON PS538571E

LAKES VIEWS GIPPSLAND P/L

189 PALMERS ROAD, LAKES ENTRANCE

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A Site Locality Plan (Figure 2) provides an illustration of the position of the subject land within the broader context of the Lakes Entrance township, as well as demonstrated the largely unsubdivided nature of surrounding holdings within the LENGA precinct, with the exception of the residential lots with frontage to Country Club Drive or Riviera Close.



Looking south from northern alignment of Country Club Drive

A Site Context Plan (Figure 3) provides similar information but at a closer scale, enhanced by aerial photography which demonstrates the minimal development that has occurred on adjoining properties, which typically comprise either rural style dwellings on larger vacant allotments utilised for grazing, or smaller rural residential allotments. A series of photographs are incorporated within this plan that depict the expansive views enjoyed from the subject land, and give an indication of the fall across the property which provides for the equitable sharing of views.



Looking south from Clubhouse grounds

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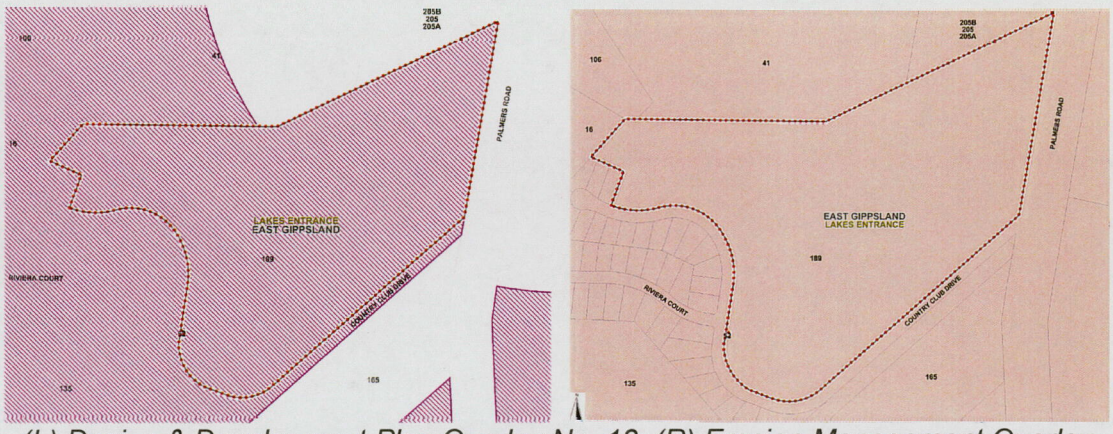
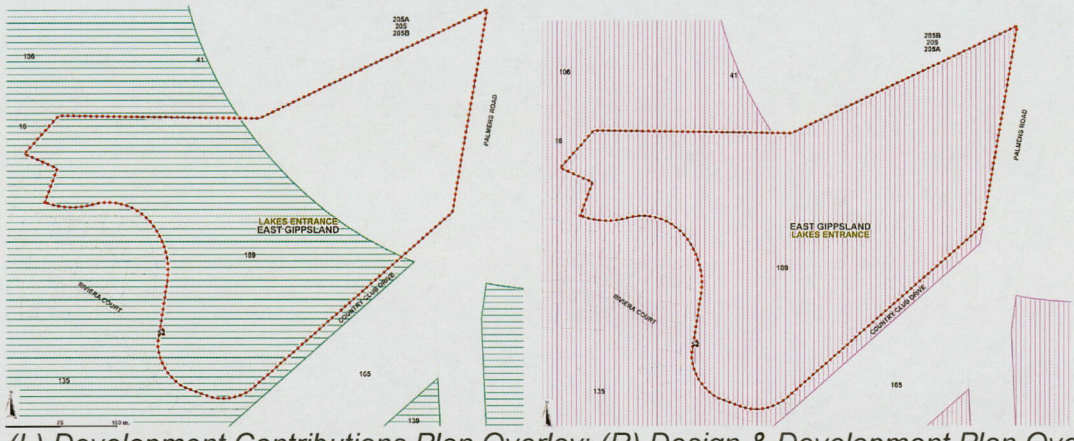
The subject land is contained with the General Residential Zone and is affected by a range of Planning Overlays included within the *East Gippsland Planning Scheme*.

Design and Development Overlay – Schedule 13 (*Residential Development in Coastal Settings: Lakes Entrance*) applies to all land within Lakes Entrance which has been zoned for residential purposes. The Erosion Management Overlay applies to the majority of the municipality with proximity to the coast.



(L) Design & Development Plan Overlay No. 13; (R) Erosion Management Overlay
(Source: Planning Maps Online)

Amendment C112 introduced a range of Overlays which apply to the subject land, including the Development Contributions Plan Overlay (No. 1), the Development Plan Overlay - Schedule 8 *(Lakes Entrance Northern Growth Area)* and the Environmental Audit Overlay.



(L) Development Contributions Plan Overlay; (R) Design & Development Plan Overlay
(Source: Planning Maps Online)

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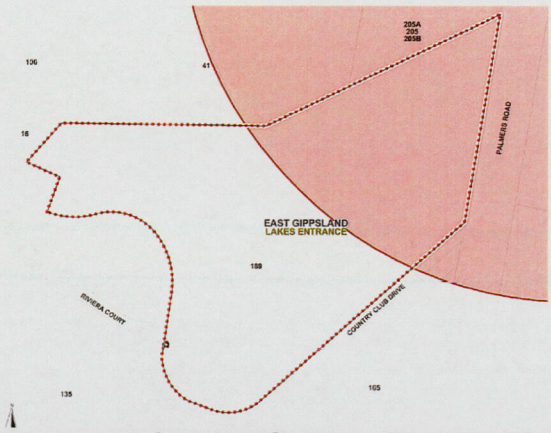
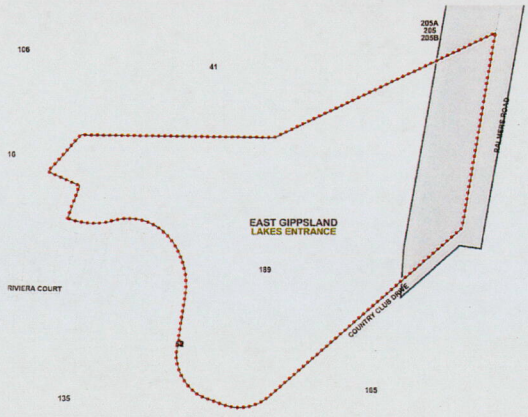


Environmental Audit Overlay (Source: Planning Maps Online)

A strip of land adjacent to Palmers Road in the east is included within the Vegetation Protection Overlay – Schedule 1 *(Tambo-Bairnsdale Roadside Vegetation Protection Network).*



Vegetation Protection Overlay (Source: Planning Maps Online)

The subject land, as with the broader LENGA precinct, enjoys limited provision with respect to existing open space, bicycle and pedestrian networks. Existing footpaths developed within the subject land are the exception, with pedestrian and cycling movements elsewhere in the precinct occurring principally along road verges.

For recreation purposes the subject land is reliant upon existing provision within the town including the Aquadome, Football/Cricket oval, Netball courts, Tennis Courts, Bowls Club, Surf Club and foreshore environs. Extension of social infrastructure to accommodate the needs of LENGA residents was anticipated by Amendment C112, with the apportionment of costs associated with improved infrastructure forming part of the Development Contributions Plan as adopted by Council.

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3. Proposed Lot and Layout Pattern

3.1 Proposed Road Hierarchy

A Road Hierarchy Plan (Figure 4) has been prepared which proposes the construction of all new roads to an Access Street standard as defined in Table 6, Section 6.3 of the LENGA ODP.

No Connector Streets are proposed, with the anticipated traffic volumes generated by both existing and proposed development accessed from Country Club Drive less than 1,000 per day, based on the presumption that each dwelling would generate 10 vehicle movements per day. This is consistent with the traffic volumes specified at Table 6, Section 6.3 of the LENGA ODP.

The Road Hierarchy Plan also includes a typical cross section which depicts a 16 metre wide road reserve comprising a 7.5 metre wide carriageway with a 4.25 metre wide verge on each side. This typical street cross section is entirely consistent with the specifications of Table 7 and Figure 4 of Section 6.4 of the LENGA ODP.

The road hierarchy has been designed on the premise that the existing Access Street (Country Club Drive) will be retained without requiring further upgrade. The retention of this road and the existing vehicle access point to the subject land from Palmers Road is an expectation of the Road Hierarchy Plan (Plan 10) of the LENGA ODP.

The Development Plan does not restrict the future extension of the existing Access Street in a south-westerly direction through the existing Municipal Reserve to connect to the proposed east-west collector road between Ostlers Road in the west and Palmers Road to the south-east as depicted on the Road Hierarchy Plan (Plan 10) of the LENGA ODP. Whether the extension of this existing road is either practical or achievable is not a matter that has been considered, as any such roadworks would sit outside the boundaries of the subject land.

For information regarding the access provisions pertaining to the proposed Gas Daughter Station, please refer to the Echelon Planning submission.

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3.2 Proposed Subdivision Layout

A Proposed Subdivision Plan (Version 2) (Figure 5) has been prepared for the subject land which nominates the creation of 56 vacant allotments for future residential development, together with an allotment of approximately 3636m² to the north-east of the property, being the site of the proposed Gas Daughter Station.

This Plan also depicts a larger balance allotment approximately 5.984 hectares in area, which represents the extent of the subject land that is included within the 500 metre buffer measured from the Municipal Landfill at the corner of Colquhoun Road and Thorpes Lane. No residential development is proposed for this balance cell until such time as the Environmental Audit Overlay has been reviewed. Future development of this balance parcel may be pursued once more is understood about Council's intentions for the landfill in accordance with the requirements of the *Environment Protection Act 1970* including intended remedial activities.

The proposed residential allotments vary in size and scale, with approximate areas ranging between 576m² and 1,479m². The average lot size proposed is 914m², which is only slightly larger than that nominated by the LENGA ODP for conventional density housing, being 880m² (p.26).

The subdivision layout provides an appropriate transition from the existing allotments within Country Club Drive and Riviera Court, respectful of both the established and preferred neighbourhood character for the precinct.

Lots have been designed with varying dimensions to ensure appropriate solar access, and to maximise expansive southerly ocean views where achievable. The scheme of subdivision also proposes variation in the width of lot frontages which vary between 17m up to 38.6m, excluding corner allotments.

The subdivision layout as designed provides opportunity for a range of housing types and design opportunities, offering diversity and choice for the market, and ensuring consistency with the LENGA ODP.

For information regarding the proposed Gas Daughter Station, please refer to the Echelon Planning submission.

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PROPOSED SUBDIVISION LAYOUT

PARISH OF COLQUHOUN
CROWN ALLOTMENT 124 & 31 (PARTS)

LOT Z ON PS538571E

LAKES VIEWS GIPPSLAND P/L

189 PALMERS ROAD, LAKES ENTRANCE

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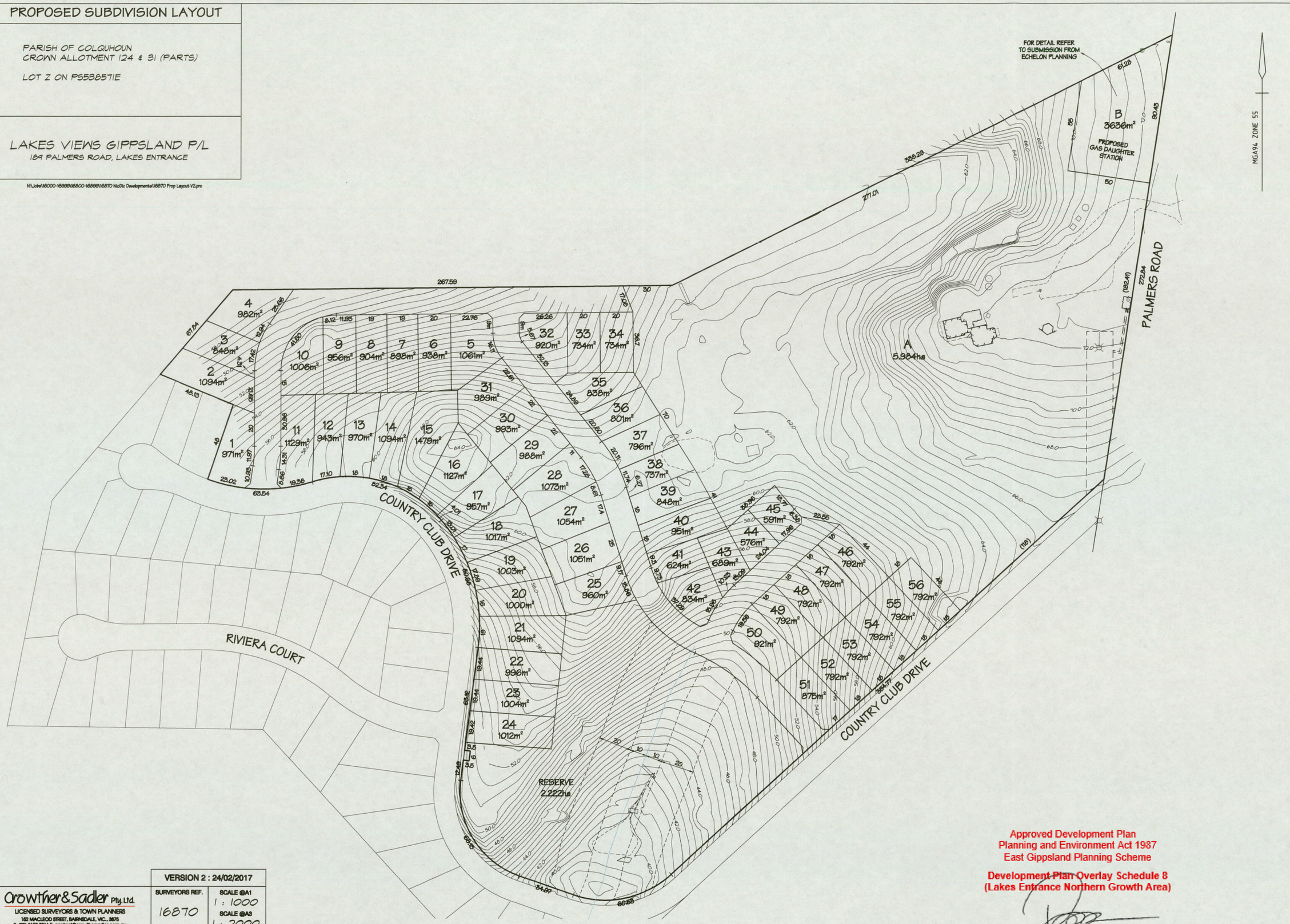

VERSION 2 : 24/02/2017	
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3.3 Public Open Space

The LENGA ODP does not prescribe any specific areas of passive or active open space for the subject land. There are three areas of passive open space nominated elsewhere within LENGA as detailed at Plan 12 (p.49). The distance from these areas to the proposed lots are estimated as follows:

- Approximately 230 metres east of proposed Lot 56;
- Approximately 290 metres south-west of proposed Lot 24; and
- Approximately 400 metres west of proposed Lot 1

The shared pathway network proposed by the LENGA ODP (Plan 8, p.25) includes the subject land in part, with the nominated route entering the subject land from the north approximately 250 metres from the eastern boundary, travelling in a southerly direction towards the declared waterway. The nominated route then proceeds parallel to the watercourse, with a path to be constructed within the ecological buffer adjacent to the waterway. The shared path will cross Country Club Drive and continue beyond the subject land in a southerly direction through the existing Municipal Reserve.

When applied to the scheme of subdivision proposed for the subject land, a large extent of the proposed shared trail falls within the area currently sterilised pending the resolution of required buffer details relating to the Municipal Landfill. There is no intention to undertake any development within the portion of the site nominated as proposed Lot A, as any works of Lot A at this time would be premature and may potentially result in stranded investment. The imposition of the Development Plan Overlay over the subject land in its entirely indicates Council's view that the highest and best use of the land is for residential purposes, subject to further investigation relating to the 500 metre buffer.

The construction of this section of the shared trail will be deferred, to be addressed as part of a future Development Plan for proposed Lot A once the buffer distance is reviewed.

The proposed development of the subject land will include the creation of a large reserve to the south of the property on the northern alignment of Country Club Drive. This Reserve will serve a range of purposes, including:

- Preservation and protection of the declared waterway;
- An ecological buffer adjoining the waterway for a distance of 30 metres either side;
- Retention of mature remnant vegetation including a significant stand of Box Trees; and
- Protection of an area which has the potential to accommodate the Viscid Daisy Bush (*Olearia viscosa*), a flora species for which DELWP has assigned a conservation status of 'vulnerable', and is listed as 'threatened' under the *Flora and Fauna Guarantee Act 1988*.

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The proposed Reserve is appropriately located to satisfy the LENGA ODP objective for open space to be located within 400 metres safe walking distance of all dwellings. The following diagram depicts a 400 metre offset from the proposed Reserve, which easily encapsulates each of the proposed allotments.



Figure 6 – Offset from Proposed Reserve

A later section of this document will nominate requirements for the landscaping of the proposed Reserve, including the specifications for the ecological buffer adjacent to the waterway.

3.4 Bicycle and pedestrian path network

The development of the subject land will provide improved opportunities for pedestrian and bicycle circulation, with a network of paths facilitating easy movement throughout the estate.

The Road Hierarchy Plan provided on page 13 of this document provides a typical street cross section for each of the proposed Access Streets to be constructed, with a 1.5m wide concrete path to be constructed on each side. The new path network will connect seamlessly with existing footpaths established within Country Club Drive and Riviera Court.

The proposed shared trail will provide clear and legible access through the proposed Reserve, immediately adjacent to the waterway.

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The proposed path network provides multiple opportunities for future connection to the balance allotment once matters relating to the 500m environmental audit buffer have been resolved.

3.5 Land required for drainage purposes

The subject land does not include any areas required for drainage purposes within the LENGA ODP or the *LENGA Development Concept Plan Hydrology* prepared by Water Technology. The subject land forms part of Drainage Catchment No. 2 as detailed on Plan 5, Section 2.7.7 of the LENGA ODP. The property is further dissected into two drainage sub-catchments No. 5 and No. 9 as identified at Figure 2-2 of the Water Technology report (p. 7).

The following diagram provides an illustration of how the proposed allotments would be separated into the two drainage sub-catchments, subject to detailed design.

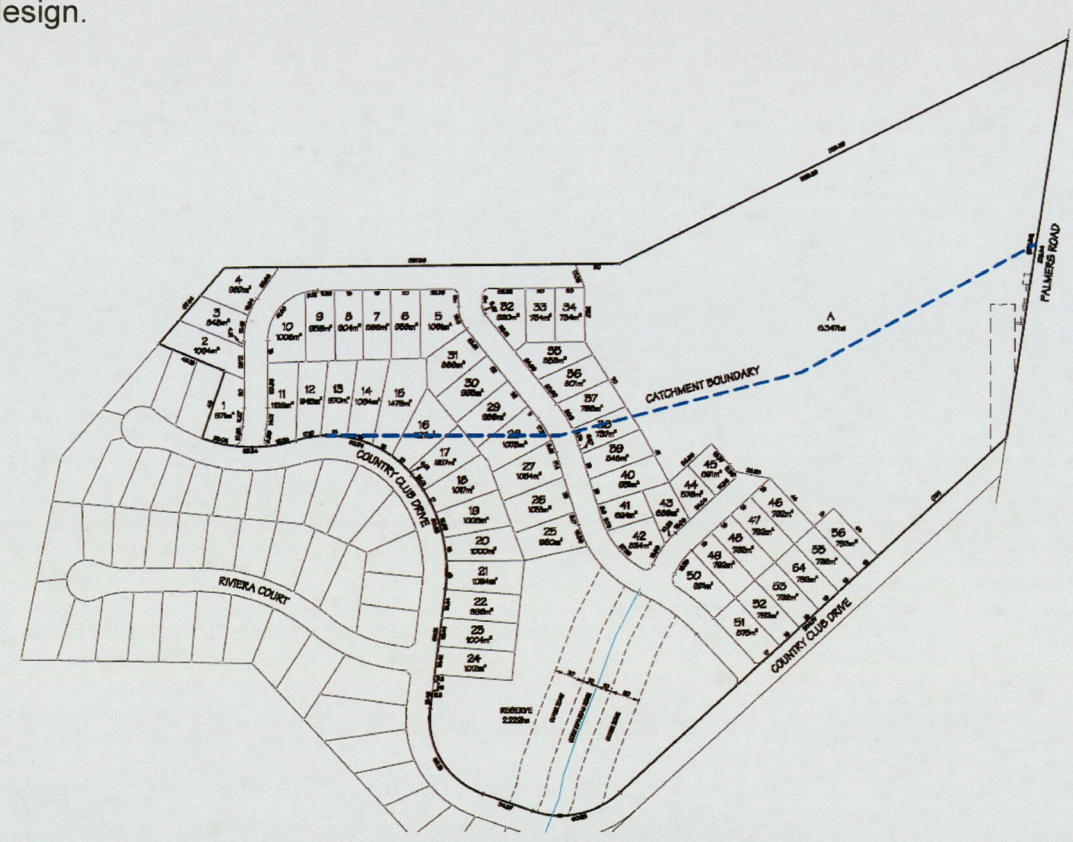

Figure 7 – Drainage sub-catchments

No land is required to be set aside within the subject land to facilitate drainage for these catchments. There are no retarding basins or bio-retention swales proposed, with these items of infrastructure typically proposed within lower lying areas or existing drainage lines further down in the catchment.

Costs associated with establishing appropriate drainage infrastructure has been apportioned throughout the LENGA, with a variable levy for drainage forming part of the LENGA Development Contributions Plan. Section 5 of this document will review matters relating to Hydrology.

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The existing drainage line recognised as a declared waterway will continue to perform a localised drainage function, with the establishment of an ecological buffer of 30 metres either side of the waterway expected to deliver positive outcomes with respect to water quality. Section 10 of this document will address considerations relating to waterway management.

For detail regarding drainage associated with the proposed Gas Daughter Station, please refer to the submission from Echelon Planning.

3.6 Land provided for community services

The subject land does not include any areas earmarked for community services as nominated by either the LENGA ODP or the LENGA Social Impact Assessment. Accordingly, there is no requirement for any land to be set aside for community services.

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4. Proposed Road Network

Development of the subject land will involve the construction of an internal road network developed to an Access Street standard, accessed via existing road infrastructure in Country Club Drive, including the intersection with Palmers Road. There are no additional access/egress points proposed to Palmers Road, with all proposed lots to have immediate frontage to the proposed internal road network.

The LENGA ODP acknowledges the existing vehicle access to the subject land from Palmers Road, which is identified as Access Point 9 (p.25). Table 5, Section 6.2 nominates the turn treatments required for this intersection as an Auxiliary Left and a Channelised Right (p.36). Both of these turn treatments are in place today, having been constructed and approved as part of the preceding residential development which included the construction of the intersection to the satisfaction of VicRoads.

Additional pavement widening to accommodate an auxiliary left hand turning lane for this intersection is listed as an infrastructure requirement at Item 9 of Table 10, Section 12 (p.55). The Table nominates the Developer as having Funding Responsibility for this infrastructure item.

The design of the road network is supported by a Traffic Impact Assessment ('TIA') prepared by Sustainable Transport Surveys (now SALT^3) and issued on 2 December 2013. This Assessment is attached at Appendix A. It is noted the scheme of proposed subdivision included shown at Appendix 1 of the TIA has been subject to further refinement following further investigations relating to waterway management, drainage and native vegetation.

These changes are not considered to have had a significant impact on matters relating to traffic, with the road alignment as currently proposed remaining generally in accordance with that upon which the TIA was based. The overall number of lots proposed has reduced over this period by 10 allotments, which would reduce the traffic volumes likely to be generated by approximately 100 vehicle movements per day. Estimates of traffic volumes contained within the TIA are therefore both generous and conservative.

The TIA confirms the proposed internal road network has been designed in a manner that will accord with the requirements of Clause 56 of the *East Gippsland Planning Scheme*, which accords with the requirements of the LENGA ODP. The existing turn treatments within Palmers Road have also been reviewed, with the TIA confirming the existing provision will accommodate the additional development traffic without requiring any further works. The existing intersection will continue to operate under 'excellent' conditions at peak times with the increased traffic volumes anticipated by the proposed development. The TIA provides full support for the proposed subdivision.

For access information pertaining to the proposed Gas Daughter Station, please refer to the submission from Echelon Planning.

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5. Hydrology

The proposed development is supported by a Hydrology Report prepared by Crossco Consulting and is attatched at Appendix B.

The attached Report demonstrates the proposed development will ensure the integrity of flow paths has been maintained, and that flood extents, flood levels and velocities are within the post-development conditions assumed by Water Technology in preparing the *Northern Growth Area Lakes Entrance Development Concept Plan Hydrology* (July 2012).

The Report includes a Stormwater Management Plan as an Appendix to the Report which depicts the actual location of the drainage line versus the mapped location of the designated waterway. A localised retarding basin is proposed through the augmentation of the existing dam, which will then discharge to existing municipal stormwater infrastructure to the south-west of the site.

A recommendation of the Report is for all future dwellings to be provisioned with a rainwater tank for detention of stormwater, with a minimum capacity of 1,500 litres. This will assist in slowing the rate of discharge from the site, delivering improved water quality outcomes and reducing the risk of scouring.

For hydrological detail associated with the proposed Gas Daughter Station, please refer to the submission from Echelon Planning.

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6. Geotechnical Assessment

A Geotechnical Risk Assessment has been prepared for the subject land by Simon Anderson Consultants and is attached at Appendix C. The Assessment was informed by a field investigation which included taking a series of soil investigation bores for further analysis.

Analysis of soils found highly permeable topsoils with dense, gravely sands sub-soils. This soil profile provides for rapidly draining surfaces with minimal run-off, with sub-soil characteristics demonstrating adequate strength and stability for residential slabs, footings and retaining walls.

The Assessment concluded the risk of landslide, sheet/rill erosion and tunnel erosion for the subject land to be low, and found the site suitable for the development as proposed. No further intensive investigation was deemed necessary. The Assessment raised no concerns regarding the subdivision of the land.

In the event that future construction of dwellings included slab on ground design with cut/fill batters and retaining walls, the Assessment suggested that an Erosion Management Plan may need to be implemented during and after construction, dependent upon the degree of fall over an allotment. Seven possible mitigation measures were outlined at page 8 of the Assessment, which would be considered as part of the Building Permit requirements and represent normal construction techniques. These measures include appropriate erosion control measures during construction, sub-soil drainage, inspection and maintenance of erosion and sediment control measures.

Please refer to the submission from Echelon Planning in relation to the Geotechnical Assessment associated with the proposed Gas Daughter Station.

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7. Heritage Values

A desktop analysis has been undertaken to ascertain heritage values relating to the subject land.

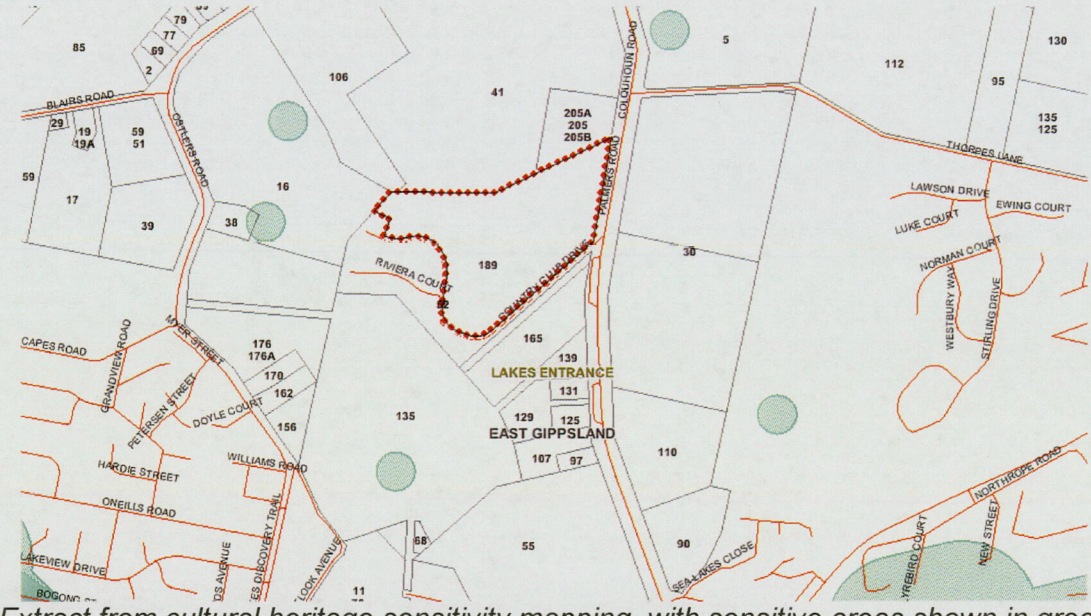
7.1 Aboriginal Cultural Heritage

Regulation 6 of the *Aboriginal Heritage Regulations 2007* requires a Cultural Heritage Management Plan be prepared for any Planning Application that involves a high impact activity on an area of cultural heritage sensitivity.

The subdivision of land into three or more lots constitutes a high impact activity as defined at Regulation 46 of the *Aboriginal Heritage Regulations 2007.*

The subject land is not mapped as an area of cultural heritage sensitivity as defined at Division 3, Regulations 22-38 (inclusive) of the *Aboriginal Heritage Regulations 2007*.

On that basis, the future subdivision of the subject land would not trigger the preparation of a Cultural Heritage Management Plan.



Extract from cultural heritage sensitivity mapping, with sensitive areas shown in green (Source: Planning Maps Online)

7.2 Non-Indigenous Cultural Heritage

A review of the Heritage Overlay has confirmed there are no properties within the LENGA precinct affected by this Overlay.

The *East Gippsland Shire: Heritage Gaps Study* (Context, September 2005) ('East Gippsland Heritage Study') identifies the Lakes Entrance Garden Cemetery at 165 Palmers Road, Lakes Entrance as a place of potential significance. Country Club Drive separates the subject land from this place of potential significance, therefore development of the subject land is unlikely to have any impact on the potential heritage values of the cemetery.

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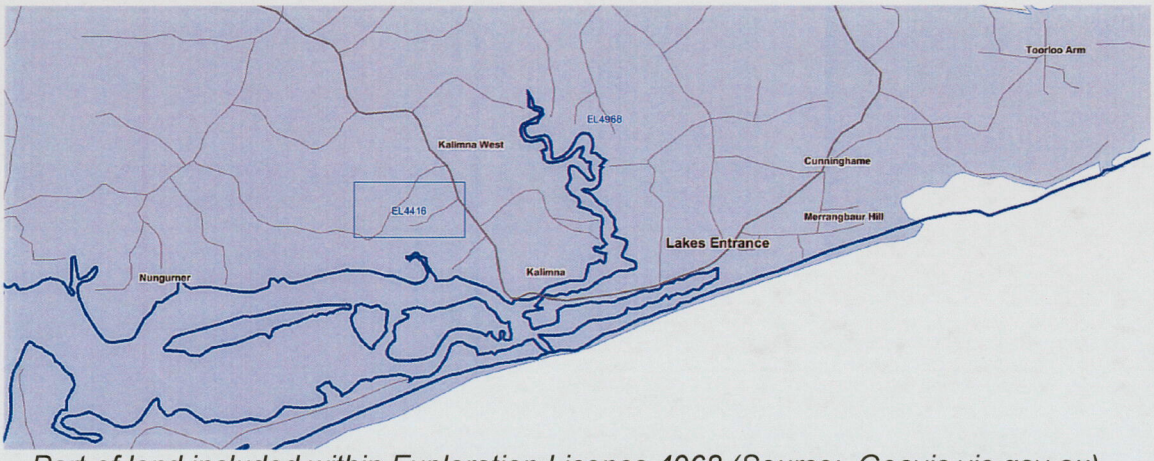
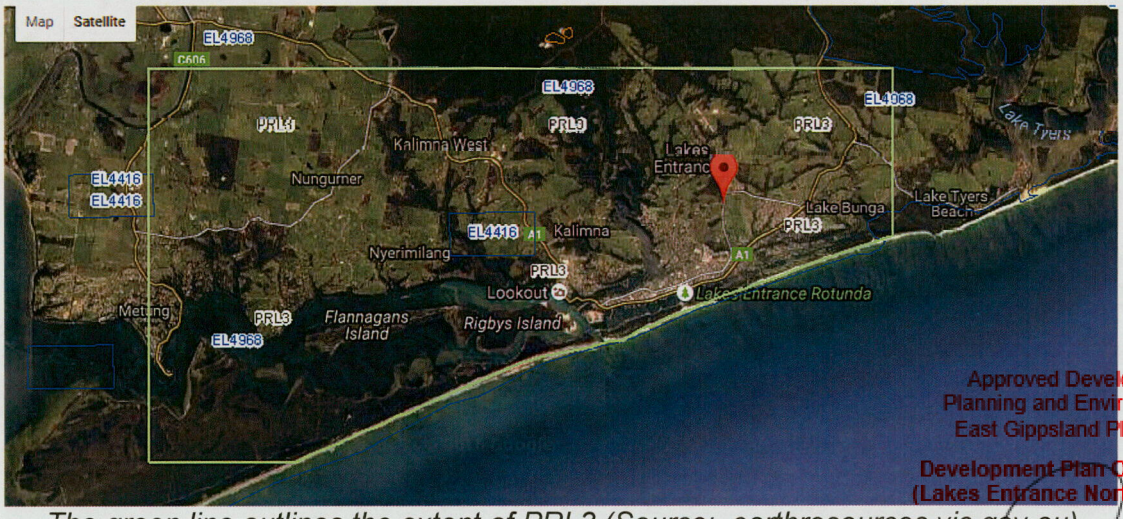
We understand that limitations in Council resourcing have prevented any further progress towards the actions recommended by the East Gippsland Heritage Study as recorded in minutes from the Ordinary Council Meeting held on 6 March 2007.

The township of Lakes Entrance, together with much of the land adjoining the coast from Golden Beach in the west to Lake Tyers in the east, is included within Exploration Licence EL4968. This Licence is held by Entrance Energy Ltd. and provide exploration rights for base metals, gold, mineral sands, platinum and silver, over an area of just under 2,000km^2.



Part of land included within Exploration Licence 4968 (Source: Geovic.vic.gov.au)

Lakes Entrance is also included within Onshore Petroleum Retention Lease PRL3, which covers an area of approximately 124km^2 from Metung in the west to Lake Bunga in the east. This Lease is owned by Petro Tech Pty. Ltd., with Lakes Oil Ltd. holding a 100% interest and will expire on 26 February 2017. We note the State Government has suspended all onshore petroleum exploration, with a moratorium preventing any such activities until 2020, providing opportunity for further studies to be undertaken, foreshadowing a permanent ban if risks to human health cannot be appropriately addressed.



The green line outlines the extent of PRL3 (Source: earthresources.vic.gov.au)

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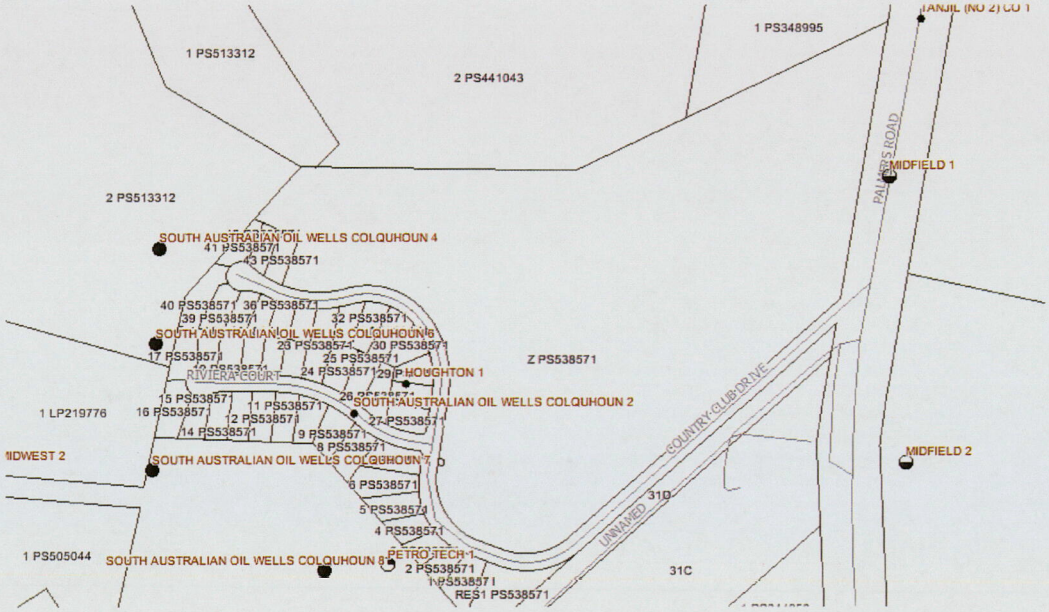
The East Gippsland Heritage Study provides an overview of historical exploration undertaken around Lakes Entrance:

> *"During the 1920s and 1930s, a number of bores were sunk around Lakes Entrance. Some oil was found, as well as artesian water which was utilised by the town. Further drilling in the 1940s and 1950s produced some oil. However, offshore drilling in the 1960s was highly successful and the wells were not further developed."* (Volume 3: Environmental History, Context, Sept 2005, p.60)

As a legacy of previous onshore exploration, there are a number of petroleum wells within the LENGA area, however none are located on the subject land.



Existing petroleum wells within proximity of subject land (Source: geovic.vic.gov.au)

7.3 Consideration of Heritage values

Based on the review of likely heritage considerations relevant to the subject land, there are considered to be no values that warrant further protection or management.

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8. Landscape Master Plan

Landscaping of the proposed development will consist of the following:

- Street tree planting at a rate of no less than one tree per vacant lot proposed;
- Plantings associated with an ecological buffer adjoining each side of the declared waterway comprising a 10 metre wide core riparian zone with riparian vegetation, with a further 20 metre wide outer zone planted with ground covers, sedges and grasses; and
- Retention and enhancement of remnant vegetation located within the proposed Reserve.

For landscaping detail relating to the proposed Gas Daughter Station, please refer to the submission from Echelon Planning.

The following comments provide a direct response to the items specified at Clause 3.1 to a Landscape Master Plan.

8.1 Safe and friendly streets

The development has been designed to deliver a network of connected and cohesive streets and public spaces where residents feel safe. The design provides for strong surveillance of the proposed Reserve which enjoys a wide and expansive frontage to both Country Club Drive and the proposed north-south Access Street.

The curvilinear street design assists in slowing traffic, promoting pedestrian safety. Proposed street tree plantings will line the streets to soften the hard edge associated with wide concrete footpaths adjoining both sides of the proposed road network.

The retention of the mature copse of Box Trees to the south-west of the proposed Reserve will announce the movement from hard to soft landscaping, with these impressive species assisting in providing an established feel to the Reserve.

The undulating topography of the Reserve including the drainage line and complimentary riparian plantings within the ecological buffer will provide interest and promote opportunities for passive enjoyment of the space.

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8.2 Entrance treatment and features

Unlike other properties within the LENGA, the subject land has a defined entry statement established as part of works associated with the residential subdivision approved by Planning Permit 306/2004/P issued by Council on 15 September 2005.

The Lakes View Estate has a low level rendered brick wall with gold coloured lasercut lettering affixed directly to the painted surface. Groundcover planting are established to the south-east of the sign, with ornamental gum trees planted either side to frame the structural element. The entry statement is discrete and well set back from the intersection with Palmers Road, ensuring there will be no impact on the safety of the intersection.



Entry signage viewed from Country Club Drive

No additional treatments or features are proposed to the entrance.

8.3 Planting themes

The landscaping of the proposed Reserve and streetscape areas will benefit from the knowledge gained through the curation of the Golf Course which was constructed in 1990-1991, commencing operation in 1993. At the time of construction the property was completely cleared of vegetation as part of the engineering of the site, save for a few small patches of scattered trees comprising native (eucalypt) and non-native (pine) species.

Over time the Golf Course environment has been enhanced through a planting regime which has resulted in cleared fairways with fringing vegetation of both a planted and regenerated nature, together with some retained mature species. Areas of vegetation have been allowed to regenerate since time of purchase to provide for wind breaks, visual amenity purposes and to provide variation and interest in the golf course.

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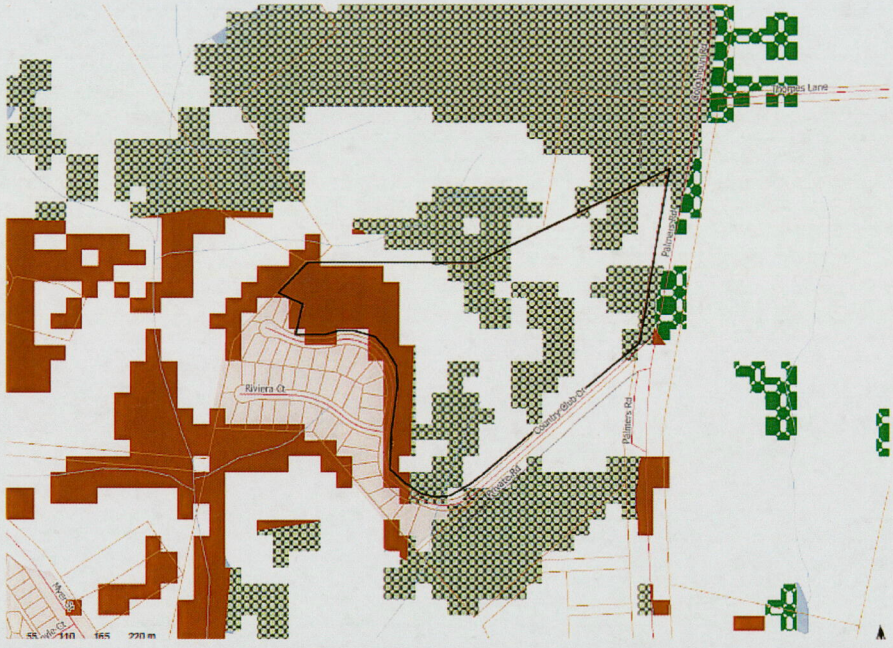
Some of the natural regeneration that has occurred along the northern boundary

Species commonly occurring include *Acacia longifolia* (Golden Wattle), *Acacia mearnsii* (Black Wattle), *Eucalyptus sp.* Gums, Ironbark, Box, *Exocarpos cupressiformis* (Cherry Ballart), *Allocasuarina littoralis* (Black Sheoak), *Pteridium esculentum* (Austral Bracken), *Lomandra filiformis* (wattle Mat-rush) and *Melaleuca parvistaminea* (Rough-barked Honey-myrtle).

Given the successful establishment of these species across the site, it is expected that future landscaping will utilise similar or complimentary species, having regard for the benchmark species associated with the ecological vegetation class as applying.

A later section of this report will provide commentary on the flora and fauna assessment undertaken for the site by Ethos NRM, with this assessment indicating the subject land is mapped as comprising of both Ecological Vegetation Class 16: Lowland Forest (to the west) and Ecological Vegetation Class 151: Plains Grassy Forest.



2005 EVC Mapping (Source: DELWP)

The site vegetation is considered to be representative of EVC 151 given the species which have been assessed as being present on site. Whilst mapping indicates that the EVC 16 is present, the ground conditions for the proposed Reserve area are considered more representative of EVC 151.

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A later section of this Report provides a summary of benchmark species for EVC 151 from which landscaping species will be derived. We note that the final selection and mix of species will be determined to the satisfaction of the Responsible Authority, and will be entirely dependent upon availability and suitability.

8.4 Tree Planting schedule

Street trees will be established throughout the site to deliver a cohesive streetscape theme, at a rate of one tree per residential lot proposed. Appropriate planting techniques will be utilised to assist the trees to establish, including installing tree guards and/or stakes, and mulching of disturbed soils.

The following species list is taken from Council's Preferred Tree Species document but is by no means exhaustive. Final selection and mix of species to be utilised within the streetscape will be dependent upon availability and suitability.

Scientific Name	Common Name	Height	Width
Acacia boormanii	Snowy River Wattle	4	3
Acacia caerulescens	Limestone Blue Wattle	-	-
Acacia cognate	Narrow-leaf Bower	5	3
Acacia floribunda	Gossamer	3	3
Acacia howittii	Sticky Wattle	5	5
Acacia implexa#	Lightwood	10	5
Acacia longifolia	Sallow Wattle	5	4
Acacia melanoxylon	Blackwood	6-30	3-15
Acacia pynantha	Golden Wattle	3-8	2-4
Acmena smittii	Lilly-pilly	8-30	
Allocasuarina littloralils#	Black She-oak	9	5
Allocasuarina strict	Drooping She-oak	8	4
Angophora floridunda	Rough-barked Angophora	20	10
Banksia ericifolia	Heath Banksia	4	3
Banksia marginate	Silver Banksia	5	3
Banksia integrifolia	Coast Banksia	4-20	
Banksia serrata	Saw Banksia	8	5
Banksia spinulosa	Hairpin Banksia	4	3
Brachychiton populeneus	Kurrajong	5-10	
Callistemon citrinus	Crimson Bottlebrush	3	3
Callistemon pallidus	Lemon Bottlebrush	4	3
Callistemon subulatus	Dwarf Bottlebrush	1.5	
Callistemon sieberi	Alpine Bottlebrush	1-3	
Callitris columellaris	White Cypress-pine	7-25	
Callistris endlicheri	Black Cypress-pine	5-15	
Callistris rhomboidea	Port Jackson Pine	2-6	
Corymbia maculate	Spotted Gum	40	20
Eucalptus bosistoana#	Coast Grey Box	25-45	
Eucalyptus elata	River Peppermint	20-45	

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Scientific Name	Common Name	Height	Width
Eucalpytus mellidora#	Yellow Box	12-30	
Eucalpytus neglecta	Omeo Gum	5-9	
Eucalyptus polyanthemos#	Red Box	7-25	
Eucalyptus albens	White Box	8-24	
Eucalyptus tricarpa	Ironbark	10-30	
Eucalyptus tereticornis#	Forest Red Gum	20-45	
Hakea eriantha	Tree Hakea	3-8	
Hakea sericea	Silky Hakea	3	2
Leptospermum grandifolium	Mountain Tea-tree	2-4	
Leptospermum laevigatum	Coast Tea-tree	2-8	
Lomatia fraseri	Tree Lomatia	7	4
Melaleuca armillaris	Giant Honey-myrtle	2-14	
Melaleuca ericifolia	Swamp Paperbark	2-9	
Melaleuca squarrosa	Scented Paperbark	3-6	4
Melaleuca stypheloides	Prickly Paperbark	8-10	5
Myporum insulare	Boobialla	5	3
Pittosporum undulatum	Sweet Pittosporum	4-14	
Tristania laurina	Kanooka	5-20	

Denotes those species which coincide with EVC151 benchmark species

8.5 Native Vegetation

The subject land was excluded from the Native Vegetation Precinct Plan at the request of our Client. Consideration of matters relating to vegetation removal therefore defaults to the provisions of Clause 52.17 of the *East Gippsland Planning Scheme*, and the future subdivision of the property must therefore be undertaken in accordance with the *Permitted clearing of vegetation – Biodiversity Assessment Guidelines* (DEPI, 2013).

For information relating to native vegetation impacts associated with the proposed Gas Daughter Station, please refer to the submission from Echelon Planning.

Native vegetation has been a key consideration in designing the proposed subdivision. The large Reserve area proposed to the south of the site seeks to preserve and enhance the integrity of the declared waterway, retain a large stand of mature Box trees, and also minimising biodiversity impacts on potential habitat for the Viscid Daisy-bush (*Olearia viscosa*). A Plan of Vegetation Removal (Figure 9) depicts in green the vegetation to be retained within the Reserve.

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Vegetation located within the boundaries of proposed Lot A will be retained, until such time as matters relating to the 500 metre buffer from the municipal landfill have been resolved. Any desire to remove this existing vegetation, identified as yellow on the Plan of Vegetation Removal (Figure 9) would be subject to further Planning consideration.

The remaining vegetation on site, depicted in purple, blue and orange on the Plan of Vegetation Removal (Figure 9) will be presumed lost as a consequence of the development. This vegetation is a mixture of regrowth (shown orange), planted vegetation (shown purple) and remnant vegetation (shown blue). In order to achieve no net loss in the contribution made by the vegetation to Victoria's biodiversity, vegetation offsets will be required to compensate for the removal of the remnant vegetation. Given the residential context of the subject land, third party offsets will need to be established offsite.

Vegetation management associated with the provision of defendable space is not proposed. The *Lakes Entrance Northern Growth Area Bushfire Study* (GHD, 2013) does not specify any requirements for ongoing management of vegetation within the subject land for the purposes of establishing and maintaining defendable space.

Reliance on the existing access point to Palmers Road avoids the need for any additional vegetation removal within the road reserve.

On balance the proposed development strikes an appropriate balance between the retention of vegetation for biodiversity values and the level of residential growth anticipated by LENGA.

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PLAN OF VEGETATION REMOVAL

PARISH OF COLQUHOUN
CROWN ALLOTMENT 124 & 31 (PARTS)

LOT Z ON PS538571E

LAKES VIEWS GIPPSLAND P/L

189 PALMERS ROAD, LAKES ENTRANCE

N:\Jobs\16000-16999\16800-16899\16870 NaDo Developments\16870 Veg Removal V2.pro

REMNANT VEGETATION TO BE REMOVED

REGROWTH TO BE REMOVED

PLANTED VEGETATION/ VEGETATION THAT DOES NOT TRIGGER CONSIDERATION OF CLAUSE 52.17 TO BE REMOVED

AREA AFFECTED BY LEGAL AGREEMENT AF 072419Q (0.6ha)

VEGETATION TO BE RETAINED SUBECT TO CLARIFICATION OF 500m BUFFER

VEGETATION TO BE RETAINED

MGA94 ZONE 55

PINE TREES & 11 TREES. THERE IS INSUFFICANT COVERAGE OF NATIVE SPECIES TO FORM A PATCH







FOR DETAIL REFER TO SUBMISSION FROM ECHELON PLANNING

B

PROPOSED GAS DAUGHTER STATION

A

PALMERS ROAD

ROAD

COUNTRY CLUB DRIVE

ROAD

ROAD

COUNTRY CLUB DRIVE

PLANTED CONIFERS

RESERVE

OUTER ZONE

CORE RIPARIAN ZONE

OUTER ZONE

20 10 10 30



HZ6



HZ7



HZ8



HZ9



SIGNIFICANT BOX TREES TO BE RETAINED



HZ13



HZ12 IS CLASSIFIED AS A VEGETATION PATCH AS IT COMPRISES OF MORE THAN 3 OVERSTOREY TREES



PLANTED BANKSIAS



MIX OF PLANTED SPECIES & REGROWTH VEGETATION WITH INSUFFICIENT COVERAGE TO FORM PART OF A PATCH. A MIX OF SPECIES ARE PROVIDED INCLUDING BLACK WATTLE & GOLDEN WATTLE.



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VERSION 2 - 24/02/2017

Crowther & Sadler Pty. Ltd.
LICENSED SURVEYORS & TOWN PLANNERS
182 MACLEOD STREET, BAIRNSDALE, VIC., 3875
P: (03) 5152 6011 E: contact@crowthersadler.com.au

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SCALE @A1 1 : 1000

SCALE @A3 1 : 2000

9. Flora and Fauna Assessment

A Flora and Fauna Assessment has been undertaken by Ethos NRM as part of the Habitat Hectares Assessment and Offset Requirement for proposed subdivision which is attached at Appendix D. Potential impacts on biodiversity arising as a consequence of the proposed subdivision were assessed, providing direction that any vegetation to be removed would need to follow a moderate risk-based pathway. We note the assessment did not consider the impacts of the proposed Gas Daughter Station.

The field survey indicated that two EVCs were applicable to the subject land, being EVC 16: Lowland Forest and EVC 151: Plains Grassy Forest. 64 different terrestrial flora species were recorded across the site, comprising 50 indigenous species and 14 exotic species.

A desktop assessment of the Victorian Biodiversity Atlas (DELWP, 2016) identified 2 flora and 17 fauna species listed under the *Environment Protection and Biodiversity Conservation Act 1999* within a 5 kilometre radius of the centre of the subject land. No flora or fauna species or communities listed by either the *Environment Protection* or the *Biodiversity Conservation Act 1999* or *Flora and Fauna Guarantee Act 1988* were recorded on the property.

The Coast Grey-Box (*Eucalyptus bosistoana*), listed as 'rare' on the *Advisory List of Rare or Threatened Plants in Victoria* (DEPI, 2014) was recorded as forming part of the patch identified as EVC 151: Plains Grassy Forest. The Assessment confirms the removal of four Coast Grey-Box trees will not result in a significant impact.

The Assessment acknowledges attempts to minimise impacts to biodiversity through the retention of an area of vegetation to be located within the proposed Reserve which has been mapped as potential habitat for the Viscid Daisy-bush (*Olearia viscosa*).

A Strategic Biodiversity Score of 0.202 has been calculated for the vegetation on site, which was assessed as being of low to moderate quality.

The Assessment calculates total impact equivalent of the vegetation to be removed as being 1.970 Hectares or 0.755 Habitat Hectares of native vegetation. The Offset Requirement triggered by the proposed removal of 1.970 Hectares of vegetation is specified as:

- 0.228 General Biodiversity Equivalence Units ('GBEUs);
- A minimum Strategic Biodiversity Score of 0.161; and
- Located within either the East Gippsland municipal boundary or the East Gippsland Catchment Management Authority boundary.

Offsets will need to be provided off site via a third party. A review of the Native Vegetation Credit Register has confirmed the availability of appropriate offsets within the East Gippsland Catchment Management Authority area to address this requirement.

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10. Waterway Management

The existing drainage line located to the south of the subject land is identified as a declared waterway under the *Water Act 1989*.

The integrity of this waterway has been preserved and enhanced by the proposed scheme of subdivision, with a 30 metre wide ecological buffer proposed either side of the waterway in accordance with the requirements of the LENGA ODP (p.44).

This buffer will be comprised of two zones:

i. The initial ten metres either side of the waterway will be established as a core riparian zone, and will be planted with riparian vegetation consistent with the applicable EVC.

ii. For a distance of twenty metres beyond the core riparian zone, an outer zone will be planted with ground covers, sedges and grasses consistent with the applicable EVC.

A review of the DELWP Interactive Maps indicates the waterway is located within *EVC 151: Plains Grassy Forest* of the Gippsland Plain Bioregion. The following species list outlines benchmark species for EVC 151 but is by no means exhaustive. Final selection and mix of species to be utilised within the ecological buffer will be dependent upon availability and suitability.

Life form	Scientific Name	Common Name
Trees	*Allocasuarina littoralis*	Black Sheoak
	Acacia mearnsii	Black Wattle
	Acacia implexa	Lightwood
	Eucalyptus baueriana	Blue Box
	Eucalyptus bosistoana	Coast Grey Box
	Eucalyptus botryoides	Southern Mahogany
	Eucalyptus bridgesiana	Apple Box or But But
	Eucalyptus cypellocarpa	Mountain Grey Gum
	Eucalyptus globoidea	White Stringybark
	Eucalyptus globulus ssp. Pseudogobulus	Gippsland Blue Gum
	Eucalyptus macrorhyncha	Red Stringybark
	Eucalyptus melliodora	Yellow Box
	Eucalyptus muelleriana	Yellow Stringybark
	Eucalyptus obliqua	Messmate
	Eucalyptus ovata	Swamp Gum
	Eucalyptus polyanthemos	Red Box
	Eucalyptus radiate s.l.	Narrow-leaf Peppermint
	Eucalyptus sieberi	Silvertop Ash
	Eucalyptus tereticornis ssp. Mediana	Gippsland Red Gum
	Exocarpos cupressiformis	Cherry Ballart

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Life form	Scientific Name	Common Name
Shrubs	*Acacia melanoxylon*	Blackwood
	Acacia mucronata	Narrow-leaf Wattle
	Acacia paradoxa	Hedgw Wattle
	Acacia pycnantha	Golden Wattle
	Acacia stricta	Hop Wattle
	Acrotriche serrulata	Honey-pots
	Allocasuarina littoralis	Black She-oak
	Allocasuarina verticillata	Drooping She-oak
	Astroloma humifusum	Cranberry Heath
	Banksia marginata	Silver Banksia
	Bossiaea prostrata	Creeping Bossiaea
	Cassinia aculeata	Common Cassinia
	Cassinia longifolia	Shiny Cassinia
	Epacris impressa	Common Heath
	Hibbertia aspera	Guinea Flower
	Hibbertia obtusifolia	Grey-leaf Guinea Flower
	Hibbertia riparia	Erect Guinea Flower
	Indigofera australis	Austral Indigo
	Kunzea ericoides	Burgan
	Leptospermum continentale	Prickly Tea-tree
	Melaleuca ericifolia	Swamp Paperbark
	Melaleuca parvistaminea	Rough-barked Honey-myrtle
	Melicytus dentatus	Tree Violet
	Olearia lirata	Showy Daisy-busy
	Olearia phylogopappa	Dusty Daisy-bush
	Ozothamnus ferrugineus	Tree Everlasting
	Phyllanthus hirtellus	Thyme Spurge
	Pimelea axiflora	Bootlace Bush
	Pimelea humilis	Common Rice-flower
	Platylobium obtusangulum	Common Flat-pea
	Pomaderris aspera	Hazel Pomaderris
Herbs	*Acaena novae-zelandiae*	Bidgee-widgee
	Dichondra repens	Kidney-weed
	Drosera peltata ssp. auriculata	Tall sundew
	Euchiton gymnocephalus	Creeping Cudweed
	Gonocarpus tetragynus	Common Raspwort
	Hydrocotyle hirta	Hairy Pennywort
	Hydrocotyle laxiflora	Stinking Pennywort
	Hypericum gramineum	Small St John's Wort
	Lagenophora sp.	Bottle-daisy
	Opercularia varia	Variable Stinkweed
	Oxalis corniculata s.l.	Yellow Wood-sorrel
	Poranthera microphylla	Small Poranthera
	Senecio hispidulus	Rough Fireweed
	Tricoryne elatior	Yellow Rush-lily
	Veronica calycina	Hairy Speedwell
	Viola hederacea	Ivy-leaf Violet
	Wahlenbergia gracilis s.l.	Sprawling Bluebell

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Life form	Scientific Name	Common Name
Other*	*Austrodanthonia spp.*	Wallaby-grasses
	Austrostipa spp.	Spear-grasses
	Billardiera scandens var. scandens	Common Apple-berry
	Bossiaea prostrata	Creeping Bossiaea
	Bulbine bulbosa	Bulbine Lily
	Clematis aristata	Mountain Clematis
	Clematis glycinoides	Forest Clematis
	Deyeuxia quadriseta	Reed Bent-grass
	Dianella admixta	Black-anther Flax-lily
	Dichelachne micrantha	Short-hair Plume-grass
	Echninopogon ovatus	Common Hedgehog-grass
	Entolasia marginate	Bordered Panic
	Epacris impressa	Common Heath
	Gahnia radula	Thatch Saw-sedge
	Glycine clandestina	Twining Glycine
	Hardenbergia violacea	Purple Coral-pea
	Lagenophora gracilis	Slender Bottel-daisy
	Lepidosperma laterale	Variable Sword-sedge
	Lomandra filiformis	Wattle Mat-rush
	Lomandra longifolia	Spiny-headed Mat-rush
	Microlaena stipoides var. stipoides	Weeping Grass
	Phyllanthus hirtellus	Thyme Spurge
	Pimelea humilis	Common Rice-Flower
	Poa australis spp. agg.	Tussock Grass
	Pteridium esculentum	Austral Bracken
	Tetrarrhena juncea	Forest Wire-grass
	Themeda triandra	Kangaroo Grass
	Tricoryne elatior	Yellow Rush-lily
	Xanthorrhoea minor ssp. lutea	Small Grass-tree

* *Includes all remaining lifeforms (grasses, groundcovers, graminoids, ferns, etc.)*

Source material:

Gippsland Vegetation Types: Ecological Vegetation Classes derived from *Ecological Vegetation Class Mapping at 1:25,000 in Gippsland*, Davies et.al (2001)

Indigenous Flora Species Selection Guide for Bairnsdale & surrounds, Greening Australia (2008)

Ecological Vegetation Class bioregion benchmark, Gippsland Plain bioregion, EVC 151: Plains Grassy Forest, Department of Sustainability & Environment (2004)

In accordance with the requirements of Clause 2.0 of Schedule 8 to the Development Plan Overlay, it is expected that a Condition on Planning Permit will require the preparation of a Detailed Landscape Plan to the satisfaction of the Responsible Authority.

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16870 Development Plan V

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Furthermore, it is anticipated any Planning Permit would include the mandatory condition relating to landscaping of public land (as specified at Clause 2.3 of Schedule 8 to the Development Plan Overlay), which would require the completion of landscaping to a standard to the satisfaction of the Responsible Authority.

Schedule 8 to the Development Plan Overlay includes a requirement for buffer zones to generally accord with the LENGA Native Vegetation Precinct Plan ('NVPP'). The subject land was deliberately excluded from the NVPP at the request of the property owner. The requirement to be generally in accordance with this Plan is therefore considered to be less relevant to the subject land.

11. Economic Assessment

The proposed Neighbourhood Activity Centre is located approximately 500 metres to the south of the subject land. Considerations relating to achieving an appropriate mix of commercial and retail uses are therefore not relevant to the consideration of this Development Plan.

For economic considerations associated with the proposed Gas Daughter Station, please refer to the submission from Echelon Planning.

12. Staging of the Development

A Staging Plan (Figure 10) has been prepared which anticipates the initial stage of subdivision being a two lot subdivision to create an allotment for the proposed Gas Daughter Station. From there, the residential development is anticipated to proceed in five stages.

Stage 2, being the first stage of residential development, will utilise existing road infrastructure, creating fifteen vacant allotments with frontage to Country Club Drive, together with a reserve designed to protect remnant vegetation and a waterway.

Stage 3 will again utilise existing road infrastructure, proposing the creation of six vacant allotments with frontage to Country Club Drive to the south-east.

The remaining three stages will require construction of new internal roads, with the sequencing of infrastructure works facilitating the orderly and progressive development of the site.

The development of the balance cell (Proposed Lot A) is unable to be considered until matters relating to the municipal landfill and associated 500 metre buffer have been resolved.

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Appendix B: Hydrology Report - Crossco Consulting

Appendix C: Geotechnical Risk Assessment - Simon Anderson Consultants

Appendix D: Habitat Hectares Assessment and Offset Requirements for proposed subdivision - Ethos NRM

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ROAD HIERARCHY PLAN

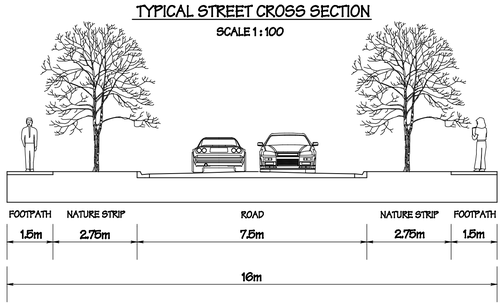
PARISH OF COLQUHOUN
CROWN ALLOTMENT 124 & 31 (PARTS)

LOT Z ON PS538571E

LAKES VIEWS GIPPSLAND P/L
189 PALMERS ROAD, LAKES ENTRANCE

N:\Jobs\16000-16999\16800-16899\16870 NicDis Developments\16870 Road Hierarchy V3.pro

TYPICAL STREET CROSS SECTION
SCALE 1:100



LEGEND

- EXISTING FOOTPATH
- PROPOSED FOOTPATH
- SHARED TRAIL
- OPPORTUNITY FOR FUTURE PEDESTRIAN CONNECTION
- OPPORTUNITY FOR FUTURE ROAD CONNECTION
- OPPORTUNITY FOR FUTURE SHARED PATH IN ACCORDANCE WITH LENGA ODP

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STAGING PLAN

PARISH OF COLQUHOUN
CROWN ALLOTMENT 124 & 31 (PARTS)

LOT Z ON PS538571E

LAKES VIEWS GIPPSLAND P/L
189 PALMERS ROAD, LAKES ENTRANCE

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STAGE 1

B

A

MGA94 ZONE 55

PALMERS ROAD

STAGE 4

1 2 3 4 5 6 7 8 9 10 11 12 13 31 32 33 34 35

STAGE 2

14 15 16 17 18 19 20 21 22 23 24

STAGE 3

25 26 27 28 29 30 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56

RESERVE

COUNTRY CLUB DRIVE

RIVIERA COURT

COUNTRY CLUB DRIVE

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Our ref: 16870

13 October 2017

Strategic Planning Coordinator
East Gippsland Shire Council
Via email – feedback@egipps.vic.gov.au

Attention: Ms. Nicole Reynolds

Dear Nicole,

Re: Development Plan – 189 Palmers Road, Lakes Entrance
Residential Subdivision
Our Client – NicDic Developments Pty. Ltd.

We are pleased that Council provided 'in principle' endorsement of the Development Plan for the above mentioned project at the Ordinary Council Meeting of 3 October 2017.

Our instructions from our Client are to work with Council towards addressing the matters raised within the recommendation detailed within the Council Report as adopted by Council to obtain an endorsed plan set.

To progress this matter we have prepared the following response to the recommendation to ensure we have an understanding of Council's requirements. We would appreciate your confirmation that we have interpreted the recommendation appropriately.

Rec. 1.1 and 1.2 – Modified Staging Plan

Please find enclosed a revised Staging Plan (Version 3), with the stages adjusted to ensure alignment with proposed methods of stormwater drainage as detailed in the enclosed Future Stormwater Management Plan prepared by Crossco Consulting (Drawing No. 1695/004-A).

Rec. 1.3 – Timing for Detailed Drainage Design

We understand detailed design of drainage and associated acquisition processes (where required) will be addressed as part of future Planning Applications, to the satisfaction of the Responsible Authority. No further action is required prior to the approval of the Development Plan.

Rec. 1.4 – Impact of staging on Council drainage infrastructure

Future Planning Applications will be required to have regard for the timing of the broader LENGA drainage infrastructure program.

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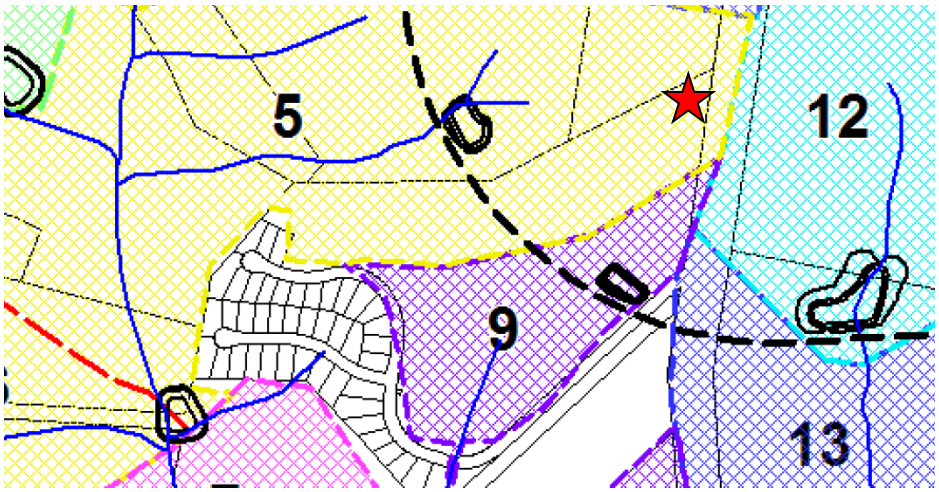
bsi. ISO 9001 Quality Management FS 520900
Consulting Surveyors Victoria MEMBER FIRM

Rec. 1.4 *[sic]* – Acquisition of Retarding Basin RB7a

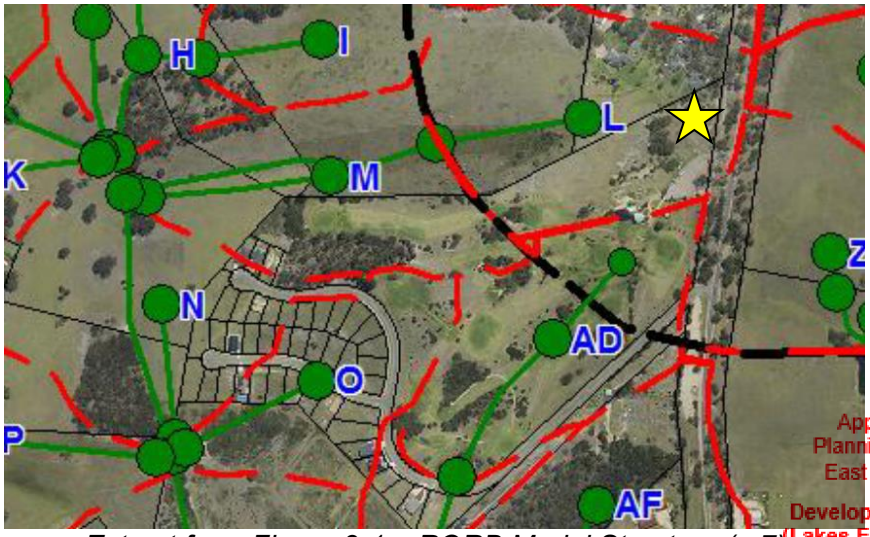
We understand that Council has included this requirement to assist in facilitating drainage of the Gas Daughter Station proposed for the north-eastern corner of our Client's property ('the Gas site').

We believe this site will not drain to the south-west, and will not require this retarding basin. This opinion is supported by the catchment hydrology characteristics reported by Water Technology within the document *Northern Growth Area – Lakes Entrance Development Concept Plan Hydrology* (October 2013). The portion of our Client's site containing the Gas site forms part of Catchment 5 which drains to the north-east, whilst RB7a is positioned at the head of Catchment 9.



Extract from Figure 2-1 – Waterway Features and Internal Catchment Boundaries DCP (p.6), with proposed Gas site highlighted with red star

This is also supported by RORB Modelling and MUSIC modelling for the precinct, each of which demonstrate the Gas site forms part of a drainage sub-catchment that drains to the north-west.



Extract from Figure 3-1 – RORB Model Structure (p.7) with Gas site denoted with yellow star

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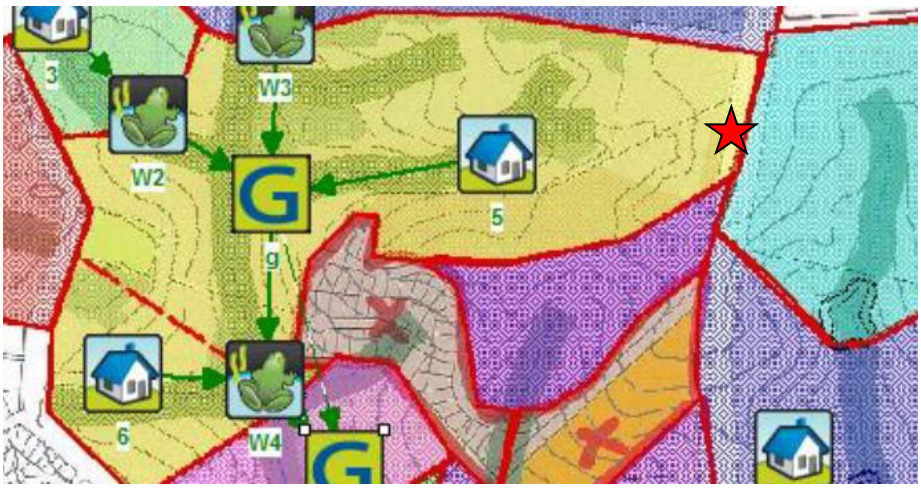

Extract from Figure 3-4 – Part 1 MUSIC Model Layout (p.11) with Gas site denoted with red star

On that basis there is no need for Council to acquire the land for RB7a as part of Stage 1. Furthermore, the aforementioned Water Technology report states that RB7a is not required to deliver Part 1 of the LENGA development area. It is expected that the future rezoning of the balance of the LENGA area will address matters relating to the creation of RB7a, including appropriate financial mechanisms for compensation associated with acquisition.

Rec. 1.5 – Hydrology Report

We understand it is Council's expectation that a Hydrology Report that identifies all flow paths, flood extents, flood levels and velocities for existing and proposed conditions will be required to accompany any Application for Planning Permit.

Rec. 1.6 – Stormwater Management Plan

Both Council and the East Gippsland Catchment Management Authority ('EGCMA') will require any Application for Planning Permit to be accompanied by a Stormwater Management Plan. Drainage outcomes anticipated by this Plan must be generally in accordance with the aforementioned Water Technology Report and the LENGA Outline Development Plan.

Rec. 1.7 – Waterway Management Plan

The EGCMA will require a Waterway Management Plan ('WMP') be submitted and endorsed, forming part of the Planning Permit for any future subdivision. In practice we have found the EGCMA will require this level of detail to be submitted prior to Certification, but would not require as part of the Planning Application suite of documents.

Rec. 1.8 – Works on Waterways

Any works proposed within 30 metres of a designated waterway would need to be detailed on plans submitted as part of any Planning Application. The need for a Works on Waterways Permit is expected to be referenced as a 'note' on Planning Permit.

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Rec. 1.9 – Staged Payment of Development Contribution Levies

We thank Council for the inclusion of this recommendation. We would expect that the first Planning Permit that deals with land affected by the Development Contributions Plan Overlay will include a Condition that will require the execution of a Section 173 Legal Agreement to formalise this arrangement in perpetuity.

Rec. 1.10 – Ending of Legal Agreement AF072419Q

It is acknowledged that any Planning Application that seeks to remove vegetation within the area currently affected by Legal Agreement AF072419Q will also need to address the obligations of the Agreement. We anticipate a Condition on Permit would require the ending of the Agreement prior to the issue of Statement of Compliance. Ideally, a request to end the Agreement pursuant to Section 177(2)(a) of the *Planning & Environment Act 1987* would be submitted for consideration in parallel with the Planning Application.

Rec. 1.11 – Vegetation Offsets

It is expected that any Planning Permit which approves the removal of native vegetation will include a Condition that requires offsets to be established to the satisfaction of DELWP and the Responsible Authority. It is acknowledged that in this instance, a further 'offset' will be required to compensate for the removal of vegetation within the area earmarked by the Agreement.

Rec. 1.12 – Intersection Treatments

All intersection treatments proposed within the LENGA ODP for the intersection of Palmers Road and Country Club Drive (identified at Page 25 as 'Access Point 9') are in place today. We remain reliant upon the Traffic Impact Assessment Report prepared by Sustainable Transport Surveys as submitted with the Development Plan which confirms no further intersection treatments are required to accommodate the additional development traffic associated with the proposed subdivision.

We acknowledge that the intersection may need to be reviewed should further subdivision of the balance allotment be proposed in the future, presuming the 500 metre buffer from the municipal landfill is removed from the site. The future subdivision of the balance allotment, described as Lot A on the Proposed Subdivision Plan (Version 2 – drawn 234/02/2017) will need to consider likely traffic impacts in accordance with the requirements of Clause 56 of the Planning Scheme.

Rec. 1.13 – Amended Road Hierarchy Plans

We respectfully seek Council's clarification on standard road cross sections. We understand Council has previously established that where there is an inconsistency between the Infrastructure Design Manual ('IDM') and an adopted Strategic Document, that the Strategic Document should be relied upon.

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For example, in the Paynesville Growth Area Precinct Structure Plan, single sided footpaths are prescribed for an Access Street, contrary to the IDM requirement for footpaths on both sides.

In this instance, the following variance exists for an Access Street:

LENGA ODP	7.3m from kerb invert to kerb invert
IDM	7.5m from kerb invert to kerb invert

Your recommendation directs us to adopt the IDM specification instead of the LENGA ODP, which is inconsistent with Council's practice elsewhere. We seek your clarification as to what other elements of the LENGA ODP where there are inconsistencies with the IDM should be ignored through the implementation of this project.

Rec. 1.14 – Works associated with vehicle access

It is acknowledged that any works proposed to shape the landform, including modifying the grade of vehicle access for lot with frontage to Country Club Drive, will need to be specified in plans which will form part of a Planning Application. As the recommendation suggests, this may well include retaining walls and constructed driveway entries. It is expected that a Condition on Permit may require detailed construction drawings be submitted for approval by Council prior to the commencement of works.

Rec. 1.15 – Proposed Footpaths

The enclosed Road Hierarchy Plan (Version 3) has been amended to delete the footpath to the north of the site in accordance with Council's request.

Rec. 1.16 – Detailed Design

As is the case for any residential subdivision, it is expected that Conditions on Permit will include requirements for detailed plans to be submitted to Council for approval prior to the commencement of works. This level of detail is not required to be provided at this point in time.

We trust that the responses provided above are consistent with Council's expectations and requirements, and will enable the approval of the Development Plan for our Client's project.

As always, please do not hesitate to contact our office should you wish to discuss any element of this project.

Regards,

MICHAEL SADLER

Encl. *Staging Plan (Version 3 – drawn 13/10/2017)*
Road Hierarchy Plan (Version 3 – drawn 9/10/2017)
Crossco Consulting – Future Stormwater Management Plan (1965/004-A)

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Sustainable Transport Surveys

Lakes Views Estate

189 Palmers Road, Lakes Entrance

Reference: 13031REP01F01

Prepared for: Lakes Views Gippsland Pty Ltd

2 December 2013

Prepared by

Sustainable Transport Surveys Pty Ltd

ABN 76 150 090 207

39 Williams Parade

Bairnsdale VIC 3875

Telephone: (03) 5152 7422

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Appendix

Appendix 1: Proposed Subdivision

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Lakes Views Estate
189 Palmers Road, Lakes Entrance

Document Control

Version	Position	Prepared by	Date
REP01D01	Principal Traffic Engineer	James Brownlie	25/11/2013
REP01D01 Checked	Office Manager	Sophie Beasley	26/11/2013
REP01F01	Principal Traffic Engineer	James Brownlie	`2/12/13

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1 Introduction

Sustainable Transport Surveys was retained by Crowther & Sadler Pty Ltd on behalf of Lakes Views Gippsland Pty Ltd to undertake an assessment of the additional traffic volumes associated with the expansion of the Lakes Views Residential Estate, Lakes Entrance and to assess the impacts of the additional traffic volumes on the intersection of Palmers Road and Country Club Drive.

In the course of preparing this assessment, the subject site and its environs have been inspected, plans of the development reviewed and all relevant traffic volume data collected and analysed.

2 Background

2.1 Location and Existing Conditions

The subject site is generally located on the northwest corner of the intersection Palmers Road and Country Club Drive, Lakes Entrance, as shown in Figure 1 and has a frontage to Country Club Drive. The subject site currently forms part of the Lakes View Golf Course.

Land uses within the vicinity of the subject site are mixed in nature with the Lakes View Golf Course located to the north of the site, the Lakes Entrance Cemetery is located to the east on the opposite side of Country Club Drive while residential properties within the Lakes Views Estate are located to the south/west. To the east of Palmers Road land is typically used for farming.

Figure 1: Locality Plan



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2.2 Road Network

2.2.1 Palmers Road

Palmers Road is a Road Zone 1 controlled and managed by VicRoads which provides access from the township of Lakes Entrance in the south through to Lakes – Colquhoun Road in the north.

In the vicinity of the subject site Palmers Road has a typical rural cross section with one 3.0 metre trafficable lane in each direction with gravel shoulders and an 80 km/h speed limit applies, as shown in Figure 2.

In the vicinity of Country Club Drive, local road widening is provided to facilitate dedicated left and right turn lanes, as shown in Figure 3. The dimensions of the turn lanes are shown in Table 1.

Table 1: BAR and BAL Dimensions

Lane Type	Lane Width (metres)	Taper at start (metres)	Lane Length (metres)	Taper at end (metres)	Total Length (metres)
BAR	3.5	17.0	74.4	48.0	139.4
BAL	3.1 (at kerb and channel) 4.2 (at wides point)	21.0	33.0	-	54.0

Figure 2: Palmers Road Facing South Towards Country Club Drive



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Figure 3: Road Widening at the Intersection of Palmer Road and Country Club Drive



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2.2.2 Country Club Drive

Country Drive is a local street providing access from Palmers Road in the west through to residential properties within the Lakes Views Estate.

In the vicinity of the subject site Country Club Drive has an approximate 7.6 metres wide carriageway set within an approximate 16.6 metre wide road reserve which provides one trafficable lane in each direction with kerb and channel adjacent both kerbs. The intersection of Palmers Road and Country Club Drive is controlled by 'giveway' signage and linemarking as shown in Figure 4.

A view of Country Club Drive facing west is shown in Figure 5.

Figure 4: Country Club Drive Facing East Towards Palmer Road



Figure 5: Country Club Drive Facing East From Palmers Road



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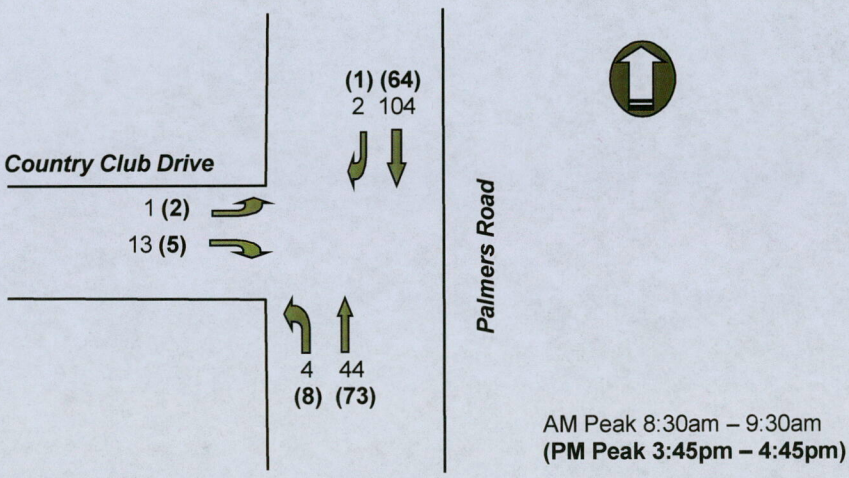
2.3 Traffic Volumes

In order to ascertain the existing traffic volumes within the vicinity of the subject site, Sustainable Transport Surveys undertook turning movement surveys at the intersection of Palmers Road and Country Club Drive on Wednesday 20 November 2013 between 7:00am – 9:45am and 3:00pm – 5:30pm.

The surveys recorded the individual vehicle movements for all approaches at the intersection during 15 minute intervals.

The AM and PM peak period occurred between 8:30am – 9:30am and 3:45pm – 4:45pm respectively, as shown in Figure 6.

Figure 6: AM and PM Peak Traffic Volumes



2.4 Existing Intersection Operating Conditions

To assess the exiting operation of the Palmers Road/Country Club Drive intersection the traffic volumes shown in Figure 6 have been input into SIDRA. Sidra (Signalised and Unsignalised Intersection Design and Research Aid) is a computer package, which provides information about the capacity of an intersection in terms of a range of parameters, as described below:

Degree of Saturation (DoS) is the ratio of the volume of traffic observed making a particular movement compared to the maximum capacity for that movement. Various values of degree of saturation and their rating are shown in Table 2.

Table 2: Rating of Degrees of Saturation

Degree of Saturation	Rating
Up to 0.6	Excellent
0.6 to 0.7	Very Good
0.7 to 0.8	Good
0.8 to 0.9	Fair
0.9 to 1.0	Poor
Above 1.0	Very Poor

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95th Percentile (95%ile) Queue represents the maximum queue length, in metres, that can be expected in 95% of observed queue lengths in the peak hour.

Based on the existing road geometry and proposed traffic volumes, the results of the analysis are presented in Table 3.

Review of Table 3 indicates that all approaches of the intersection operate within the 'excellent' category during both the AM and PM peak periods with minimal delays and queues for all approaches.

Table 3: Existing Operation Conditions – Palmers Road/ Country Club Drive

Leg	Movement	AM Peak			PM Peak		
		DoS	Av. Delay (seconds)	95th'ile Queue (m)	DoS	Av. Delay (seconds)	95th'ile Queue (m)
Palmers Road (N)	Right	0.01	9	0	0.01	9	0
	Through	0.06	0	0	0.04	0	0
Palmers Road (S)	Left	0.01	8	0	0.01	9	0
	Through	0.03	0	0	0.04	0	0
Country Club Drive	Left/right	0.02	10	1	0.01	10	0

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3 Proposed Development

It is proposed to develop the southern section of the Lakes View Golf Course as an extension of the existing Lakes Views Estate, comprising an additional 66 residential lots.

Access to the residential estate will be retained from Palmers Road via Country Club Drive and a new local street network will prove access to 40 residential lots with the remaining 26 lots accessed from Country Club Drive.

A copy of the proposed subdivision plan is shown in Appendix 1.

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4 Traffic Considerations

4.1 Traffic Generation

Surveys undertaken by Sustainable Transport Surveys and other traffic consultancies generally indicate that low density residential subdivisions typically generate between 6.1 and 8.5 vehicle movements per dwelling per day with 10% of daily volumes occurring in the AM and PM peak periods.

This was confirmed during turning movement surveys undertaken at the intersection of Stirling Drive and Thorpes Lane, Lakes Entrance on Wednesday 8 February 2012 between 7:30am – 9:30am and 4:00pm – 6:00pm.

Stirling Drive provides the only access to a residential subdivision comprising 123 residential dwellings.

The subdivision generated 0.63 movements per dwelling in the AM peak period (8:15am – 9:15am) and 0.71 vehicle movements per dwelling in the PM peak period (4:15pm – 5:15pm).

Whilst the AM network peak and AM development peak coincided the overall development PM peak occurred between 4:45pm – 5:45pm with 0.78 vehicle movements per dwelling.

In order to allow a conservative assessment of the traffic impacts associated with the proposed subdivision a traffic generation rate of 9.0 movements per residential lot has been applied to the 66 lots. Accordingly it is anticipated that the subdivision will generate 594 vehicle movements per day.

It is anticipated that 59 vehicle movements will occur during both the AM and PM peak periods split between inbound and outbound movements.

The existing Lakes Views Estate comprises a total of 44 lots with 14 houses currently constructed resulting in 30 vacant lots. The existing 30 vacant lots are anticipated to generate an additional 270 vehicle movements per day including 27 during the AM and PM peak periods.

4.2 Traffic Distribution

The distribution of traffic onto the road network from the proposed subdivision will be dependent on a number of factors including:

- The purpose of the trip;
- Access points available to the surrounding arterial network; and
- Likely trip destination.

Residentially generated trips can broadly be classified into work, shopping, recreational or school based, with research conducted by the Ministry of Transport indicating the following break ups applicable to the site:

- Work 36%
- Personal/ business/ shopping 34%
- Social/ recreational 25%
- School 5%

In consideration of the existing road network, and based on the previously undertaken turning movement surveys (At the intersection of Palmers Road and Country Club Drive) it is anticipated that traffic will be distributed 70% outbound and 30% inbound during the AM peak and 45% outbound and 55% inbound during the PM peak period. During the AM peak period traffic will be distributed 15% to and from the north while during the PM peak 18% will be allocated to the north, with the remain traffic volumes allocated to the south along Palmers Road.

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Based on the preceding the anticipated development traffic volumes (including undeveloped lots) are as shown in Figure 7.

The post development traffic volumes are shown in Figure 8.

Figure 7: Anticipated Development Traffic Volumes (including undeveloped lots)

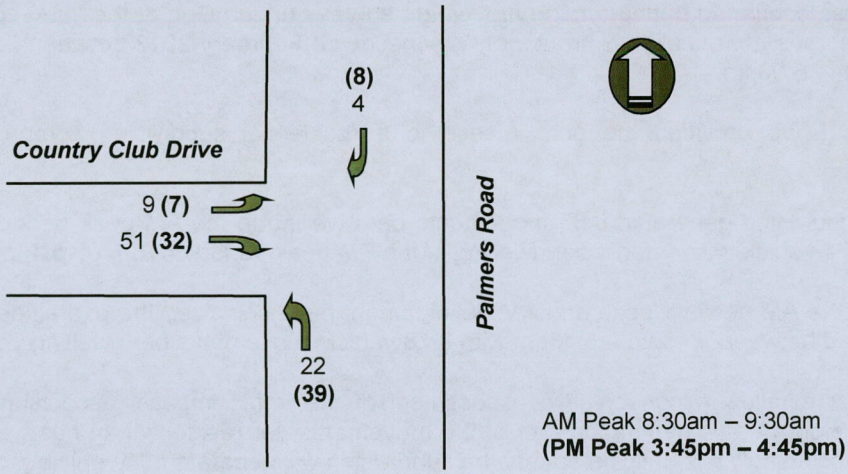
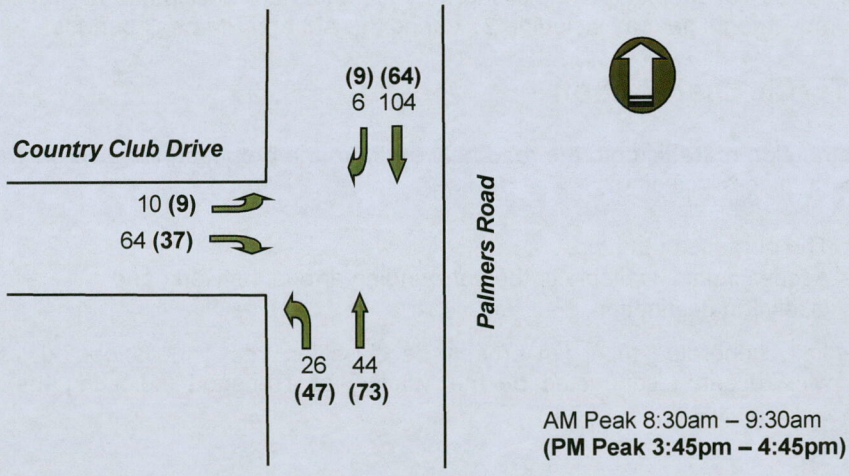


Figure 8: Post Development Traffic Volumes



4.3 Traffic Impacts

To assess the impacts of the proposed subdivision on the intersection of Palmers Road and Country Club Drive the projected traffic volumes illustrated in Figure 8 have been analysis using SIDRA. The results of the analysis are shown in Table 4.

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Table 4: Proposed Operation Conditions – Palmers Road/ Country Club Drive

Leg	Movement	AM Peak			PM Peak		
		DoS	Av. Delay (seconds)	95th'ile Queue (m)	DoS	Av. Delay (seconds)	95th'ile Queue (m)
Palmers Rd (N)	Right	0.01	9	0	0.01	9	0
	Through	0.06	0	0	0.04	0	0
Palmers Rd (S)	Left	0.02	8	0	0.03	8	0
	Through	0.03	0	0	0.04	0	0
Country Club Drive	Left/right	0.11	4	3	0.07	10	2

A review of Table 4 indicates that all approaches will continue to operate under 'excellent' conditions with minimal delays or queuing during both the AM and PM peak periods.

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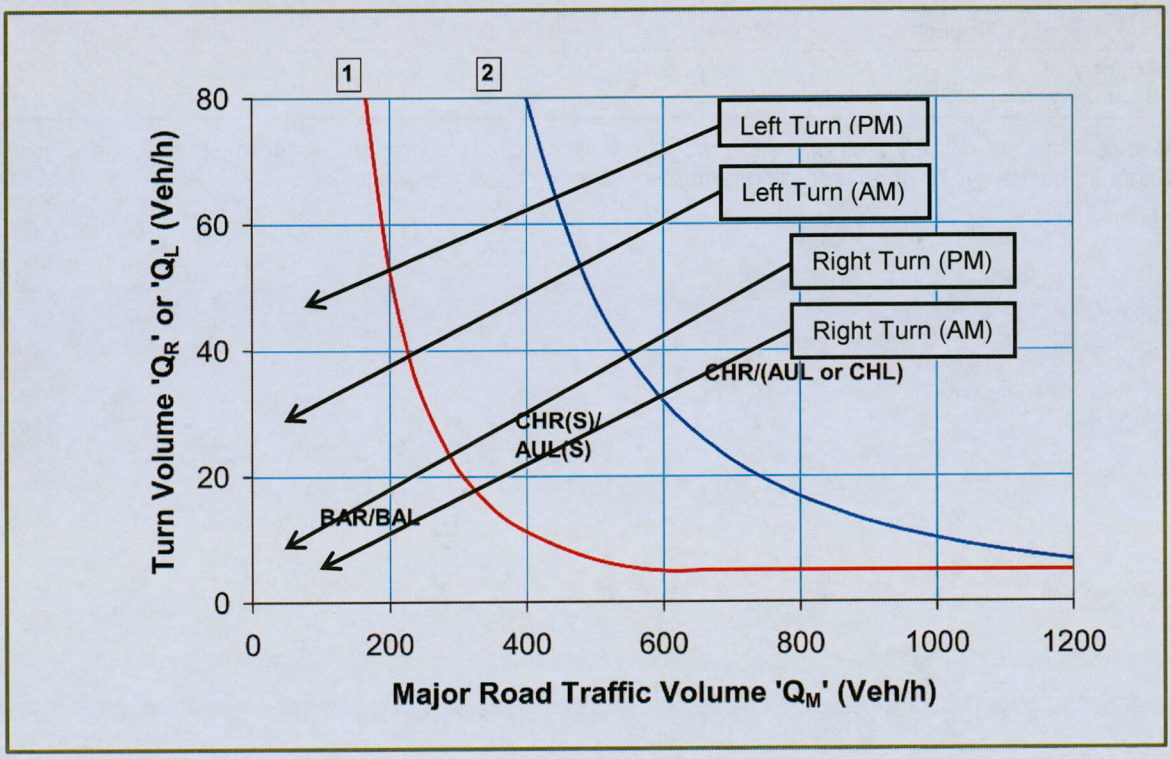
5 Design Considerations

5.1 Auxiliary Turn Lanes

The warrants for various turn treatments on Major Roads at unsignalised intersections are detailed within the Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections.

Given that Palmer Road has a speed limit of 80km/h in the vicinity of the Country Club Drive, the warrants and anticipated traffic volumes are illustrated in Figure 9.

Figure 9: Turn Lane Warrants



5.1.1 Rural Basic Right-turn Treatment (BAR)

A review of Figure 9 indicates that the provision of a BAR turning treatment is warranted in this instance. It is noted that with regards to the provision of a right turn treatment the Austroads Guide to Road Design does not indicate the warrants for not providing a turn treatment (the provision of a single through lane only).

A BAR treatment provides sufficient trafficable width for the design through vehicles to pass to the left of a stationary turning vehicle. This is achieved by widening the shoulder to provide a minimum width sufficient to allow the vehicles to pass. Substantial speed reduction is a feature of this layout.

The existing BAR treatment has an overall length of approximately 140 metres and a width of 3.5 metres while the though lane has a width of 3.0 metres. This is considered more than sufficient to allow through traffic to pass vehicles turning right into the Lakes Views Estate in this instance.

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5.1.2 Rural Basic Left-turn Treatment (BAL)

A review of Figure 9 indicates that the provision of a BAR turning treatment is warranted in this instance.

A BAL treatment is defined as a widened shoulder, which assists turning vehicles to move further off the through carriageway making it easier for through vehicles to pass.

The existing BAL treatment has a total length of 54 metres including 33 metres of storage and a minimum width of 3.1 metres, while the through lane has a width of 3.0 metres. The existing BAL treatment will adequate accommodate for the anticipated development traffic.

A review of Table 4 indicates that during the AM and PM peak periods the left turn lane is anticipated to have a 95th percentile queue length of 0 metres. Accordingly it is anticipated that left turn traffic will have no impact on the existing operations of through traffic along Palmers Road.

5.2 Clause 56 Assessment

Clause 56 of the East Gippsland Planning Scheme relates to 'Residential Subdivision' and specifies 'Objectives' and 'Standards' to meet specified design element criteria.

With regard to traffic and car parking issues, the most relevant is Clause 56.06; Access and Mobility Management, consisting of the following key objectives:

56.06-1:	Integrated Mobility Objectives
56.06-2:	Walking and Cycling Network Objectives
56.06-3:	Public Transport Network Objectives
56.06-4:	Neighbourhood Street Network Objectives
56.06-5:	Walking and Cycling Network Detail Objectives
56.06-6:	Public Transport Network Detail Objectives
56.06-7:	Neighbourhood Street Network Detail Objectives
56.06-8:	Lot Access Objective

The assessment of the effectiveness of the road network in meeting the above objectives will be determined by its ability to provide;

- A safe and accessible road network;
- No incentive for through traffic intrusion;
- Suitable access for emergency and service vehicle access;
- A low speed traffic environment;
- A safe and convenient pedestrian and bicycle network;
- An attractive streetscape with a high level of residential amenity;
- Safe intersection design, with a preference for T-intersections; and
- Sufficient room for drainage systems, public utility services and street lighting.

An assessment of each of the relevant objectives is presented below:

5.2.1 Clause 56.06-1: Integrated Mobility

The intent is to achieve an urban design that is permeable and compact that encourages walking, cycling and public transport modes, with accessibility to larger activity centres.

The small scale and location of the subdivision provides limited opportunity for an integrated mobility networks to be created, this being said the subdivision provides one local street that loops from the western end of Country Club Drive towards the eastern end. This new local street will assist in providing an integrated mobility network. An additional local street provides access to 8 residential lots and an allowance has been made for possible future access from the eastern end of this street.

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The subdivision is well serviced by footpaths with footpath provided on at least one side of all new streets. With regards the bicycle network the streets provide bicycle facilities on road in accordance with the East Gippsland Planning Scheme.

5.2.2 Clause 56.06-2 & 56.06-5: Walking and Cycling

The intent is to create subdivisions that encourages walking and cycling within the residential development, and between surrounding neighbourhoods.

The road network within the proposed subdivision is suitably designed to encourage both pedestrian and cyclist trips within and through the area. The internal road network has footpaths on at least one side of all streets. The shared on road cycle facilities provides access through the estate

The proposed pedestrian and cycling networks provide a safe and direct movement through the proposed subdivision.

5.2.3 Clause 56.06-3 & 56.06-6: Public Transport Network

The intent is to encourage the use of existing public transport infrastructure, and to create new services that provide links to surrounding activity nodes.

The public transport servicing the adjacent area is very limited with no buses currently servicing Lake Views Estate.

This being said it is envisaged that should a bus service be provided to the estate, buses will be able to access via Country Club Drive and circulate through the new local street.

5.2.4 Clause 56.06-4 & 56.06-7: Neighbourhood Street Network

The intent is to for direct, safe and easy movement through and between neighbourhoods for pedestrians, cyclists, public transport and other motor vehicles.

The proposed internal road layout will comprise a 7.2 metre wide carriageway set within an 15.8 metre wide road reserve, while the existing street (Country Club Drive) has a carriageway of approximately 7.6 metres set within a road reserve of approximately 16.6 metres.

Based on Clause 56.06-8 of the East Gippsland Planning Scheme, Country Club Drive is defined as an Access Street Level 2. An Access Street Level 2 is designed to accommodate between 2,000 – 3,000 vehicles per day.

The Estate is anticipated to generate up to 990 vehicles movements per day (total 110 lots at 9 vehicle movements per lot per day) including 99 vehicles movements during each peak period. The daily traffic volumes for the internal subdivision roads are well within the recommended volume limits specified in Table C1 of Clause 56.06-8 of the East Gippsland Planning Scheme.

The proposed road network will provide adequate clearances to cater for the access requirements of service and emergency vehicles (e.g. typically up to an 8.8m truck).

The design and construction of all street carriageways/verges provide a street geometry and vehicle speeds that provide for an accessible and safe neighbourhood road network for all users.

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5.2.5 Clause 56.06-8: Lot Access

The intent is to provide for safe vehicle access between roads and subdivision lots.

All lots will have direct access onto the proposed internal road or onto Country Club Drive.

The design and construction of all vehicle crossovers will generally be in accordance with Council's requirements.

The proposed access arrangements will provide safe and convenient access to individual lots.

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6 Conclusion

Based on the preceding analysis for the Lakes Views Estate, Lakes Entrance it is concluded that:

- It is proposed to develop an additional 66 residential lots within the Lakes Views Estate, resulting in a total of 110 residential lots access from Country Club Drive, Lakes Entrance;
- All development traffic will access the site via the intersection of Palmers Road and Country Club Drive;
- The additional 66 lots are anticipated to generate an additional 594 vehicle movements per day including 59 vehicle movements during the AM and PM peak periods;
- The anticipated development traffic will be accommodated by the intersection of Palmer Road and Country Club Drive with the intersection continuing to operate under "excellent" conditions during both the AM and PM peak periods with minimal delays or queuing;
- The internal road network for the residential subdivision has generally been designed in accordance with Clause 56 of the East Gippsland Planning Scheme; and
- The existing BAR and BAL treatments on Palmers Road are sufficient to accommodate the additional development traffic.

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Appendix 1: Proposed Subdivision

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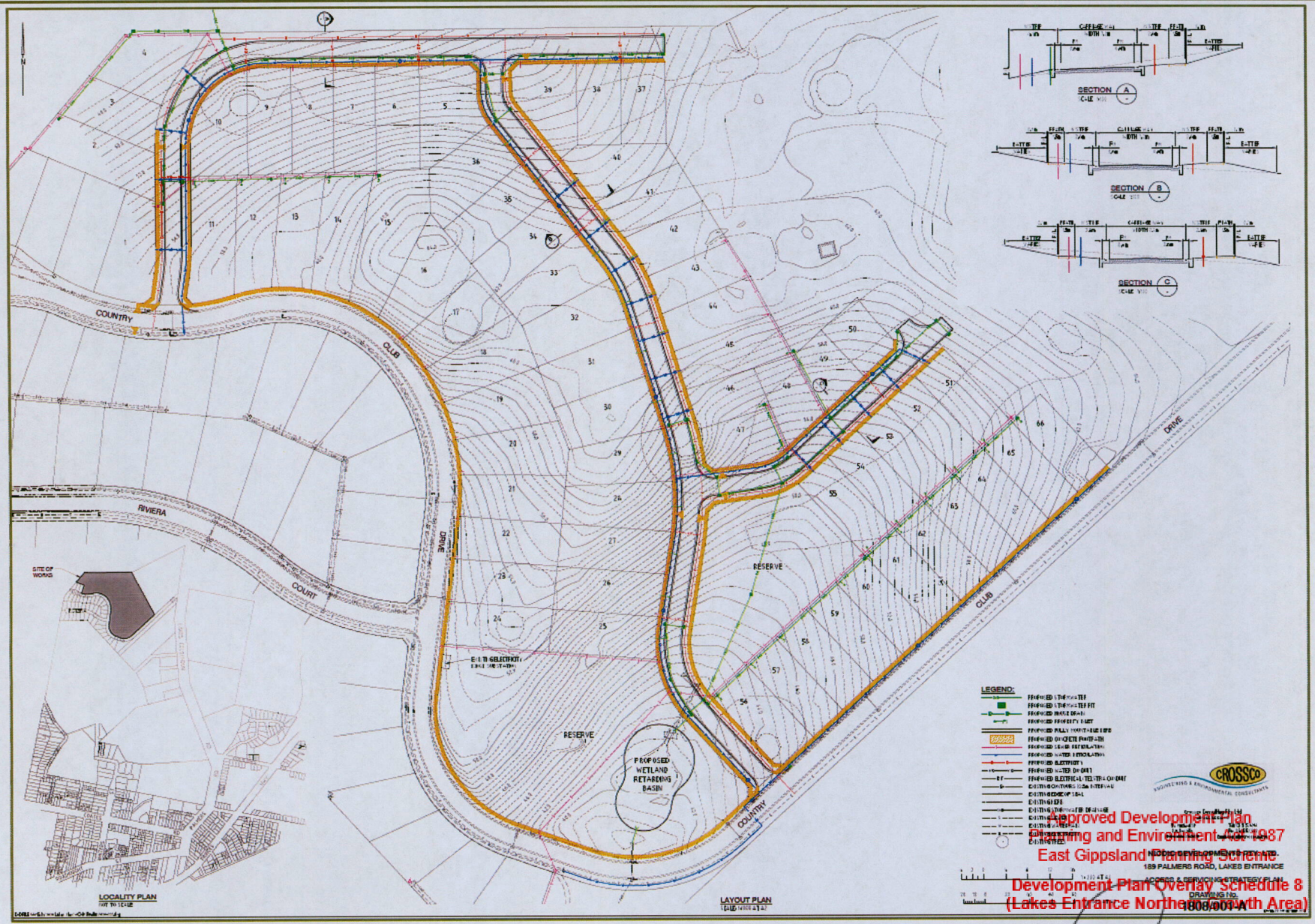

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Job: Proposed Subdivision **189 Palmers Rd** **Lakes Entrance**	**Date: 6 Dec 2013**
Client: Nic Dic Developments P/L	**Designed: SJA**
Checked:	**Job No.: 335108**
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GEOTECHNICAL RISK ASSESSMENT



189 Palmers Rd, Lakes Entrance

INTRODUCTION

This report is designed to demonstrate the level of geotechnical risk involved in relation to the proposed 66 Lot Residential subdivision at 189 Palmers Rd, Lakes Entrance, during and after construction of all roads and associated works.

SITE DESCRIPTION

This large allotment (approximately 15ha) is currently a well-manicured, nine hole "par 3" golf course open to the public, with club house and residential dwelling located at the north east corner of the property. Access to the site is via a sealed bitumen driveway off Palmers Road with a public car parking area located at the high point of the property.

The subject site is situated on an undulating plain and low hill landform, with a yellow duplex sedimentary landscape. The landform has an Ephemeral Watercourse[1] directly north of the subject site and another at the south end[2], within the property boundaries. Both of these drainage lines feed into the North Arm, approximately 1.5km south west of the subject site.

Some small pockets of vegetation are still existing on the current golf course layout, with areas of Lowland Forest (EVC 16) located at the western tip of the property and smaller areas of Plains Grassy Forest (EVC 151) scattered throughout.

Existing residential size allotments along Country Club Drive and Riviera Court are predominantly vacant land, with similar grades and landscape elements as the subject site. The vacant lots display excellent grass cover and no signs of erosion or landslip. The few developed Lots with residential dwellings are all well landscaped, with either cut/fill batters or retaining walls with no erosion or failure evident. A Two storey dwelling currently under construction at 12 Riviera Court shows signs of sheet and rill erosion on the exposed fill batters[3]. Re-sodding and stabilising with grass after completion will alleviate further erosion.

PROJECT DETAILS

A 66 Lot residential subdivision is proposed for the site. The subject site is adjoining an existing residential area along the south side of Country Club Drive and Riviera Court. Proposed construction details will be as follows;

- All cut/Fill batters to be no steeper than 1 in 3 and sown with local grasses.
- Sealed roads with kerb and channel drainage directing stormwater runoff to underground road and easement drainage.
- Blocks to be primarily between 700-1000m^2 with a large 6.347ha lot housing the existing dwelling and allocated Reserves (4,205m^2 and 9507m^2) at the south end of the site.
- Roof drainage to be directed underground to reticulated stormwater drainage.
- Existing drainage patterns are to be maintained, with proposed road works to have minimal impact.
- Best practice WSUD to treat/retain/discharge stormwater flows from the site.

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[1] *Refer photo 1 (Appendix A)*
[2] *Refer photos 2,3 & 4 (Appendix A)*
[3] *Refer photo 5 (Appendix A)*

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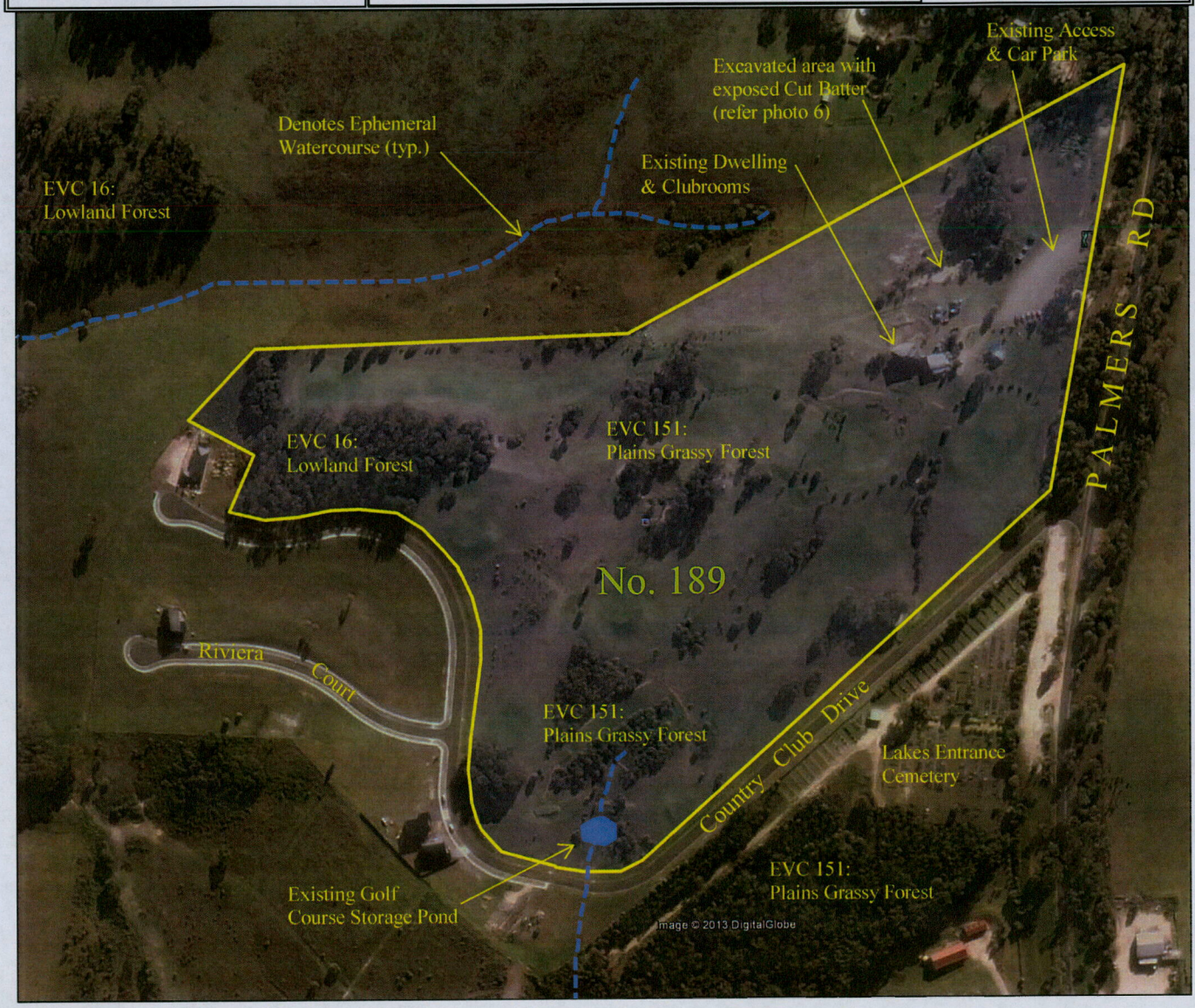

Aerial view of subject site (approximate title boundaries shown)

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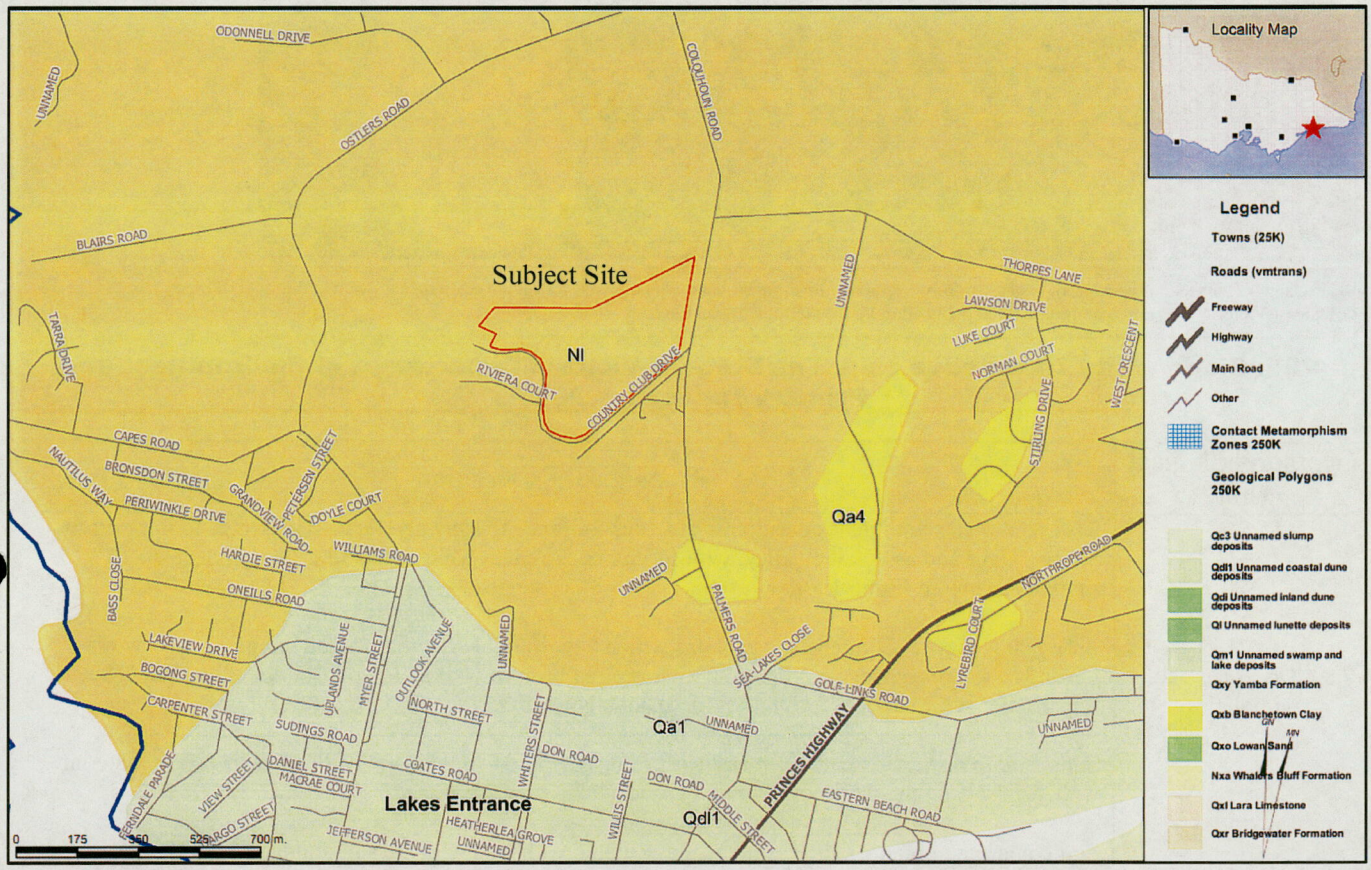
METHODOLOGY

1.DESKTOP INVESTIGATION

A desktop investigation of the subject site was carried out using DSE and GeoVIC mapping of published soil survey information and noted watercourse locations.

Soils of the site have also been mapped and described in Sustainable Soil Management *"A reference manual to the major agricultural soils of the Bairnsdale and Dargo regions"*, and are described as belonging to the Stockdale (Sd) map unit with Munro (Mu). This unit occurs on rolling low hills and is comprised of Tertiary sediments and sands. Most of the land has been cleared of native vegetation and used for grazing. The surface soils are mostly fine textured soils, with a sandy loam to fine sandy loam sharply separated from a medium clay subsoil occurring at around 20-40cm, although some subsoils are clayey sands and sandy clays. Some of the more sandier surface soils have developed a "coffee rock" layer at the base of the A2 horizon.



Disclaimer: This map is a snapshot generated from Victorian Government data. This material may be of assistance to you but the State of Victoria does not guarantee that the publication is without flaw of any kind.

REF: VANDENBERG, A.H.M., 1997. BAIRNSDALE SJ 55-7 Edition 2, 1:250 000 Geological Map (Series 1:250,000 geological maps. Geological Survey of Victoria.)

Geological Unit	Geological Description	Mapping Unit
Nl *(Tmp)*	Tertiary Marine, Non-marine deposits consisting of gravel, sand.	Stockdale (Sd)

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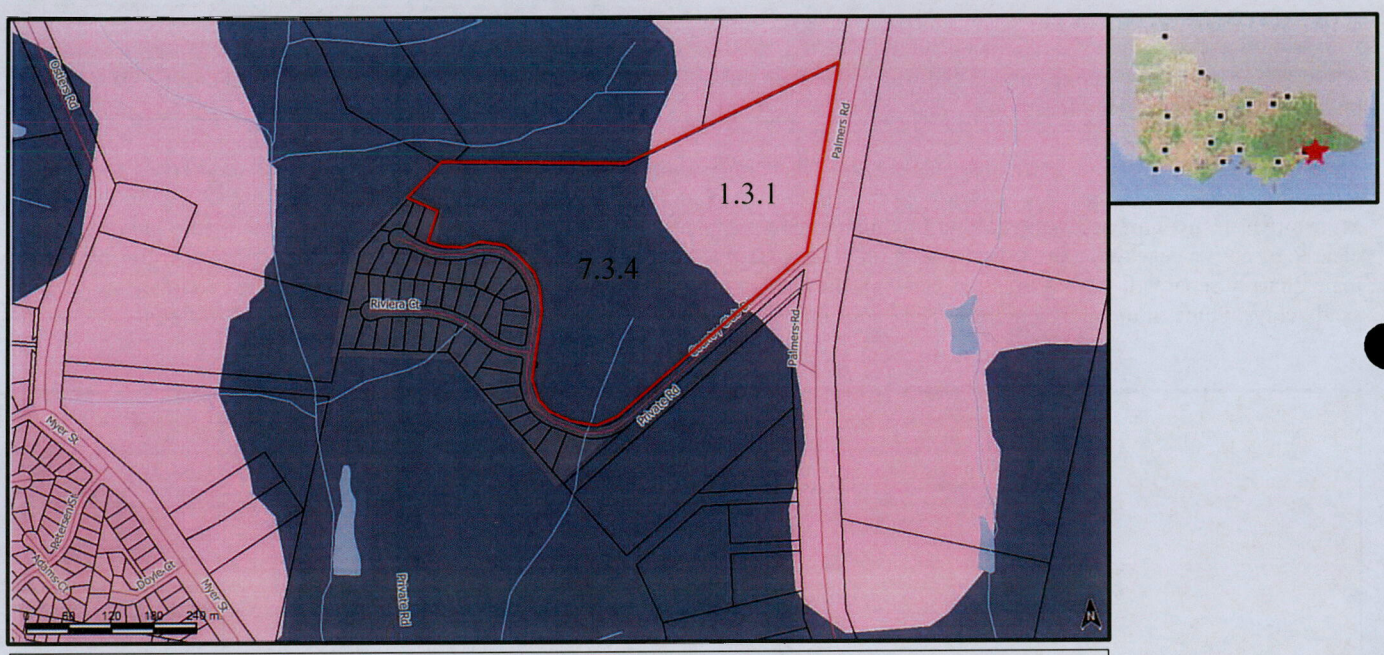
1.DESKTOP INVESTIGATION cont'd



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REF: Biodiversity Interactive Map, The State of Victoria Department of Environment and Primary Industries 2013

Geomorphological Unit	Geological Description
7.3.4 Dissected plains with dunes	Dissected plains with dunes occur east of Lakes Entrance to Newmerella then dissected to the west by Snowy River and associated valley, with further occurrences which become further dissected and spatially scattered further east. Based on Neogene sediments these plains which have variable regolith (based on mantle of Eastern Uplands), where coarser regolith occurs it has often been re-worked to produce dunes and sand sheets. Local relief is limited to a few metres, occasionally greater. Soils tend to be acidic texture contrast soils (Kurosols and Chromosols) on the clayier parent material with Tenosols on the dunes. Soil colour and organic matter content is associated with local climate and drainage conditions.
1.3.1 Low relief landscapes at low elevation	On the southern side of the Eastern Uplands, a dissected plateau-like surface of hills known as the Nillumbik Terrain extends from the eastern suburbs of Melbourne (e.g., Camberwell and Templestowe) around Mt Dandenong and further eastwards to the NSW border. The hilly landscape to the east from Cann River to the border has the appearance of a dissected plateau.

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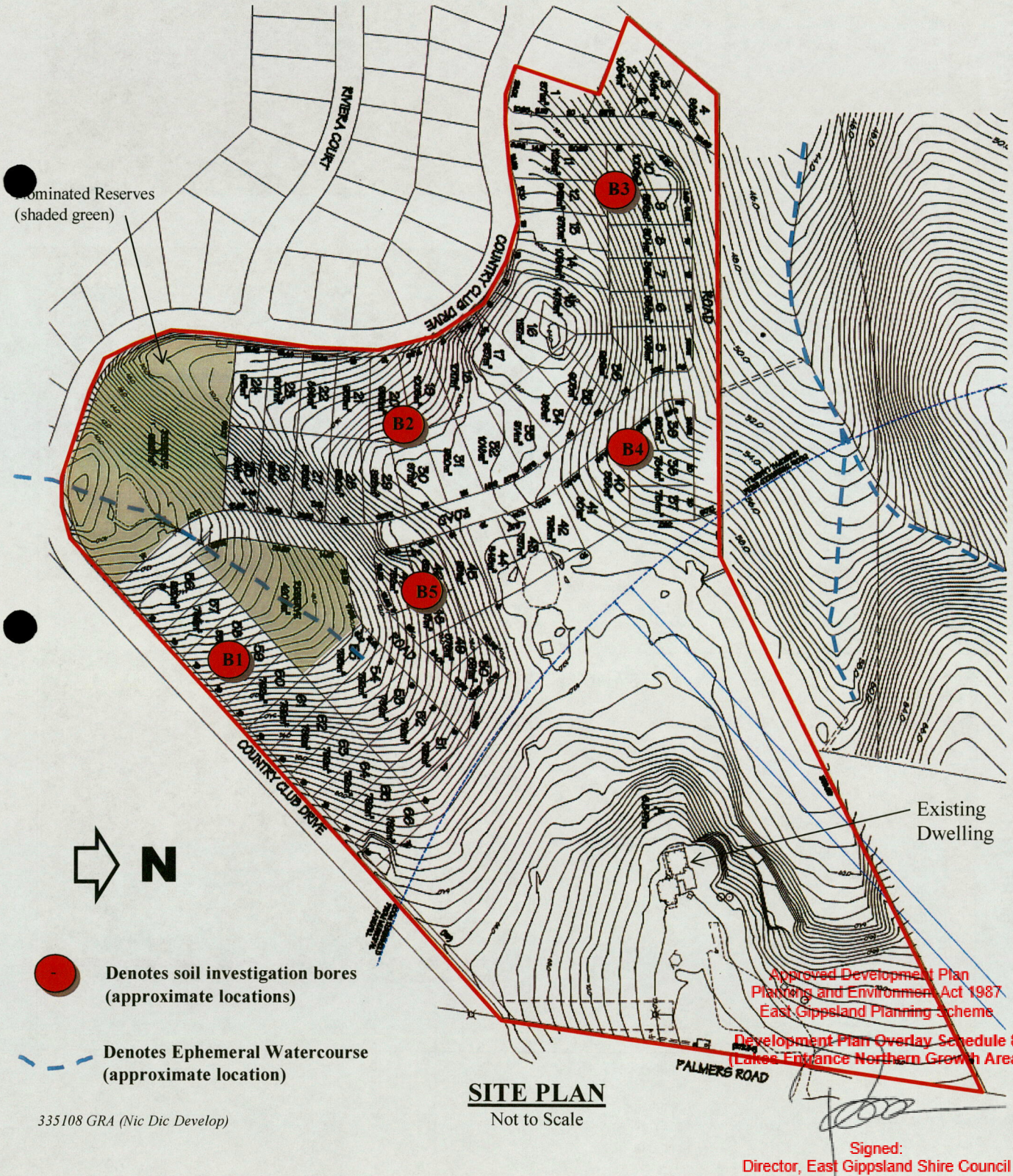
2. FIELD INVESTIGATION

A site visit was carried out with an inspection of the area of proposed subdivision and of nearby landforms, features and developments. A series of soil investigation bores were taken throughout the site (B1-B5) as shown on the site plan below. The bore logs of these are shown on pages 6 & 7.



SITE PLAN
Not to Scale

335108 GRA (Nic Dic Develop)

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189 Palmers Rd
Lakes Entrance

Client: Nic Dic Developments P/L

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Date: 6 Dec 2013

Designed: SJA

Job No.: 335108

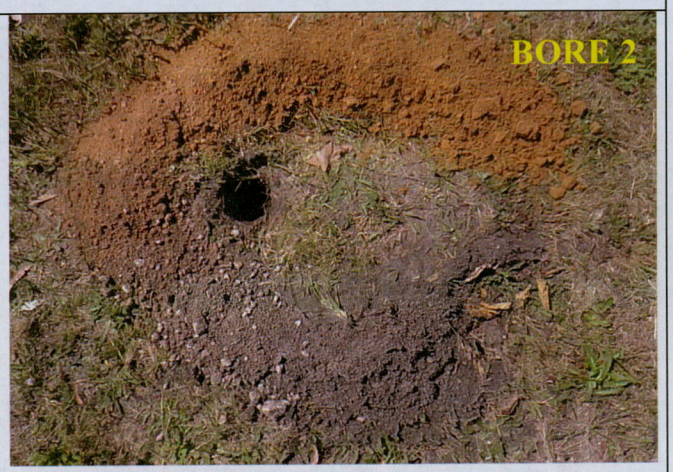
BORE LOG B1

00	Dark Grey, Moist, Loamy	**SAND**
100	Lt Brown, Moist, Dense, Gravely	**SAND**
200	Coarse Sands	
300		
400		
500		
600		
700	Orange/Brown, Moist, Dense, Fatty	**SAND**
800		
900		
1000		
1100		
1200		
1300		
1400		
1500		



BORE LOG B2

00	Dark Grey, Moist, Loamy	**SAND**
100		
200	Lt Grey/Brown, Moist, Gravely	**SAND**
300	Brown, Moist, Dense, Gravely	**SAND**
400		
500		
600	Dry, Very Dense, Cemented Sands	
700	Orange/Brown, Moist, Dense	**SAND**
800	Clayey	
900		
1000		
1100		
1200		
1300		
1400		
1500		



BORE LOG B3

00	Dark Grey, Dry, Loamy	**SAND**
100		
200		
300	Lt Grey, Dry, Dense	**SAND**
400		
500		
600	becoming gravely	
700	Yellow/Brown, Dry, Very Dense	**SAND**
800	Gravely, Cemented Sands	
900		
1000		
1100		
1200		
1300		
1400		
1500		



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East Gippsland Planning Scheme

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(Lakes Entrance Northern Growth Area)

Signed:
Director, East Gippsland Shire Council
Date: ....3 October 2018...

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Job: Proposed Subdivision
189 Palmers Rd
Lakes Entrance

Client: Nic Dic Developments P/L

Checked:

Date: 6 Dec 2013

Designed: SJA

Job No.: 335108

BORE LOG B4

00	Dark Grey, Dry, Loamy	SAND
100		
200		
300	Lt Grey, Dry, Dense	SAND
400	Greyish Brown, Dry, Very Dense	SAND
500	Gravely	
600		
700		
800		
900		
1000		
1100	Yellow/Brown, Dry, Dense	SAND
1200	Gravely	
1300		
1400		
1500		



BORE LOG B5

00	Dark Grey, Moist, Loamy	SAND
100		
200		
300		
400	Lt Grey, Moist, Dense, Gravely	SAND
500		
600		
700		
800		
900		
1000		
1100	Dark Yellow/Brown, Dry, V Dense	SAND
1200	Cemented Sands & Coffee Rock	
1300		
1400		
1500		



Note: Depths noted may vary if the site is cut and/or filled. All footings should penetrate the "Approved Founding Material" by at least 100mm.

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SUMMARY OF RISK

LANDSLIDE	**LOW**
SHEET/RILL EROSION	**LOW**
TUNNEL EROSION	**LOW**

- Moderate grades over the residential allotments (Lots 1-66), ranging from approximately 1 in 5 to 1 in 15.
- Excellent grass coverage, preventing topsoils from being washed away (even in the heaviest torrential downpours).
- Highly permeable topsoils provide a rapidly drained surface, with minimal run-off as a result.
- The only evidence of erosion on the subject site was at the excavated area directly north of the existing building. The exposed cut batter shows signs of rill erosion[4]. There is no evidence of erosion or landslip on the remainder of the subject site or adjoining rural properties to the north.
- Existing drainage patterns of the Ephemeral watercourse will remain, due to the strategic location of the nominated Reserves (refer site plan).
- Natural sub-soils of the site (i.e. Dense, Gravely Sands) will have adequate strength and stability for residential slabs, footings and retaining walls.
- Dependent on degree of fall over each allotment, an Erosion Management Plan may need to be implemented during and after construction, if slab on ground design with cut/fill batters and retaining walls were adopted. For example;

  i. The form, bulk, scale and location of cut and fill is to be controlled to ensure that there are no adverse impacts on Neighbouring properties. (i.e. Diversion banks and spoon drains)
  ii. Appropriate sub-soil drainage to be provided to effectively divert ground water away from any foundation work.
  iii. Identify a suitable storage area for stockpiles, with appropriate erosion control measures (i.e. Diversion banks and Sediment fences)
  iv. Where vegetation (natural grass cover) needs to be removed, leave it in place as long as possible.
  v. All erosion and sediment control measures to be inspected and maintained daily by site manager.
  vi. Fill batter at 1 in 3 max. to be stabilised with grass at end of construction works.
  vii. The conditions of retaining walls should be inspected annually to ensure there continued structural and drainage/erosion management adequacy. Any defective components should be removed and replaced immediately.

- Any future construction works associated with the development of allotments would be protected by Building Code of Australia, Australian Standards, Building and Planning Permit requirements and normal construction practise.

Based on findings from both the Desktop and Site investigations the site is suitable for development as proposed and further intensive investigation would not be necessary to confirm the above findings.

VERIFICATION

I, the author of this document, declare that I am suitably qualified and experienced to carry out this site assessment.

Simon Anderson BE (Civil)CPEng MIEAust No 930355
BCC Registration No EC-1711
Date 6 Dec 2013

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[4] *Refer photo 6 (Appendix A)*

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Client: Nic Dic Developments P/L

Checked:

Date: 6 Dec 2013

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Job No.: 335108

APPENDIX A

Photo 2: Well vegetated Ephemeral Watercourse north of subject site.



Photo 2: Catchment dam south end of site



Photo 3: Drainage pit for Ephemeral w/c south end of subject site



Photo 4: Outlet drainage to Ephemeral w/c south of subject site

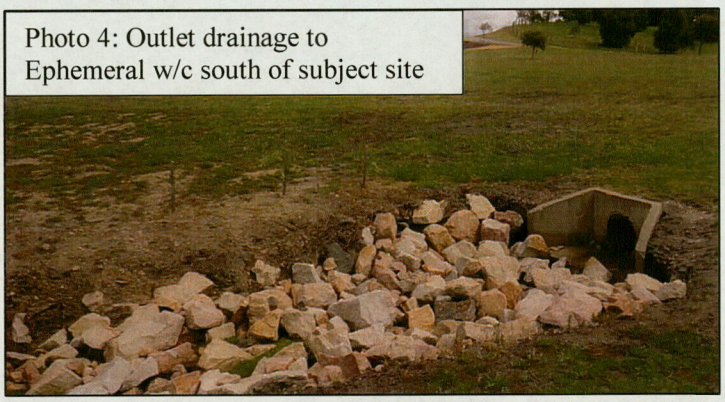


Photo 5: Rill Erosion on face of fill batter. Dwelling under construction at 12 Riviera Ct

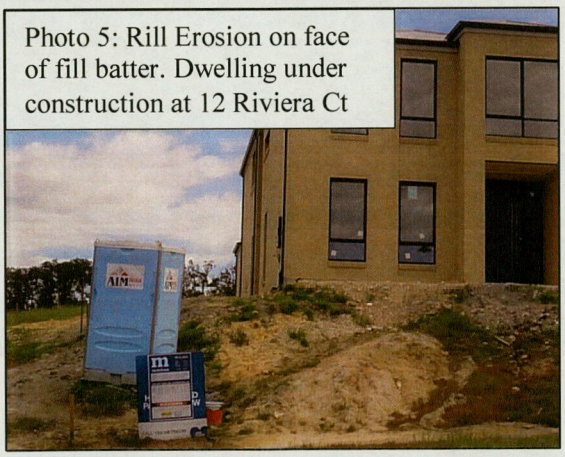
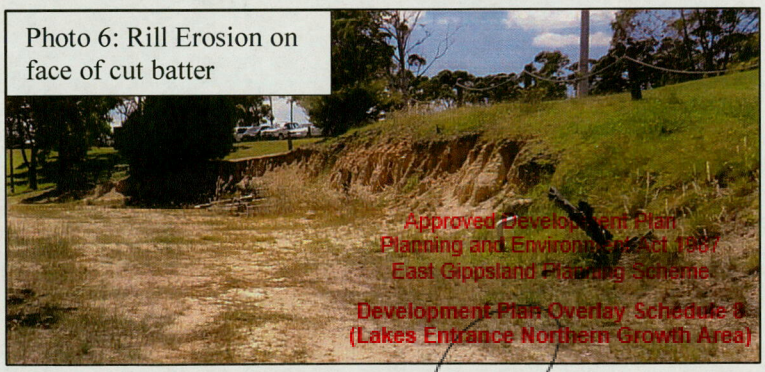


Photo 6: Rill Erosion on face of cut batter



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Date: ....3 October 2018...

Habitat Hectares Assessment and Offset Requirement for proposed subdivision

189 Palmers Road, Lakes Entrance



FINAL Version 1

Prepared for: NicDic Developments Pty Ltd

April 2016

ETHOS NRM Pty Ltd

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ENVIRONMENTAL, PLANNING & NATURAL RESOURCE MANAGEMENT CONSULTANTS

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Cover Photo: 189 Palmers Rd, Lakes Entrance (Ethos NRM)

Ethos NRM Pty Ltd				
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EXECUTIVE SUMMARY

Ethos NRM Pty Ltd has been engaged to assess proposed vegetation removal at 189 Palmers Road, Lakes Entrance associated with a multi-lot subdivision. State Policy for vegetation removal requires that the impacts on biodiversity from proposals to remove native vegetation are assessed according to the *Biodiversity Assessment Guidelines* (DEPI, 2013a), within the relevant risk-based pathway.

Removal of vegetation falls within the **MODERATE** risk-based pathway. A „moderate" risk pathway requires that the following tasks are undertaken:

- A habitat hectares assessment and mapping of vegetation extent and condition using GIS.
- A statement of how impacts on biodiversity from the removal of native vegetation have been minimised.
- Documentation of Habitat Importance scores of the native vegetation to be removed.
- Preparation of an offset strategy that details how a compliant offset will be secured.

Habitat Hectares Assessment was undertaken by Ethos NRM across the western section of the property, from which vegetation removal is proposed to enable the multi-lot subdivision (see Appendix 1). Field survey results recorded the site (or property) to be within the East Gippsland Lowlands bioregion. Remnant vegetation patches recorded on the property were consistent with Lowland Forest (EVC 16) and Plains Grassy Forest (EVC 151) Ecological Vegetation Classes (EVCs). A total of 64 terrestrial flora species were recorded across the site (including 50 indigenous flora species and 14 exotic species). Five Lowland Forest Habitat Zones were identified on the site, separated by the condition and diversity of understorey vegetation, as well as one Plains Grassy Forest Habitat Zone.

Native vegetation removal, to enable subdivision of 189 Palmers Road, Lakes Entrance, comprises of predominantly **remnant patches** of native vegetation, and **3 scattered trees**. The following native vegetation removal has been accounted for within this report;

1. 1.235 ha of remnant patch and 3 scattered trees, equating to **1.446 ha or 0.536 Habitat Hectares** required to be removed to enable the multi-lot subdivision (including the area protected by a Section 173 Agreement), and
2. compensation for removal of **0.524 ha or 0.219 Habitat Hectares** of remnant patch native vegetation currently protected by a Section 173 Agreement

Combined there is a total impact equivalent to the removal of **1.970 ha or 0.755 Habitat Hectares** of native vegetation.

The calculation of native vegetation offsets to compensate for the removal of vegetation protected by the Section 173 Agreement has been undertaken in accordance with advice obtained from DELWP Regional Services (Gippsland). In effect this area will be offset twice as compensation for the proposed removal of protected vegetation.

The *Guidelines* require that where vegetation removal cannot be avoided, provision of offsets is required to compensate for the impacts on biodiversity. The determination of offsets relies on a purpose-built Native Vegetation Information Management Tool developed by DELWP. Model based data is used to assess the proportional impact of proposed vegetation removal on habitat for rare or threatened species. The offset test has been applied to the proposed vegetation removal associated with subdivision of 189

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Palmers Road, Lakes Entrance, and no specific offset for rare or threatened species were identified.

An assessment of the likely implications for removal or impacts to EPBC or FFG listed species has been undertaken, with regard to potential approval or permit requirements under these policies. No EPBC or FFG listed flora species or communities were recorded by Ethos NRM on the property, including those identified by the desktop search as having potential to occur. One flora species listed as rare on DELWP"s *Advisory List of Rare or Threatened Plants in Victoria* (DEPI, 2014a), Coast Grey-box (*Eucalyptus bosistoana*) was recorded within the small patch of Plains Grassy Forest. No significant impacts to EPBC or DELWP listed rare or threatened species are expected to occur as a result of removal of vegetation for the subdivision. Four Coast Grey-box trees are proposed to be removed.

Proposed vegetation loss and impacts to biodiversity has been minimised through retention of remnant vegetation which is modelled by DELWP to provide habitat for the threatened species Viscid Daisy-bush, as well as additional remnant patch vegetation, within a proposed Reserve in the southwest of the property. The extent of proposed vegetation removal has been reduced from previous subdivision plans, by reducing the number and configuration of the residential lots, relocating the access road, and increasing the area of vegetation retained within the Reserve.

Vegetation on the site is all of low to moderate quality (as evident by the low Habitat Scores) and does not provide an important contribution to Victoria"s biodiversity. This is supported by both the allocation of a General Offset requirement and no Specific Offsets, and the low Strategic Biodiversity Score (0.202).

If a permit to remove vegetation removal is granted under the Guidelines, there is a requirement to offset the loss of vegetation and ensure a „no net loss" outcome for biodiversity (DEPI, 2013a).

The Offset Requirement for removal of the equivalent of 1.970 ha of vegetation is:

- **0.228 General Biodiversity Equivalence Units** (GBEUs)
- **a minimum strategic biodiversity score of 0.161** and
- located within the East Gippsland Catchment Management Authority boundary (or East Gippsland Shire boundary).

The *Guidelines* also require that the offset is secured, to the satisfaction of the responsible or referral authority, before the native vegetation is removed (DEPI, 2013a), by either:

- A security agreement for the site including an onsite (Offset) management plan, or
- Evidence of a secured third party offset, e.g. Native Vegetation Credit Register extract.

Ethos NRM has confirmed that there are available vegetation offsets on the Native Vegetation Credit Register within the East Gippsland Catchment Management Area that can be purchased to meet offset obligations for this project. This is the Landholders preferred method for achieving offset obligations.

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1 INTRODUCTION

Ethos NRM has been engaged to undertake a Habitat Hectares Assessment of proposed vegetation removal at 189 Palmers Road, Lakes Entrance, to enable a multi-lot subdivision. The proposed vegetation removal includes 0.523 ha of remnant patch native vegetation which is currently protected by a Section 173 Agreement. The proposed removal of this Agreement (pursuant to approval by East Gippsland Shire Council) is also accounted for within this report.

Habitat Hectares assessment and quantification of the offset requirements for vegetation removal associated with the proposed subdivision has been undertaken in accordance with the *Biodiversity Assessment Guidelines* (DEPI, 2013a), herein referred to as the „*Guidelines*". This report quantifies the vegetation loss in Habitat Hectares and the Offset Requirement in Biodiversity Equivalence Units (BEUs).

1.1 Site Location and Description

The property 189 Palmers Road (Lot Z on PS538571) is located 2km north of Lakes Entrance, and is bounded by Palmers Road to the east, and Country Club Drive to the south (refer to **Figure 1**). Surrounding the property is private land either in use for agricultural purposes, residential or lifestyle rural allotments.

The property is currently utilised as a golf course, and is largely cleared, with scattered remnant patches of native vegetation, and numerous amenity plantings of native (indigenous and non-indigenous) and exotic tree and shrub species. The most intact area of native vegetation exists in the north-west corner of the property, with smaller patches in the middle, east and south-east. The property is on a south to south-westerly aspect, with gentle to undulating slopes, steepening along drainage lines in the south and east.

A Section 173 Agreement (AF072419Q) exists in the north-west corner of the property to protect an area of native vegetation, as shown in **Figures 1 to 3**.

The proposed subdivision comprises 56 residential lots, a new access road and reserve area on the western portion of the property, with the eastern portion to be retained as a single lot (Lot A). The western portion of the subdivision is the subject of this vegetation assessment and report, while the eastern portion of the property (Lot A) is not included, as no vegetation is proposed to be removed within this area. Hereafter, reference to the „site" excludes the area contained within Lot A and the proposed Reserve. Refer to **Appendix 1** for a detailed Subdivision Layout Plan.

1.2 Objectives

The broad objectives of the Vegetation Assessment are to:

- identify and map vegetation types across the property,
- assess vegetation condition,
- describe the structural and floristic components of the vegetation on the property, including Ecological Vegetation Classes (EVCs),
- identify and describe any Rare or Threatened Species and Threatened Ecological Communities,
- quantify vegetation loss associated with the proposed subdivision in accordance with relevant legislative requirements, including the removal of vegetation (offset) protected by a Section 173 Agreement,
- quantify offset requirements under current legislation.

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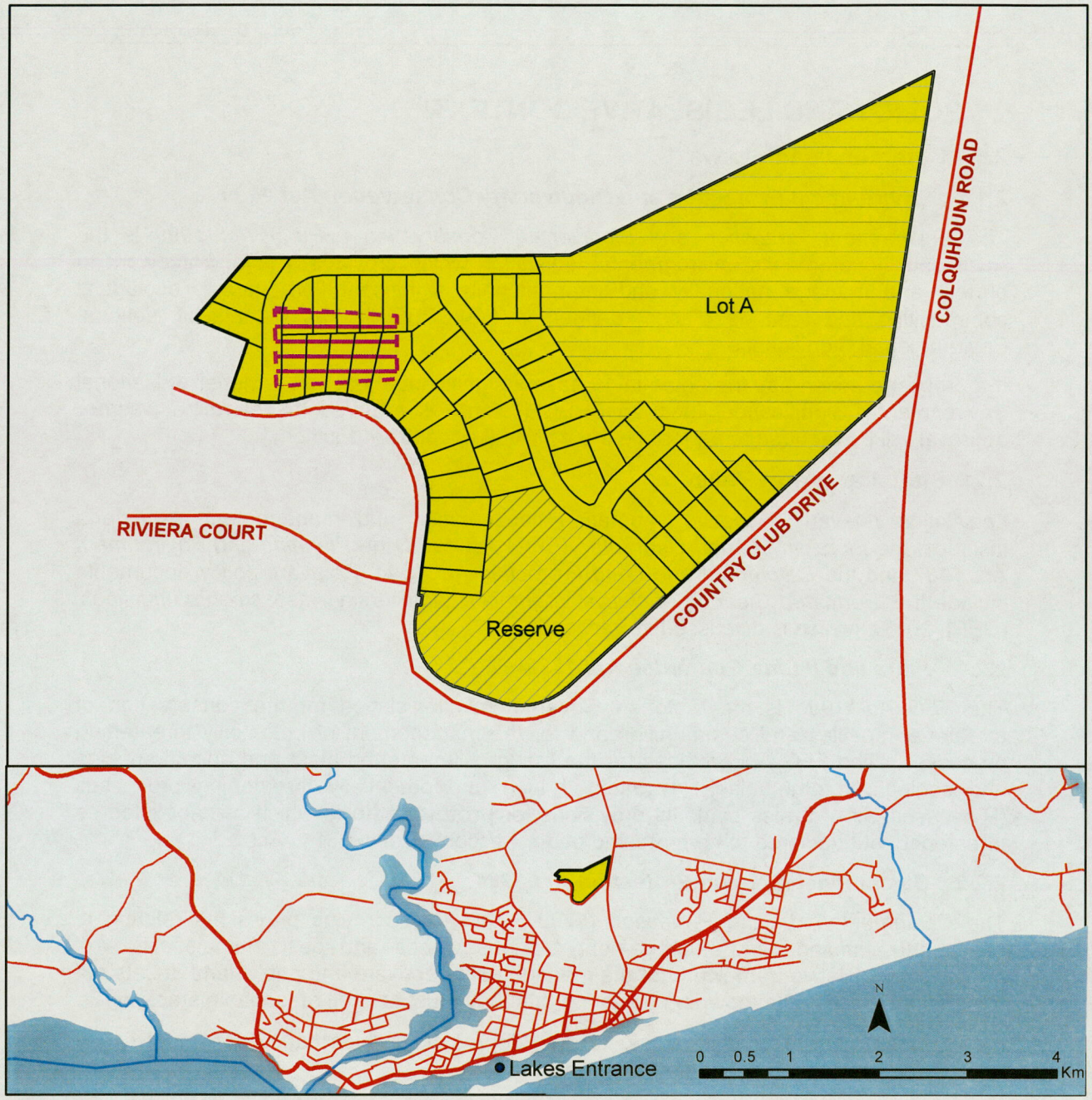

FIGURE1: SITE LOCATION AND SUBDIVISION LAYOUT
189 PALMERS ROAD, LAKES ENTRANCE

Legend

- Roads
- Hydrology
- 189 Palmers Road
- Proposed Reserve
- Lot A (proposed)
- Area covered by Section 173 Agreement
- Estuaries and coastal waters

ETHOSNRM

N

0 20 40 80 120 160

Meters

1:5,000	Version 2
Date: 28/04/2016	
Coordinate System: GDA 94 MGA Zone 55	

Map Produced by: Ethos NRM,
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2 POLICY AND LEGISLATIVE CONTEXT

2.1 Commonwealth Laws

2.1.1 *Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* is the Australian Government's environmental legislation which provides a legal framework to protect and manage nationally and internationally significant flora, fauna, ecological communities and heritage places, defined in the EPBC Act as Matters of National Environmental Significance.

If a proposed action has the potential to have a significant impact on a Matter of National Environmental Significance, then an EPBC Referral is required to determine whether approval will be required to undertake the activity (i.e. controlled action).

2.2 State Laws and Policy

Legislation relevant to native vegetation conservation and management in Victoria includes; the *Flora and Fauna Guarantee (FFG) Act 1988*, the *Planning and Environment Act 1987* and the *Catchment and Land Protection Act 1994*. Relevant policy documents include the *'Permitted Clearing of Native Vegetation Biodiversity Assessment Guidelines'* (DEPI, 2013a) which is discussed in Section 2.3.

2.2.1 *Flora and Fauna Guarantee Act 1988*

The *FFG Act 1988* is the Victorian Government's legislation for the conservation of threatened species and communities and for the management of potentially threatening processes. The FFG Act provides for the listing of threatened plant and animal species and ecological communities (Threatened List) and potentially threatening processes (Processes List). It also contains provisions for **protected flora**, which are not listed as threatened, but declared to be protected under Section 46 of the FFG Act.

2.2.2 *Catchment and Land Protection Act 1994*

The *Catchment and Land Protection (CALP) Act 1994* contains provisions relating to catchment planning, land management, noxious weeds and pest animals. The Act provides a legislative framework for the management of private and public land. It sets out the responsibilities of landowners declaring that they must take all reasonable steps to:

- avoid causing or contributing to land degradation which causes or could cause damage to land of another landowner
- protect water resources and conserve soil
- eradicate regionally prohibited weeds and prevent the growth and spread of regionally controlled weeds
- prevent the spread of and eradicate established pest animals.

2.2.3 *Planning and Environment Act 1987* (Local Government Regulations)

Planning schemes contain provisions relating to the management of native vegetation, where a permit to remove, destroy or lop native vegetation may be required. The property is located within the East Gippsland Shire jurisdiction and is zoned General Residential Zone Schedule 1 (GRZ1). A number of planning overlays apply to the property.

- Design and Development Overlay (DDO13) applies to the entire property.
- Development Contributions Plan Overlay (DCPO1) applies to the western section of the property.

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- Development Plan Overlay (DPO8) applies to the entire property.
- Environmental Audit Overlay (EAO) applies to the eastern section of the property.
- Erosion Management Overlay (EMO) applies to the entire property.
- Vegetation Protection Overlay (VPO1) applies to the eastern boundary of the property and Palmers Road.

The purpose of DDO13 is to encourage re-establishment of indigenous vegetation along drainage lines.

DCPO defines levy contributions for the provision of works, services and facilities for developments, and DPO8 identifies the application requirements for subdivision of land.

The EAO identifies potentially contaminated land and details environmental audit requirements for proposed change in land use. The proposed new residential lots in the west of the property are not located within the EAO.

The purpose of the EMO is to protect areas prone to erosion, landslip or other land degradation processes by minimising land disturbance and inappropriate development.

The purpose of VPO1 is to protect high conservation value roadside vegetation within Government road reserves. The proposal will not remove vegetation from within the VPO.

The Section 173 Agreement AF072419Q is an agreement under the *Planning and Environment Act 1987* between East Gippsland Shire Council and the landowners, that no native vegetation within the area identified as Vegetation to be Retained will be removed, destroyed, felled, lopped, trimmed, ringbarked or uprooted or otherwise damaged without the prior written consent of the Council. Hence, the proposed vegetation removal within the area covered by the Section 173 Agreement will require consent from Council to remove the Section 173 Agreement.

2.2.4 Clause 52.17 Native Vegetation

Removal of native vegetation under Clause 52.17 requires a planning permit from the East Gippsland Shire Council in accordance with the Victorian Biodiversity Assessment Guidelines, unless an exemption or „as of right use" applies. There are no relevant exemptions in Clause 52.17-7 table of exemptions which apply to this project.

A permit is required to remove native vegetation for the proposed subdivision.

2.3 Victoria's Native Vegetation Permitted Clearing Regulations

The ***Permitted clearing of native vegetation – Biodiversity Assessment Guidelines*** are incorporated into the Victorian Planning Provisions and guide how impacts on biodiversity are considered when assessing an application for a permit to remove, lop or destroy native vegetation.

The *Guidelines* (DEPI, 2013a) adopt a risk-based approach to decision making and aim to:

- ensure a stronger focus on the value of native vegetation for state-wide biodiversity (no net loss to biodiversity),
- reduce the regulatory burden for landholders while at the same time providing upfront information about the value of native vegetation on their land, and
- improve decision making.

The *Guidelines* (DEPI, 2013a) define the assessment requirements for applications to remove vegetation through determination of **risk-based pathways**. The risk-based pathway is classified through two main factors; the map-based *Location Risk* identified by

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DELWP modelling and *Extent Risk* determined by the area of proposed native vegetation removal. The risk pathway will then dictate the level of detail and assessment required to accompany the application for removal of vegetation.

3 ASSESSMENT METHODOLOGY

The following steps have been undertaken to collect floristic information and quantify vegetation loss and offset requirements associated with vegetation removal to enable the proposed multi-lot subdivision of 189 Palmers Road, Lakes Entrance;

- Desktop Investigation
- Determination of the Risk-based Pathway for assessment of application
- Field Survey – Habitat Hectares Assessment
- Biodiversity Assessment Report (Offset Requirements)

The results of the field survey and desktop investigations are detailed in following sections of this report.

3.1 Desktop Investigation

Desktop investigations of flora and fauna data were used to gather information on the site prior to undertaking vegetation assessments and preparation of this report. Ethos NRM has obtained data for the occurrence and description of bioregions, EVCs (Ecological Vegetation Class), rare or threatened flora, fauna and threatened ecological communities, from a number of sources including:

- East Gippsland Shire Council (EGSC) Planning Scheme
- Planning Maps Online (DELWP, 2016c)
- EPBC on-line Protected Matters Search Tool (DE, 2016)
- DELWP Interactive Maps – Biodiversity Interactive Maps (DELWP, 2016a)
- DELWP Ecological Vegetation Class Benchmark Descriptions (DELWP, 2016b)
- DELWP Bioregion Descriptions (DEPI, 2016b)
- Victorian Biodiversity Atlas Database (VBA, 2016)

3.2 Field Survey

Habitat Hectares Assessment survey in accordance with DELWP methodologies (DSE, 2004a) has been used to assess vegetation quality at the site. Vegetation on-site was assessed as pasture or „native vegetation" in accordance with the *Guidelines* (DEPI, 2013a). Any native vegetation identified was mapped and categorised as a remnant patch or scattered trees.

The site was surveyed by two DELWP Accredited Native Vegetation Assessors on 18th February 2016. Flora species lists (see **Appendix 2**) were collected and areas of native vegetation were recorded on a GPS.

Ethos NRM has estimated native vegetation removal to enable the proposed multi-lot subdivision based on Proposed Subdivision Plan Version 4 (see **Appendix 1**), provided to Ethos NRM by Crowther and Sadler. The following elements have been included in the clearing for subdivision of the site (western portion of the property):

- Full loss of vegetation within proposed residential lots <4000m² in area
- Full loss of vegetation within driveways and access roads

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- 2m wide fenceline clearing either side of proposed new boundary fences
- Assessment and consideration of indirect loss of canopy trees in close vicinity to the subdivision boundaries, where direct removal of vegetation is not proposed
- Removal of vegetation within an area protected by Section 173 Agreement AF072419Q.

3.2.1 Habitat Hectare Methodology

Habitat Hectares Assessment culminates in determination of a Habitat Score for each habitat zone assessed. The habitat score of a habitat zone is calculated using ten components: large trees, tree canopy cover, understorey diversity and cover, weediness, recruitment, organic litter, logs, patch size, neighbourhood context and distance to core area. Each component is listed on a Vegetation Quality Field Assessment Sheet. The site is then scored according to the conditions and landscape context. Scores typically vary between 10 and 90, with extensive intact („pristine") vegetation theoretically having a score of 100.

Habitat zones are delineated in the field and are based on similar vegetation quality and type (EVC), hence more than one survey sample point may occur within the same habitat zone where the quality and type of vegetation has been consistent. Habitat Hectare assessments are only undertaken in areas of vegetation which are considered „remnant patches", that is, where the canopy layer is greater than 20% or where at least 25% of the total perennial understorey plant cover is native plants, as a proportion of total understorey cover (DEPI, 2013a).

A Habitat Hectare is a unit of measurement that combines quality (relative to a published Benchmark) and quantity (area) of a habitat zone (DSE, 2004a). The Habitat Hectare value (HHa) of a habitat zone is calculated by multiplying the habitat score by the area of the habitat zone (in hectares) which is proposed to be removed.

3.2.2 Compensation for removal of protected vegetation

Advice was sought from DELWP regarding the methodology for calculation of compensation for removal of vegetation protected by the Section 173 which currently exists on the property. The calculation method required by DELWP is to double the offset requirement for removal of vegetation within the Section 173 Agreement area (refer to Appendix 5).

Ethos NRM has calculated the offset requirement by obtaining two Biodiversity Impacts and Offset Requirement reports from DELWP; one which contains all native vegetation removal from the property including the protected vegetation, and one which contains only the area of vegetation protected by the Section 173 Agreement. The two were then added together to calculate the total biodiversity impacts and offset requirement for the proposed subdivision, which compensates twice for vegetation removal within the Section 173 Agreement area.

3.3 Taxonomy

Common and scientific names for terrestrial vascular plants within this report follow the Victorian Biodiversity Atlas (VBA) of the Department of Environment, Land, Water and Planning (DELWP).

3.4 Survey Limitations

The survey effort combined with information gathered from other sources is considered adequate to assess and quantify vegetation condition and flora values within the project site. However the following limitations/qualifications apply to this study:

- This vegetation assessment includes only vascular flora.

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- Certain flora and fauna species are only readily identifiable onsite during periods of particular environmental and climatic conditions. Survey of the site was undertaken in mid-summer and there is potential that plants which flower outside of the survey period may not have been detected. Hence additional species that Ethos NRM did not detect may occur within the project site.
- Mapping of flora species and communities was undertaken with hand-held (uncorrected) GPS units and aerial photo interpretation. Accuracy of this mapping is therefore limited to the GPS unit which is generally (+/-6m). This degree of accuracy is considered adequate for the size and scale of the project (survey) area.

4 FIELD SURVEY RESULTS

4.1 Native Vegetation Recorded

4.1.1 Bioregion

The property is located within the East Gippsland Lowlands bioregion which broadly comprises of gently undulating terraces flanked by coastal plains, dunefields and inlets. Vegetation within this bioregion is commonly dominated by Lowland Forest with Damp Forest and Shrubby Dry Forest ecosystems interspersed throughout the foothills (DELWP, 2016a).

4.1.2 Ecological Vegetation Classes

DELWP EVC mapping (see **Appendix 3**) at the site indicates Lowland Forest (EVC 16) and Plains Grassy Forest (EVC 151) as occurring on the property, which was confirmed by Ethos NRM upon visiting the site. Remnant vegetation, soil and site characteristics are consistent with the Lowland Forest EVC across the north and west of the property, and Plains Grassy Forest across the south and east.

Lowland Forest is described as a moderately tall eucalypt forest which grows on relatively fertile and reasonably well drained soils with a diverse range of understorey life forms and species present (DELWP, 2016b). Plains Grassy Forest is described as an open forest which grows on the lowland plains and old river terraces made up of gravelly sandy clay soils with a heathy shrub layer, with a diverse grassy, sedgy and herbaceous ground layer (DELWP, 2016b).

4.1.3 Habitat Score

Habitat Hectares assessment of remnant patches of native vegetation was undertaken and vegetation quality scored in accordance with the DELWP methodology (DEPI, 2014). Five habitat zones were delineated on the property based on observed variation in vegetation type, cover, condition and other attributes. Habitat Zones are shown in **Figure 3.** See **Appendix 4** for a copy of the Vegetation Quality Assessment Field Sheets.

4.1.4 Conservation Status

Bioregional Conservation Status describes how rare or threatened an EVC is within a bioregion, by comparing the current extent of an EVC compared to the predicted extent pre-European settlement (pre-1750). Within the East Gippsland Lowlands bioregion Lowland Forest (EVC 16) has a Conservation Status of Least Concern, and Plains Grassy Forest (EVC 151) is Endangered.

4.1.5 Native Vegetation Description Type and Condition

The majority of native vegetation at the site is consistent with the EVC 16 Lowland Forest which comprises of a large remnant patch of vegetation located in the northwest of the

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site, and smaller patches in the middle and east of the site. Remnant vegetation at the site comprises of scattered mature eucalypts dominated by acacia and a diverse range of understorey shrubs, grasses and herbaceous species.

Five Lowland Forest Habitat Zones were identified on the site, distinguished by the condition and diversity of understorey vegetation and canopy cover (see **Table 1**). Except for the far northwest section (HZA and HZF), all other areas of are mown regularly. Habitat Zones A and F recorded a higher diversity and cover of understorey vegetation than other Habitat Zones. However, HZF is lacking the eucalypt tree canopy. EVC 151 Plains Grassy Forest was occurred in one small remnant patch of mature eucalypts in the southeast of the site.

Areas of native vegetation at the site are illustrated in **Figure 2**.

Table 1. Habitat Zones (Remnant Patch vegetation)

Habitat Zone	EVC	Conservation Status	Habitat Score	Area
HZA	Lowland Forest (EVC 16)	Least Concern	47/100	0.702
HZB	Lowland Forest (EVC 16)	Least Concern	32/100	0.289
HZC	Lowland Forest (EVC 16)	Least Concern	17/100	0.045
HZD	Lowland Forest (EVC 16)	Least Concern	15/100	0.010
HZE	Plains Grassy Forest (EVC 151)	Endangered	33/100	0.073
HZF	Lowland Forest (EVC 16)	Least Concern	33/100	0.115

A variety of eucalypts were recorded within Lowland Forest patches (HZA,B,C,D,F) including; Yellow Stringybark *(Eucalyptus muelleriana),* Blue Box (*Eucalyptus baueriana*), Mountain Grey-gum (*Eucalyptus cypellocarpa*), and Ironbark *(Eucalyptus tricarpa).*

Understorey diversity was highest in the northwest corner where the understorey is not mown. Within Habitat Zones A and F (Lowland Forest) a wide variety of small to medium sized shrubs and understorey trees were recorded including;

Cherry Ballart (*Exocarpus cupressiformis*), Black Wattle *(Acacia mearnsii),* Sallow Wattle *(Acacia longifolia),* Golden Wattle (*Acacia terminalis*), Sweet Pittosporum *(Pittosporum undulatum)*, Sweet Bursaria (*Bursaria spinosa*), Seaberry Saltbush (*Rhagodia candolleana*) and Hop Goodenia *(Goodenia ovata).*

The diversity of ground layer species was also high within Habitat Zones A and F. Species recorded included: Kangaroo Grass (*Themeda triandra*), Wallaby-grasses (*Rhytidosperma* spp.), Spiny-headed Mat-rush *(Lomandra longifolia),* Plume-grass (*Dichelachne* sp.), Hairy Stinkweed (*Opercularia hispida*), Kidney-weed (*Dichondra repens*), Nodding Saltbush (*Einadia nutans*), Southern Tick-trefoil (*Desmodium gunnii*), and Twining Glycine (*Glycine clandestina*). HZF had a relatively high cover of Bracken.

All other Lowland Forest Habitat Zones had greatly reduced understorey diversity and cover, with large areas of ground bare of vegetation, or with introduced grass species dominant (e.g. Kikuyu, Panic Veldt-grass). HZB had less than 20 understorey species present, while HZC and HZD had less than 10 understorey species.

Plains Grassy Forest was present in one Habitat Zone, HZE, and had a modified understorey due to mowing. The patch comprises several large mature eucalypts, including the rare species, Coast Grey-box *(Eucalyptus bosistoana)*, along with Blue Box (*Eucalyptus baueriana*). A few scattered medium shrubs remain, including immature

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eucalypts, Sweet Pittosporum (*Pittosporum undulatum*), Cherry Ballart (*Exocarpus cupressiformis*) and Black Wattle (*Acacia mearnsii*).

The ground layer was dominated by the introduced grass Kikuyu (*Cenchrus clandestinus*), and several other exotic grassy and herbaceous species including; Flatweed (*Hypochaeris radicata*), Buck"s-horn Plantain (*Plantago coronopus*) and Rat-tail Grass (*Sporobolus africanus*). Native herbaceous and grassy species were present across the patch, and included; Kangaroo Grass (*Themeda triandra*), Weeping Grass (*Microlaena stipoides*), Wallaby-grass (*Rhytidopserma* spp.), Flax Lily (*Dianella* sp.), Kidney-weed (*Dichondra repens*) and Nodding Saltbush (*Einadia nutans*).

Ethos NRM recorded a total of 50 indigenous flora species and 14 exotic flora species on the site (see **Appendix 2)**, including one rare flora species (DEPI, 2014a), Coast Grey-box (*Eucalyptus bosistoana*).

4.1.6 Planted vegetation

Numerous small patches of planted vegetation are scattered across the property, and can mostly be described as amenity plantings. The amenity plantings are located around the boundaries of the property, and between holes on the golf course. Some are in straight lines, and some are more extensive and natural looking. However, all of the amenity plantings comprise of a combination of native and non-native species.

Native species are scattered throughout non-native plantings, and in most areas the plantings do not meet the definition of native vegetation. Indigenous native species planted include Swamp Paperbark, Coast Banksia, Sallow Wattle and Mountain Grey-gum, and may include some individual plants which are remnant or established naturally following previous clearing of the site. Non-indigenous native species include a range of eucalypts (Lemon-scented Gum, Flowering Gum among others), wattles, grevillea, and hakea, as well as a variety of exotic conifers. Larger areas of planted vegetation located within the proposed Reserve area are the only ones that meet the definition of remnant patch native vegetation.

Areas of planted vegetation within and immediately to the east of the site are shown in **Figure 2.** Photographs of most patches of planted vegetation within the site are shown in **Appendix 7.**

4.1.7 Weeds

Fourteen weed species were recorded on the property during field survey by Ethos NRM, within areas of native vegetation, including two noxious weeds; Blackberry (*Rubus fruticosus spp. agg.*) and African Box-thorn (*Lycium ferocissimum*). Blackberry and African Box-thorn are both listed as Controlled Weeds in East Gippsland under the CALP Act.

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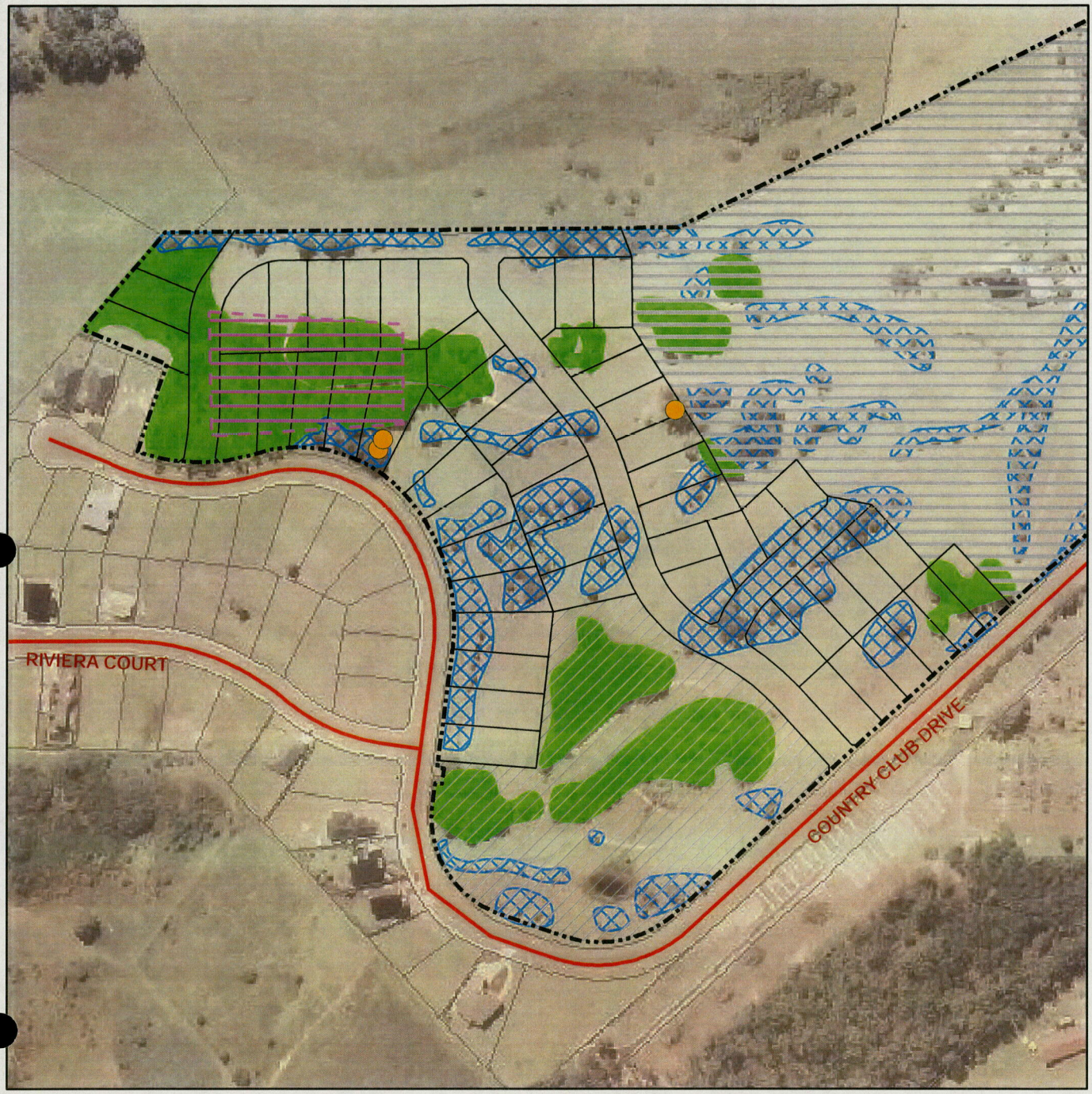

FIGURE 2: NATIVE VEGETATION ASSESSMENT
189 PALMERS ROAD, LAKES ENTRANCE

Legend

- Roads
- Existing property boundary 189 Palmers Rd
- Area covered by Section 173 Agreement
- Proposed subdivision layout (v4)
- Proposed Reserve
- Lot A (proposed)

Vegetation Mapping

- Scattered Trees
- Remnant Patch
- Planted vegetation (no offset required)

ETHOSNRM

N

0 1020 40 60 80

Meters

1:3,000 | Version 2

Date: 28/04/2016

Coordinate System: GDA 94 MGA Zone 55

Map Produced by: Ethos NRM,
PO Box 204, Bairnsdale, Victoria 3875.
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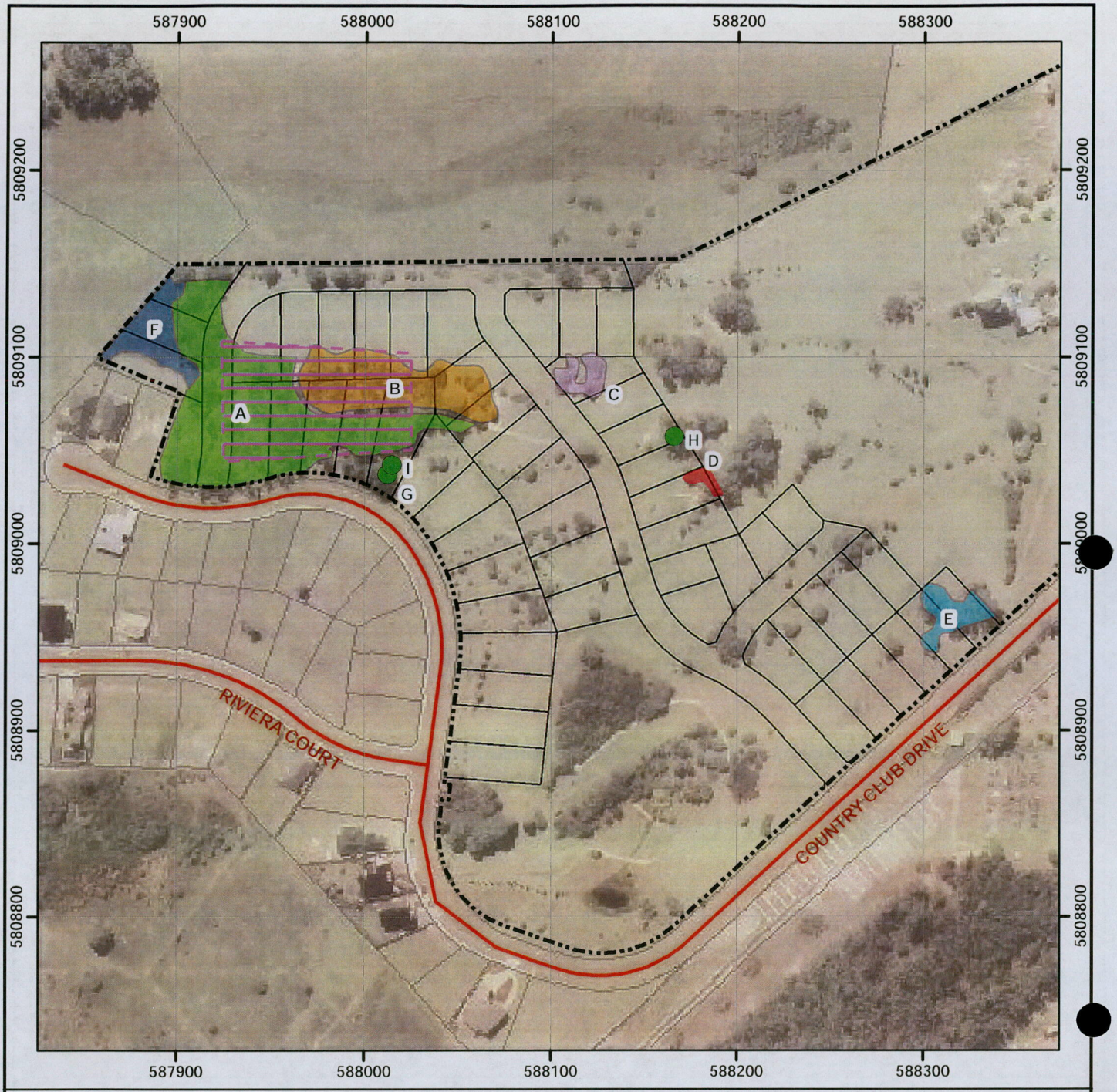

FIGURE 3: NATIVE VEGETATION REMOVAL
189 PALMERS ROAD, LAKES ENTRANCE

Legend

- Roads
- Proposed subdivision layout (v4)
- Existing property boundary 189 Palmers Rd
- Area covered by Section 173 Agreement

Native vegetation to be removed

- Scattered Trees (G,H,I)

Remnant Patch (Habitat Zone - EVC)

- A - Lowland Forest
- B - Lowland Forest
- C - Lowland Forest
- D - Lowland Forest
- E - Plains Grassy Forest
- F - Lowland Forest

ETHOSNRM

N

0 10 20 40 60 80

Meters

1:3,000 | Version 1

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5 SIGNIFICANT FLORA, FAUNA AND ECOLOGICAL COMMUNITIES

Records of the known and likely presence of Rare and/or Threatened flora and fauna within 5km of the site have been sourced from both the Victorian Biodiversity Atlas (VBA, 2016) and the online EPBC Protected Matters Search Tool (DoE, 2016). The following sections include species listed as rare or threatened on DELWP"s Advisory Lists, Victoria"s *FFG Act 1988* and the Commonwealth *EPBC Act 1999*. An assessment of the likely implications for removal or impacts to EPBC or FFG listed species is also discussed, with regard to potential approval or permit requirements under these policies.

5.1 Environment Protection and Biodiversity Conservation Act 1999

An online EPBC Protected Matters Search was undertaken and the results identified the following Matters of National Environmental Significance within a 5km radius of the centre of the site (see **Appendix 9**).

Results of the EPBC Protected Matters Search included:

- 1 wetland of international importance (Gippsland Lakes Ramsar site)
- 3 listed Threatened Ecological Communities
    - Gippsland Red Gum *(Eucalyptus tereticornis* subsp. *mediana)* Grassy Woodland and Associated Native Grassland
    - Littoral Rainforest and Coastal Vine Thickets of Eastern Australia
    - Subtropical and Temperate Coastal Saltmarsh
- 52 threatened species of which 17 are terrestrial and 2 aquatic and 27 marine fauna species; and 6 terrestrial flora species.
- 47 listed Migratory species.

No EPBC Protected Matters were recorded by Ethos NRM during field assessment at the site.

5.2 DELWP Rare and Threatened Flora Species

There are no previous records of rare and threatened flora species from the study site. However, twenty-eight rare or threatened **flora** species listed on DELWP"s *Advisory List of Rare or Threatened Plants in Victoria* (DEPI, 2014a) have been previously recorded on the Victorian Biodiversity Atlas (VBA, 2016) within 5km of the property (refer to **Table 2**). Of these species, 8 are „vulnerable", 17 are listed as „rare" and 3 „poorly known". Four species are listed under the FFG Act; Yellow-wood, Heath Spider-orchid, Limestone Blue Wattle and Viscid Daisy-bush. Two species are listed under the EPBC Act; Limestone Blue Wattle and Thick-lip Spider-orchid.

One rare species, Coast Grey-box (*Eucalyptus bosistoana*) was recorded within the small patch of Plains Grassy Forest (HZE). Four Coast Grey-box trees ranging from 15 to 65 cm DBH (diameter at breast height) were recorded within HZE and are proposed to be removed. No other threatened flora species were recorded by Ethos NRM during field assessment at the site.

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Table 2. DELWP Rare and Threatened Flora records (VBA database)

Scientific Name	Common Name	Conservation Status		
		DELWP	EPBC	FFG
Acacia caerulescens	Limestone Blue Wattle	vu	VU	L
Acronychia oblongifolia	Yellow-wood	r		L
Beyeria lanceolata	Pinkwood	r		
Beyeria lasiocarpa	Wallaby-bush	r		
Billardiera scandens s.s.	Velvet Apple-berry	r		
Caladenia mentiens	Cryptic Pink-fingers	k		
Caladenia peisleyi	Heath Spider-orchid	vu		L
Caladenia tessellata	Thick-lip Spider-orchid	vu	VU	
Cardamine microthrix	Eastern Bitter-cress	vu		
Cardamine tenuifolia	Slender Bitter-cress	k		
Carpobrotus glaucescens	Bluish Pigface	r		
Cassinia maritima	Coast Cassinia	r		
Corymbia maculata	Spotted Gum	vu #		
Eucalyptus bosistoana	Coast Grey-box	r #		
Eucalyptus polyanthemos subsp. longior	Forest Red-box	r		
Juncus revolutus	Creeping Rush	r		
Korthalsella rubra subsp. rubra	Jointed Mistletoe	vu		
Marsdenia flavescens	Yellow Milk-vine	r		
Muellerina celastroides	Coast Mistletoe	r		
Olearia viscosa	Viscid Daisy-bush	vu		L
Oxalis rubens	Dune Wood-sorrel	r		
Ozothamnus argophyllus	Spicy Everlasting	r		
Pomaderris oraria subsp. calcicola	Limestone Pomaderris	r		
Pterostylis alveata	Coastal Greenhood	vu		
Senecio spathulatus var. latifructus	Dune Groundsel	r		
Stackhousia spathulata	Coast Stackhousia	k		
Thuidium cymbifolium	Eastern Weft-moss	r		
Zieria smithii subsp. smithii	Sandfly Zieria	r		

Conservation Status: DELWP Advisory List: vu – vulnerable, r – rare, k – poorly known, # - some stands of the species may be alien.
EPBC Threat Status: VU – vulnerable. FFG Act: L – listed as threatened

5.3 DELWP Threatened Fauna Species

There are no previous records of threatened fauna species from the study site.

Sixty-four threatened **fauna** species listed on DELWP's *Advisory List of Threatened Vertebrate Fauna in Victoria* (DEPI, 2013b) have been recorded within 5km of the site, including; 3 critically endangered, 15 endangered, 26 vulnerable, 17 near threatened and 2 data deficient fauna species (refer to **Table 3**). Of these, 33 species are listed under the FFG Act and 17 are listed under the EPBC Act. No threatened fauna species were recorded by Ethos NRM during field assessment at the site.

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Table 3. DELWP Threatened Fauna records (VBA database)

Scientific Name	Common Name	Conservation Status		
		DELWP	EPBC	FFG
Accipiter novaehollandiae novaehollandiae	Grey Goshawk	vu		L
Alcedo azurea	Azure Kingfisher	nt		
Anas rhynchotis	Australasian Shoveler	vu		
Anseranas semipalmata	Magpie Goose	nt		L
Anthochaera phrygia	Regent Honeyeater	cr	CR	L
Arctocephalus forsteri	New Zealand Fur Seal	vu		
Arctocephalus tropicalis	Subantarctic Fur Seal		VU	
Ardea intermedia	Intermediate Egret	en		L
Ardea modesta	Eastern Great Egret	vu		L
Arenaria interpres	Ruddy Turnstone	vu		
Aythya australis	Hardhead	vu		
Biziura lobata	Musk Duck	vu		
Botaurus poiciloptilus	Australasian Bittern	en	EN	L
Calidris canutus	Red Knot	en		
Chelodina longicollis	Eastern Snake-necked Turtle	dd		
Cinclosoma punctatum	Spotted Quail-thrush	nt		
Circus assimilis	Spotted Harrier	nt		
Dasyurus maculatus maculatus	Spot-tailed Quoll	en	EN	L
Dermochelys coriacea	Leathery Turtle	cr	EN	L
Diomedea exulans	Wandering Albatross	en	VU	L
Dromaius novaehollandiae	Emu	nt		
Egretta garzetta nigripes	Little Egret	en		L
Eubalaena australis	Southern Right Whale	cr	EN	L
Falco subniger	Black Falcon	vu		
Gallinago hardwickii	Latham's Snipe	nt		
Haematopus fuliginosus	Sooty Oystercatcher	nt		
Haliaeetus leucogaster	White-bellied Sea-Eagle	vu		L
Hirundapus caudacutus	White-throated Needletail	vu		
Hydroprogne caspia	Caspian Tern	nt		L
Isoodon obesulus obesulus	Southern Brown Bandicoot	nt	EN	L
Larus pacificus pacificus	Pacific Gull	nt		
Lathamus discolor	Swift Parrot	en	EN	L
Lewinia pectoralis pectoralis	Lewin's Rail	vu		L
Litoria aurea	Green and Golden Bell Frog	vu	VU	
Litoria raniformis	Growling Grass Frog	en	VU	L
Ninox strenua	Powerful Owl	vu		L
Numenius madagascariensis	Eastern Curlew	vu	CR	
Nycticorax caledonicus hillii	Nankeen Night Heron	nt		
Oxyura australis	Blue-billed Duck	en		L
Pelecanoides urinatrix	Common Diving-Petrel	nt		
Petauroides volans	Greater Glider	vu		
Pezoporus wallicus wallicus	Ground Parrot	en		L
Phalacrocorax fuscescens	Black-faced Cormorant	nt		
Phalacrocorax varius	Pied Cormorant	nt		
Phascogale tapoatafa	Brush-tailed Phascogale	vu		L
Platalea regia	Royal Spoonbill	nt		
Pluvialis fulva	Pacific Golden Plover	vu		

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Scientific Name	Common Name	Conservation Status		
		DELWP	EPBC	FFG
Pluvialis squatarola	Grey Plover	en		
Potorous tridactylus tridactylus	Long-nosed Potoroo	nt	VU	L
Pseudemoia rawlinsoni	Glossy Grass Skink	vu		
Pteropus poliocephalus	Grey-headed Flying-fox	vu	VU	L
Rhinolophus megaphyllus megaphyllus	Eastern Horseshoe Bat	vu		L
Saccolaimus flaviventris	Yellow-bellied Sheathtail Bat	dd		L
Sterna striata	White-fronted Tern	nt		
Sternula albifrons sinensis	Little Tern	vu		L
Sternula nereis nereis	Fairy Tern	en	VU	L
Stictonetta naevosa	Freckled Duck	en		L
Thalassarche cauta	Shy Albatross	vu	VU	L
Thalassarche chrysostoma	Grey-headed Albatross	vu	EN	L
Thinornis rubricollis rubricollis	Hooded Plover	vu		L
Tringa nebularia	Common Greenshank	vu		
Tyto novaehollandiae novaehollandiae	Masked Owl	en		L
Tyto tenebricosa tenebricosa	Sooty Owl	vu		L
Varanus varius	Lace Monitor	en		

Conservation Status: DELWP Advisory List: cr – critically endangered, e – endangered, vu – vulnerable, nt – near threatened, dd – data deficient. EPBC Threat Status: CR – critically endangered, E – endangered, VU – vulnerable. FFG Act: L – listed as threatened

5.4 Potential Impact on Significant Species

None of the EPBC listed flora or fauna species identified by the Protected Matters search were recorded within the site during field survey by Ethos NRM. Whilst there is potential for use of the area for foraging by mammals and birds, there are no known records of these species within the site. The proposed areas of vegetation removal are low to moderate quality, isolated remnant patches of vegetation, which are considered unlikely to provide important habitat for threatened EPBC listed species, and hence it is highly unlikely that there will be significant impacts.

DELWP (VBA, 2016) records of EPBC species within 5km of the study area include 2 listed flora and 17 listed fauna species. Most of the fauna species are marine, coastal or wetland species, for which there is no habitat present. None of the species were recorded on site, nor was there suitable habitat identified during site inspection.

Habitat importance is assessed under the *Guidelines* through the Specific Offset test and no specific offsets have been identified for the proposed vegetation removal. This supports the low value of the vegetation, on 189 Palmers Road as habitat for rare or threatened species.

No significant impact is predicted on any rare or threatened flora or fauna species listed under the ***EPBC*** or ***FFG Acts*** as a result of vegetation removal associated with the proposed subdivision at 189 Palmers Rd, Lakes Entrance.

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6 VEGETATION REMOVAL

6.1 Victoria's Native Vegetation Permitted Clearing Regulations

State Policy for vegetation removal requires that the impacts on biodiversity from proposals to remove native vegetation are assessed according to the *Guidelines* (DEPI, 2013a), within the relevant risk-based pathway. The risk-based approach comprises of two main factors; extent risk and location risk. These factors determine the pathway an application is assessed through. Extent risk relates to the amount of vegetation proposed to be removed. Location risk is based on DELWP modelling which maps the strategic landscape value of a site.

The risk-based pathway is determined by combining the extent risk and location risk of proposed native vegetation removal. Three risk-based pathways for applications for a permit to remove native vegetation exist; **low, moderate and high risk**. These pathways dictate the detail of information, including whether detailed on-site vegetation condition assessment (Habitat Hectares), which is required to be provided with an application, and the decision guidelines for assessment of that application (DELWP, 2015).

6.1.1 Identification of the Risk-based Pathway and Application Requirements

Preliminary examination of the online DELWP *Native Vegetation Information Management (NVIM)* Tool *Location Risk Map* indicated that the site was within Location Risk A. The combined Risk-based pathway was confirmed to be **MODERATE** by the DELWP *„Biodiversity impact and offset requirements reports'* which are provided in **Appendix 6.**

The risk-based pathway for this project is **MODERATE.**

The requirements for applications under the **Moderate Risk** pathway as detailed in the *Biodiversity Assessment Handbook – Permitted clearing of native vegetation* (DEPI, 2015), include:

- A habitat hectares assessment and mapping of vegetation extent and condition using GIS,
- A statement of how impacts on biodiversity from the removal of native vegetation have been minimised,
- An assessment of whether the proposed removal of native vegetation will have an impact on biodiversity from the proposed use or development,
- The Habitat Importance scores of the native vegetation to be removed,
- An offset strategy that details how a compliant offset will be secured.

6.1.2 Minimising impacts on biodiversity from the removal of native vegetation

Total avoidance of vegetation removal has not been possible for subdivision of the property into multiple residential lots, as native vegetation patches are scattered across the property. However reasonable steps have been undertaken to minimise impacts to proposed native vegetation removal, through location and design of the project including:

- Avoidance of vegetation which DELWP Habitat modelling identifies to be potential habitat for the rare species Viscid Daisy-bush, and the area contributing the most to Victoria's biodiversity. This was achieved by reducing the number of lots from previous subdivision plans, relocating the access road and increasing the size of the Reserve.

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- Retention of remnant vegetation in the south of the property in a Reserve covering an area of 2.22 ha.
- Retention of vegetation in the eastern portion of the property (Lot A).

The DELWP (2015, p.29) assessment handbook states in some instances "…minimisation is unreasonable at the site level because the native vegetation makes a very low contribution to biodiversity (such as no specific offset required, low strategic biodiversity score)".

Hence, attempting to further minimise impacts on biodiversity, within the context of this site is not warranted as the remnant vegetation at this site is not of high quality (as evident by the low Habitat Scores) and does not provide an important contribution to Victoria's biodiversity. This is supported by both the allocation of a General Offset requirement and no Specific Offsets, and the low Strategic Biodiversity Score (0.202).

6.2 Vegetation Assessment

The field assessment of the study site undertaken by Ethos NRM identified that **native vegetation is present**, as defined by the *Guidelines* (see below). **Remnant patches** of native vegetation representative of the EVCs Lowland Forest (EVC 16) and Plains Grassy Forest (EVC 151) within the East Gippsland Lowlands bioregion were recorded on site.

Canopy trees within areas of vegetation proposed to be retained were assessed, and no trees were identified to be assumed lost through indirect impacts.

Several areas of amenity plantings exist across the site, comprising a combination of native (indigenous and non-indigenous) and exotic species. Amenity plantings proposed for removal do not meet the definition of native vegetation, and have been excluded from calculations of vegetation loss and offset requirements.

Native vegetation is defined in the Victoria Planning Provisions as:
'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses.'

A **remnant patch** of native vegetation is either:
- an area of vegetation where at least 25% of the total perennial understorey plant cover is native
- any area with three or more native canopy trees where the canopy foliage cover is at least 20% of the area*

Vegetation removal required to enable the multi-lot subdivision (in accordance with proposed subdivision layout version 4) has been calculated using two components:

- Total extent of native vegetation within the proposed multi-lot subdivision (accounting for full loss of vegetation within proposed residential lots <4000m^2 in area, access roads and 2 metres either side of new boundary fencelines), and including the area under Section 173 Agreement.
- Extent of native vegetation removal within Section 173 Agreement area, to be offset twice as compensation for removal of protected vegetation (in accordance with DELWP advice).

BIOR reports have been obtained for both components above, and the impacts and offset requirements have been added to give the final impacts and offset requirements for the project. Further detail of the calculation of native vegetation loss is provided in **Section 6.2.1** below.

6.2.1 Habitat Hectares

Calculation of the quality of the patches of native vegetation proposed for removal has been determined by Habitat Hectare Assessment, undertaken by Ethos NRM, which

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provides a Habitat Score. Scattered Trees are converted to a standard area of 0.07 ha with a Habitat Score of 0.2, to calculate the total impact in hectares and Habitat Hectares.

Spatial data summarising the extent and condition of the vegetation proposed to be removed was provided to DELWP for confirmation of the risk-based pathway. The site DELWP *Biodiversity impacts and offset requirements reports (BIOR)* are attached as **Appendix 6.** These reports also detail the offset calculations for vegetation removal.

Table 4 details the quantity of vegetation removal at the property associated with the proposed subdivision. An area of 1.235 ha of remnant vegetation and 3 scattered trees, equating to 1.446 ha, is proposed to be removed to enable the multi-lot subdivision of the property. **Table 5** details the quantity of vegetation removal within the area currently protected by a Section 173 Agreement, which includes an area of 0.524 ha of remnant vegetation. See **Figure 3** for illustration of areas of vegetation removal and **Appendix 7** for photos.

Table 4. Native Vegetation Removal Summary

Habitat Zone	Remnant Patch or Scattered Tree	Habitat Score	Area (ha)	Habitat Hectares (HHa)
HZA	Remnant Patch	0.47	0.702	0.330
HZB	Remnant Patch	0.32	0.289	0.092
HZC	Remnant Patch	0.17	0.045	0.008
HZD	Remnant Patch	0.15	0.010	0.002
HZE	Remnant Patch	0.33	0.073	0.024
HZF	Remnant Patch	0.33	0.115	0.038
HZG,H,I	Scattered Trees	0.20	0.210	0.042
		TOTAL[1]	**1.446 ha**	**0.536 HHa**

Table 5. Section 173 Agreement area Vegetation Removal Summary

Habitat Zone	Remnant Patch or Scattered Tree	Habitat Score	Area (ha)	Habitat Hectares (HHa)
HZA	Remnant Patch	0.47	0.346	0.163
HZB	Remnant Patch	0.32	0.177	0.057
		TOTALS[1]	**0.524 ha**	**0.219 HHa**

The total vegetation impact has been calculated to be the total area of native vegetation removal (including the s173 Agreement area) ***plus*** the area of native vegetation currently protected under the Section 173 Agreement. In effect, to compensate for the proposed removal of the Section 173 Agreement, the area of native vegetation currently protected by the s173 Agreement will be offset twice, in accordance with advice from DELWP.

Therefore native vegetation removal at 189 Palmers Road, Lakes Entrance is equivalent to an area of **1.970 hectares**, which equates to **0.755 Habitat Hectares**. Habitat Hectares is a unit measure of the quality of vegetation **x** the area of vegetation.

1.446 ha + 0.524 ha = 1.970 ha of Native Vegetation Removal

or **0.536 HHa + 0.219 HHa = 0.755 Habitat Hectares**

[1] Values in tables may not add to totals due to rounding. Table values are extracted from DELWP BIOR reports.

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7 OFFSET REQUIREMENTS

7.1 Determination of Offset Requirements

The determination of offsets relies on a purpose-built *Native Vegetation Information Management* Tool developed by DELWP. Following calculation of the Habitat Hectares (quality x quantity) of vegetation to be removed the mapped vegetation is assessed against DELWP models to determine the type, quantity and attributes of the offset required.

Offsets under the *Guidelines* comprise of:

- **general biodiversity equivalence units** *and/or*
- **specific biodiversity equivalence units**

Ethos NRM provided DELWP with a GIS (ESRI format) shape-file of the area of proposed vegetation removal with attributed site condition data. BIOR reports on the vegetation removal were supplied by DELWP and are provided in **Appendix 6**; one report was obtained for native vegetation removal, and a separate report was obtained for compensation of the area protected by the Section 173 Agreement. The two offset requirements were then added together to calculate the total offset requirement for the proposal. The vegetation impacts and offset requirements are summarised in **Table 6** below.

Whilst desktop searches for records of rare or threatened flora and fauna species have been undertaken by Ethos NRM, the ***Guidelines*** methodology relies on model based data to assess the proportional impact of proposed vegetation removal on habitat for rare or threatened species. The specific-general offset test measures on a case-by-case basis the proportion of habitat, against a threshold, each significant species will lose if the removal of native vegetation is permitted. This offset test has been applied to the proposed vegetation removal at 189 Palmers Rd, Lakes Entrance, and no specific offset for rare or threatened species was identified.

Table 6. Vegetation Offset Summary

Removal component	Total extent	General offset units	Minimum Strategic Biodiversity Score
Native vegetation removal (all native vegetation)	1.446 ha	0.162	0.161
Compensation for removal of vegetation under s173 Agreement	0.524 ha	0.066	0.161
TOTAL OFFSET REQUIREMENT		**0.228**	**0.161**

The offset requirement calculated by DELWP for the Project, under the *Guidelines,* consists entirely of *General Biodiversity Equivalence Units (GBEUs)* and includes:

0.228 General Biodiversity Equivalence Units (GBEUs) with a minimum Strategic Biodiversity Score of 0.161 for removal of 1.446 hectares of vegetation **and** compensation for removal of 0.524 ha of native vegetation currently protected by a Section 173 Agreement.

All offsets are required to be achieved within the East Gippsland Catchment Management Authority or East Gippsland Shire region.

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7.2 Offsetting Native Vegetation Losses

Where vegetation removal cannot be avoided, provision of offsets is required to compensate for the impacts on biodiversity; the purpose of an offset is to achieve a „no net loss" in the contribution made by native vegetation to Victoria"s biodiversity.

Offsets are achieved through the long-term protection, enhancement and management of the quality and quantity of native vegetation. Offsets can be achieved on private land owned by the proponent or a third party, or by purchasing a Native Vegetation Credit from the DELWP Native Vegetation Credit Register.

A formal agreement is required in all instances to secure the ongoing protection and management of the nominated offset site.

7.3 Offset Attributes

When a general offset is required the offset secured must meet the *minimum strategic biodiversity score and vicinity* attributes.

The offsets for the proposed vegetation removal at 189 Palmers Rd, Lakes Entrance must:

- have a minimum strategic biodiversity score of 0.161 and
- be within the East Gippsland Catchment Management Authority boundary (or East Gippsland Shire boundary).

7.4 Offset Strategy

Ethos NRM has confirmed that there are available vegetation offsets on the Native Vegetation Credit Register within the East Gippsland Catchment Management Area that can be purchased to meet offset obligations for this project. A letter confirming the availability of offset credits is provided in **Appendix 8**. **Table 7** details the required offset and attributes.

Table 7. Offset Requirement and Attributes

Offsets Required	Unit / Measure
General Offsets	0.228 GBEUs
Minimum Strategic Biodiversity Score	0.161
Vicinity	East Gippsland Catchment Management Authority *or* East Gippsland Shire area

At the time of preparing this report purchase of offsets from the Native Vegetation Credit Register is the preferred method by the Landholder to achieve their offset obligations.

7.4.1 Timing

A compliant offset **must be secured**, to the satisfaction of the responsible or referral authority, **before the native vegetation is removed** (DEPI, 2013a), by either:

- A security agreement for the site including an onsite (Offset) management plan, or
- Evidence of a secured third party offset, e.g. Native Vegetation Credit Register extract.

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8 REFERENCES

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VBA, 2016 Data Source (DELWP)

Data Source: 'Victorian Biodiversity Atlas', © Victorian Government, Department of Environment, Land, Water and Planning (Data Publication date: 9/2/16).

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9 APPENDICES

9.1 Appendix 1: Proposed Subdivision Plan

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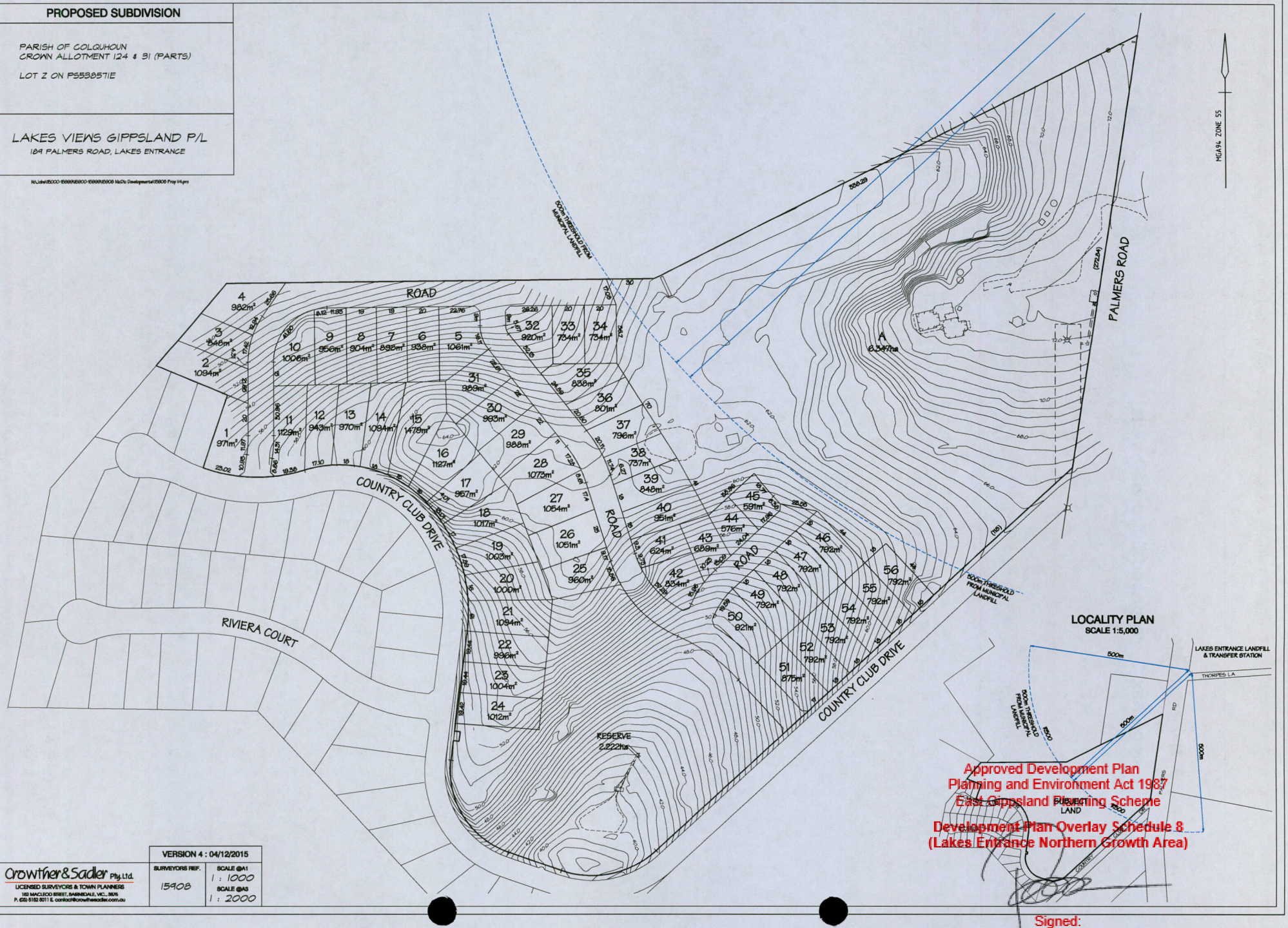
PROPOSED SUBDIVISION

PARISH OF COLQUHOUN
CROWN ALLOTMENT 124 & 31 (PARTS)

LOT Z ON PS538571E

LAKES VIEWS GIPPSLAND P/L
189 PALMERS ROAD, LAKES ENTRANCE

N:\Jobs\15000-15999\15900-15999\15908 Nic\Dc Development\15908 Prop V4.pro



LOCALITY PLAN
SCALE 1:5,000

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VERSION 4 : 04/12/2015	
SURVEYORS REF.	SCALE @A1
15908	1 : 1000
	SCALE @A3
	1 : 2000

Crowther & Sadler Pty Ltd.
LICENSED SURVEYORS & TOWN PLANNERS
192 MACLEOD STREET, BAIRNSDALE, VIC., 3875
P. (03) 5152 5011 E. contact@crowthersadler.com.au

9.2 Appendix 2: Flora Species List

The following species were recorded by Ethos NRM at 189 Palmers Road, Lakes Entrance on 18/2/16. Status: * = Introduced; r = rare (DEPI, 2014)

SCIENTIFIC NAME	COMMON NAME	STATUS
Acacia longifolia subsp. longifolia	Sallow Wattle	
Acacia longifolia subsp. sophorae	Coast Wattle	
Acacia mearnsii	Black Wattle	
Acacia sp.	Wattle	*
Acacia terminalis	Sunshine Wattle	
Acrotriche serrulata	Honey-pots	
Alyxia buxifolia	Sea Box	
Amyema sp.	Mistletoe	
Anthoxanthum odoratum	Sweet Vernal-grass	*
Astroloma humifusum	Cranberry Heath	
Banksia integrifolia subsp. integrifolia	Coast Banksia	
Billardiera scandens	Apple-berry	
Bursaria spinosa subsp. spinosa	Sweet Bursaria	
Cenchrus clandestinus	Kikuyu	*
Centaurium erythraea	Common Centaury	*
Clematis aristata	Mountain Clematis	
Conyza sp.	Fleabane	*
Correa reflexa	Common Correa	
Dactylis glomerata	Cocksfoot	*
Desmodium gunnii	Southern Tick-trefoil	
Dianella sp.	Flax Lily	
Dichelachne sp.	Plume-grass	
Dichondra repens	Kidney-weed	
Ehrharta erecta var. erecta	Panic Veldt-grass	*
Einadia nutans	Nodding Saltbush	
Eucalyptus baueriana subsp. baueriana	Blue Box	
Eucalyptus bosistoana	Coast Grey-box	Rare
Eucalyptus cypellocarpa	Mountain Grey-gum	
Eucalyptus muelleriana	Yellow Stringybark	
Eucalyptus tricarpa subsp. tricarpa	Red Ironbark	
Euchiton involucratus	Star Cudweed	
Exocarpos cupressiformis	Cherry Ballart	
Gahnia radula	Thatch Saw-sedge	
Glycine clandestina	Twining Glycine	
Gonocarpus teucrioides	Germander Raspwort	

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SCIENTIFIC NAME	COMMON NAME	STATUS
Goodenia ovata	Hop Goodenia	
Hibbertia aspera subsp. aspera s.s.	Rough Guinea-flower	
Hibbertia obtusifolia	Grey Guinea-flower	
Hydrocotyle sp.	Pennywort	
Hypochaeris radicata	Flatweed	*
Kunzea ericoides	Burgan	
Lepidosperma laterale	Variable Sword-sedge	
Leucopogon parviflorus	Coast Beard-heath	
Lomandra longifolia subsp. longifolia	Spiny-headed Mat-rush	
Lotus spp.	Trefoil	*
Lycium ferocissimum	African Box-thorn	*
Microlaena stipoides var. stipoides	Weeping Grass	
Myoporum insulare	Common Boobialla	
Olearia lirata	Snowy Daisy-bush	
Opercularia hispida	Hairy Stinkweed	
Pinus sp.	Pine Tree	*
Pittosporum undulatum	Sweet Pittosporum	
Plantago coronopus	Buck's-horn Plantain	*
Poa sp.	Tussock Grass	
Pteridium esculentum	Austral Bracken	
Rhagodia candolleana subsp. candolleana	Seaberry Saltbush	
Rhytidosperma sp.	Wallaby Grass	
Rubus fruticosus spp. agg.	Blackberry	*
Senecio sp.	Groundsel	
Sporobolus africanus	Rat-tail Grass	*
Tetrarrhena juncea	Forest Wire-grass	
Themeda triandra	Kangaroo Grass	
Wahlenbergia sp.	Bluebell	
	Unidentified lily	

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9.3 Appendix 3: EVC Map (DELWP)

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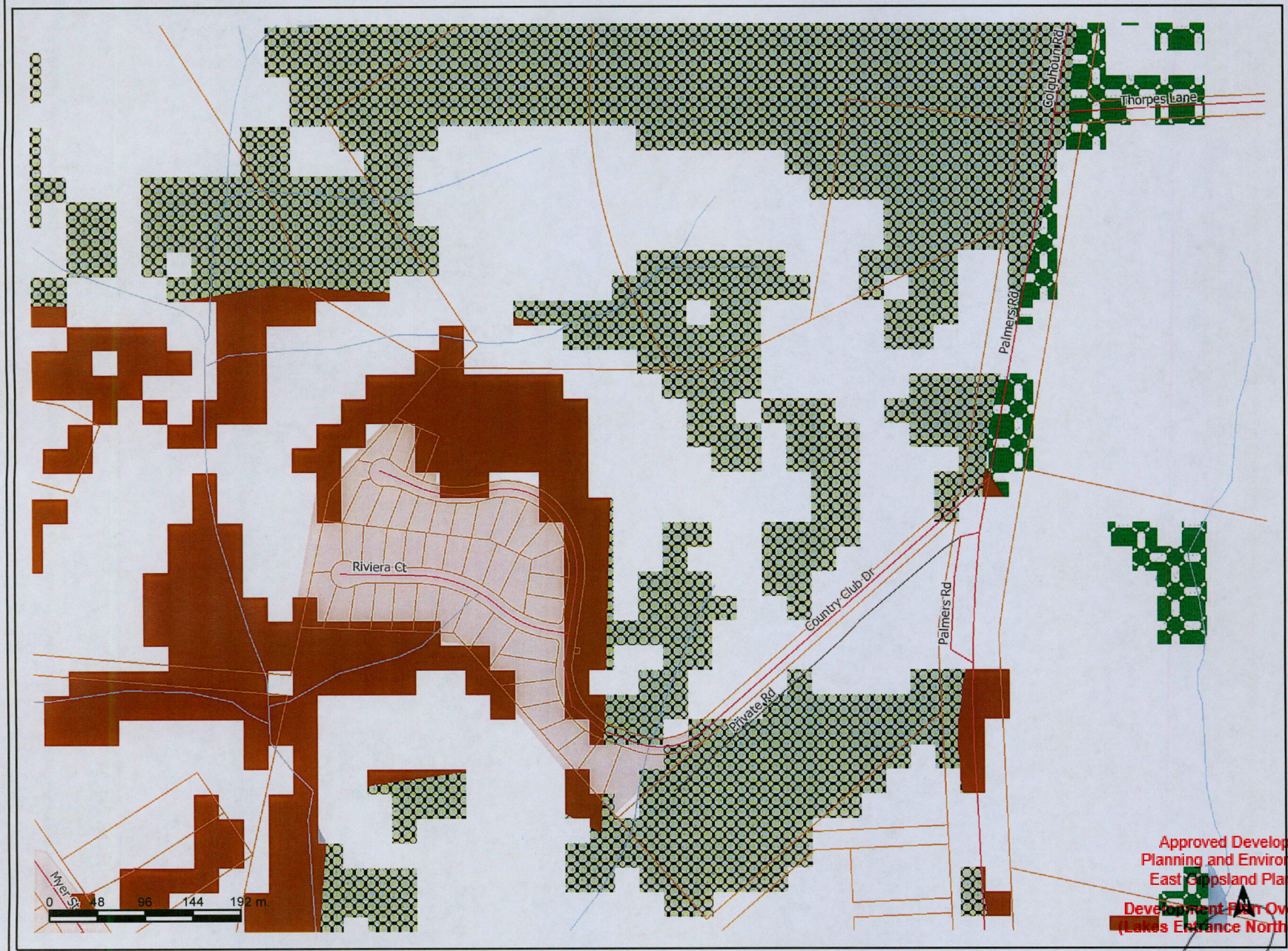
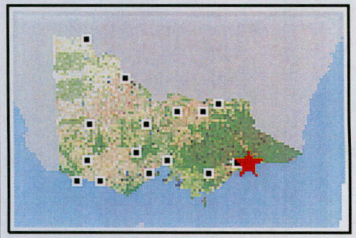
Map created Thu Feb 18 10:42:42 EST 2016



Department of Environment, Land, Water & Planning

Victoria



ROADS
- Freeway
- Highway
- Main Road
- Secondary Road
- Local Road
- 2WD (Unsealed)
- 4WD Only
- Walking or Cycle Track

WATERCOURSES

UNNAMED DRAINAGE LINES

PROPERTY

ECOLOGICAL VEGETATION CLASSES
- 15 Limestone Box Forest
- 151 Plains Grassy Forest
- 16 Lowland Forest

WATERBODIES
- Watercourse Area
- Permanent Waterbody
- Wetland Area
- Inundation Area

BUILT UP AREAS

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Map Scale 1:5,437

GDA

Victoria

Biodiversity Interactive Map A4 Landscape

(c) The State of Victoria Department of Environment, Land, Water & Planning 2016

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9.4 Appendix 4: Habitat Hectare Sheets

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Vegetation Quality Field Assessment Sheet

Version 1.3 - October 2004

Department of Sustainability and Environment

Site Name/No. 16002 - A Location Lakes View Date 16/2/16

Assessor(s) A. HILL Map Name/No. ..... AMG .....

Tenure Private EVC 16 - LOWLAND FOREST Bioregion EAST GIPP. LOWLANDS

'Site Condition Score'

Large Trees — Score: 3

Category & Description	% Canopy Health* > 70%	30-70%	< 30%
None present	0	0	0
> 0 to 20% of the benchmark number of large trees/ha	(3)	2	1
> 20% to 40% of the benchmark number of large trees/ha	4	3	2
> 40% to 70% of the benchmark number of large trees/ha	6	5	4
> 70% to 100% of the benchmark number of large trees/ha	8	7	6
≥ the benchmark number of large trees/ha	10	9	8

Large trees are defined by diameter at breast height (dbh) - see EVC benchmark.

* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

Tree Canopy Cover — Score: 3

Category & Description	% Canopy Health * > 70%	30-70%	< 30%
< 10% of benchmark cover	0	0	0
< 50% or > 150% of benchmark cover	(3)	2	1
≥ 50% or ≤ 150% of benchmark cover	5	4	3

Tree canopy is defined as those canopy tree species reaching ≥ 80% of mature height - see EVC benchmark description.

* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

Lack of Weeds — Score: 7

Category & Description	'high threat' weeds* None	≤ 50%	> 50%
> 50% cover of weeds	4	2	0
25 - 50% cover of weeds	7	6	4
5 - 25% cover of weeds	11	9	(7)
< 5% cover of weeds**	15	13	11

* proportion of weed cover due to 'high threat' weeds - see EVC benchmark for guide.

'High threat' weed species are defined as those introduced species (including non-indigenous 'natives') with the ability to out-compete and substantially reduce one or more indigenous life forms in the longer term assuming on-going current site characteristics and disturbance regime.

The EVC benchmark lists typical weed species for the EVC in the bioregion and provides an estimate of their 'invasiveness' and 'impact'. In general, those weed species considered to have a *high impact* are considered *high threat* regardless of their invasiveness.

** If total weed cover is negligible (<1%) and high threat weed species are present then score '13'.

Understorey Life forms

LF Code from EVC benchmark	# spp observed / Benchmark spp.	% cover observed / Benchmark % cover	Present (✓)	Modified (✓)
IT	3 / 4	6 / 5	✓	×
T	2 / 2	1 / 10	✓	✓
MS	14 / 10	10 / 30	✓	✓
SS	10 / 6	8 / 15	✓	×
PS	1 / 2	1 / 5	✓	×
LH	2 / 1	1 / 1	✓	×
MH	6 / 6	4 / 10	✓	✓
LTG	1 / 2	4 / 10	✓	✓
LNG	1 / 1	5 / 5	✓	×
MTG	6 / 6	35 / 10	✓	×
MNG	3 / 2	5 / 5	✓	×
GF	1 / 3	12 / 10	✓	✓
SC	4 / 3	7 / 5	✓	×
BL	na / na	2 / 10	✓	✓
	/	/	14 / 14	6 / 14
	/	/		

Present

For life forms with benchmark cover of < 10%, considered 'present' if
- any specimens are observed.

For life forms with benchmark cover of ≥ 10%, considered 'present' if
- the life form occupies at least 10% of benchmark cover.

Modified (apply only where life form is 'present')

For life forms with benchmark cover of <10%, then considered substantially 'modified' if the life form has either:
- < 50% of the benchmark species diversity; or
- no reproductively-mature specimens are observed.

For life forms with benchmark cover of ≥ 10%, then considered substantially 'modified' if the life form has either:
- < 50% of benchmark cover; or
- < 50% of benchmark species diversity; or
- ≥ 50% of benchmark cover due largely to immature canopy specimens but the cover of reproductively-mature specimens is < 10% of the benchmark cover.

Understorey — Score: 20

Category & Description		
All strata and lifeforms effectively absent		0
Up to 50% of life forms present		5
≥ 50% to 90% of lifeforms present	• of those present, ≥ 50% substantially modified	10
	• of those present, < 50% substantially modified	15
≥ 90% of lifeforms present	• of those present, ≥ 50% substantially modified	15
	• of those present, < 50% substantially modified	(20)
	• of those present, none substantially modified	25

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Date: 3 October 2018

Vegetation Quality Field Assessment Sheet

Version 1.3 October 2004

Recruitment

Score 6

Category & Description			High diversity*°	Low diversity*°
No evidence of a recruitment 'cohort'+	within EVC not driven by episodic events		0	0
	within EVC driven by episodic events^	clear evidence of appropriate episodic event	0	0
		no clear evidence of appropriate episodic event	5	5
Evidence of at least one recruitment 'cohort' in at least one life-form	proportion of native woody species present that have adequate recruitment°	< 30%	3	1
		30 - 70%	(6)	3
		≥ 70%	10	5

+ 'cohort' refers to a group of woody plants established in a single episode (can include suppressed canopy species individuals).

^ refer to EVC benchmark for clarification.

° treat multiple eucalypt canopy species as one species.

* high diversity defined as ≥ 50% of benchmark woody species diversity.

Species Recruitment

Woody species recorded in habitat zone	Adequate Recruitment
	(✓)
Eucalypt canopy (combined species)	✓
Leucopogon parviflorus	✓
Rhagodia candolleana	✓
Olearia sp. Sea Box	✗ ✗
Acacia longifolia, A. terminalis	✓ ✓
A. mearnsii, Bursaria spinosa	✓ ✓
Pittosporum undulatum	✓
Hibbertia aspera, H. obtusifolia	✓ ✓
Goodenia ovata	✗
Exocarpus cupressiformis	✗
Myoporum insulare	✗
Banksia integrifolia	✗
number of woody spp. in EVC benchmark (SS and taller)	19

10/16

Logs

Score 0

Category & Description	Large logs present*	Large logs absent#
< 10% of benchmark length	0	(0)
< 50% of benchmark length	3	2
≥ 50% of benchmark length	5	4

Large logs defined as those with diameter ≥ 0.5 of benchmark large tree dbh.

* present if large log length is ≥ 25% of EVC benchmark log length.

absent if large log length is < 25% of EVC benchmark log length.

Organic Litter

Score 5

Category & Description	Dominated by native organic litter	Dominated by non-native organic litter
< 10% of benchmark cover	0	0
< 50% or > 150% of benchmark cover	3	2
≥ 50% or ≤ 150% of benchmark cover	(5)	4

'Landscape Context Score'

Patch Size

Score 1

Category & Description	
< 2 ha	(1)
Between 2 and 5 ha	2
Between 5 and 10 ha	4
Between 10 and 20 ha	6
≥ 20 ha, but 'significantly disturbed'*	8
≥ 20 ha, but not 'significantly disturbed'*	10

* 'significantly disturbed' defined as per RFA 'Old Growth' analyses eg. roading, coupes, grazing etc. – effectively most patches within fragmented landscapes.

Distance to Core Area

Score 1

Distance	Core Area not significantly disturbed*	Core Area significantly disturbed*
> 5 km	0	0
1 to 5 km	2	(1)
< 1 km	4	3
contiguous	5	4

* defined as per RFA 'Old Growth' analyses.

Neighbourhood

Score 1

Radius from site	% Native vegetation *	Weighting	
100 m	40	0.03	1.2
1 km	20	0.04	0.8
5 km	20	0.03	0.6
subtract 2 if the neighbourhood is 'significantly disturbed'			-2
		Add Values and 'round-off'	1

* to nearest 20%.

Multiply % native vegetation x Weighting for each radius from the zone (eg. 40% x 0.03 = 1.2); then add values to obtain final Neighbourhood Value.

Final Habitat Score

	'Site Condition Score'							'Landscape Context Score'			
Component	Large Trees	Tree Canopy Cover	Lack of Weeds	Understorey	Recruitment	Organic Litter	Logs	Patch Size	Neighbourhood	Distance to Core Area	Total
											100
Score	3	3	7	20	6	5	0	1	1	1	47

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Vegetation Quality Field Assessment Sheet

Version 1.3 - October 2004

Department of Sustainability and Environment

Site Name/No. 16002B Location Lakeview Date 18/2/16

Assessor(s) A.HILL Map Name/No. AMG

Tenure Private EVC 16 - Lowland Forest Bioregion EG Lowlands.

'Site Condition Score'

Large Trees — Score: 3

Category & Description	% Canopy Health*		
	> 70%	30-70%	< 30%
None present	0	0	0
> 0 to 20% of the benchmark number of large trees/ha	(3)	2	1
> 20% to 40% of the benchmark number of large trees/ha	4	3	2
> 40% to 70% of the benchmark number of large trees/ha	6	5	4
> 70% to 100% of the benchmark number of large trees/ha	8	7	6
≥ the benchmark number of large trees/ha	10	9	8

Large trees are defined by diameter at breast height (dbh) - see EVC benchmark.

* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

Tree Canopy Cover — Score: 5

Category & Description	% Canopy Health *		
	> 70%	30-70%	< 30%
< 10% of benchmark cover	0	0	0
< 50% or > 150% of benchmark cover	3	2	1
≥ 50% or ≤ 150% of benchmark cover	(5)	4	3

Tree canopy is defined as those canopy tree species reaching ≥ 80% of mature height - see EVC benchmark description.

* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

Lack of Weeds — Score: 6

Category & Description	'high threat' weeds*		
	None	≤ 50%	> 50%
> 50% cover of weeds	4	2	0
25 - 50% cover of weeds	7	(6)	4
5 - 25% cover of weeds	11	9	7
< 5% cover of weeds**	15	13	11

* proportion of weed cover due to 'high threat' weeds - see EVC benchmark for guide.

'High threat' weed species are defined as those introduced species (including non-indigenous 'natives') with the ability to out-compete and substantially reduce one or more indigenous life forms in the longer term assuming on-going current site characteristics and disturbance regime.

The EVC benchmark lists typical weed species for the EVC in the bioregion and provides an estimate of their 'invasiveness' and 'impact'. In general, those weed species considered to have a *high impact* are considered *high threat* regardless of their invasiveness.

** if total weed cover is negligible (<1%) and high threat weed species are present then score '13'.

Understorey Life forms

LF Code from EVC benchmark	# spp observed / Benchmark spp.	% cover observed / Benchmark % cover	Present (✓)	Modified (✓)
IT	2 / 3	2 / 5	✓	x
T	1 / 2	2 / 10	✓	✓
MS	4 / 10	5 / 30	✓	✓
SS	1 / 6	1 / 15	✓	✓
PS	0 / 2	0 / 5	x	–
LH	0 / 1	0 / 1	x	–
MH	1 / 6	1 / 10	✓	✓
LTG	0 / 2	0 / 10	x	–
LNG	0 / 1	0 / 5	x	–
MTG	4 / 6	3 / 10	✓	✓
MNG	0 / 2	0 / 5	x	–
GF	1 / 3	2 / 10	✓	✓
SC	2 / 3	2 / 5	✓	x
BL	na / na	0 / 10	x	–
	1	1	8/	6/
	1	1	/14	/8

Present

For life forms with benchmark cover of < 10%, considered 'present' if
- any specimens are observed.

For life forms with benchmark cover of ≥ 10%, considered 'present' if
- the life form occupies at least 10% of benchmark cover.

Modified (apply only where life form is 'present')

For life forms with benchmark cover of <10%, then considered substantially 'modified' if the life form has either:
- < 50% of the benchmark species diversity; or
- no reproductively-mature specimens are observed.

For life forms with benchmark cover of ≥ 10%, then considered substantially 'modified' if the life form has either:
- < 50% of benchmark cover; or
- < 50% of benchmark species diversity; or
- ≥ 50% of benchmark cover due largely to immature canopy specimens but the cover of reproductively-mature specimens is < 10% of the benchmark cover.

Understorey — Score: 10

Category & Description		
All strata and lifeforms effectively absent		0
Up to 50% of life forms present		5
≥ 50% to 90% of lifeforms present	• of those present, ≥ 50% substantially modified	(10)
	• of those present, < 50% substantially modified	15
≥ 90% of lifeforms present	• of those present, ≥ 50% substantially modified	15
	• of those present, < 50% substantially modified	20
	• of those present, none substantially modified	25

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Vegetation Quality Field Assessment Sheet

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Recruitment

Score: 0

Category & Description			High diversity*◇	Low diversity*◇
No evidence of a recruitment 'cohort'+	within EVC not driven by episodic events		0	0
	within EVC driven by episodic events^	clear evidence of appropriate episodic event	0	0
		no clear evidence of appropriate episodic event	5	5
Evidence of at least one recruitment 'cohort' in at least one life-form	proportion of native woody species present that have adequate recruitment◇	< 30%	3	1
		30 - 70%	6	3
		≥ 70%	10	5

+ 'cohort' refers to a group of woody plants established in a single episode (can include suppressed canopy species individuals).

^ refer to EVC benchmark for clarification.

◇ treat multiple eucalypt canopy species as one species.

* high diversity defined as ≥ 50% of benchmark woody species diversity.

Species Recruitment

Woody species recorded in habitat zone	Adequate Recruitment (✓)
Eucalypt canopy (combined species)	X
	9
number of woody spp. in EVC benchmark (SS and taller)	

Logs

Score: 0

Category & Description	Large logs present*	Large logs absent#
< 10% of benchmark length	0	0
< 50% of benchmark length	3	2
≥ 50% of benchmark length	5	4

Large logs defined as those with diameter ≥ 0.5 of benchmark large tree dbh.

* present if large log length is ≥ 25% of EVC benchmark log length.

absent if large log length is < 25% of EVC benchmark log length.

Organic Litter

Score: 5

Category & Description	Dominated by native organic litter	Dominated by non-native organic litter
< 10% of benchmark cover	0	0
< 50% or > 150% of benchmark cover	3	2
≥ 50% or ≤ 150% of benchmark cover	(5)	4

'Landscape Context Score'

Patch Size

Score:

Category & Description	
< 2 ha	1
Between 2 and 5 ha	2
Between 5 and 10 ha	4
Between 10 and 20 ha	6
≥ 20 ha, but 'significantly disturbed'*	8
≥ 20 ha, but not 'significantly disturbed'*	10

* 'significantly disturbed' defined as per RFA 'Old Growth' analyses eg. roading, coupes, grazing etc. – effectively most patches within fragmented landscapes.

Distance to Core Area

Score:

Distance	Core Area not significantly disturbed*	Core Area significantly disturbed*
> 5 km	0	0
1 to 5 km	2	1
< 1 km	4	3
contiguous	5	4

* defined as per RFA 'Old Growth' analyses.

Neighbourhood

Score:

Radius from site	% Native vegetation*	Weighting	
100 m		0.03	
1 km		0.04	
5 km		0.03	
	subtract 2 if the neighbourhood is 'significantly disturbed'		
		Add Values and 'round-off'	

* to nearest 20%.

Multiply % native vegetation x Weighting for each radius from the zone (eg. 40% x 0.03 = 1.2); then add values to obtain final Neighbourhood Value.

Final Habitat Score

	'Site Condition Score'							'Landscape Context Score'			
Component	Large Trees	Tree Canopy Cover	Lack of Weeds	Understorey	Recruitment	Organic Litter	Logs	Patch Size	Neighbourhood	Distance to Core Area	Total
Score	3	5	6	10	5	5	1	1	1	32	100

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Vegetation Quality Field Assessment Sheet

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Department of Sustainability and Environment

Site Name/No. 16002 H2C Location Lake View Date 18/2/16

Assessor(s) A. HILL Map Name/No. ..... AMG .....

Tenure Private EVC Lowland Forest Bioregion EAST GIPP. LOWLANDS

'Site Condition Score'

Large Trees — Score: 0

Category & Description	% Canopy Health* > 70%	30-70%	< 30%
None present	0	0	0
> 0 to 20% of the benchmark number of large trees/ha	3	2	1
> 20% to 40% of the benchmark number of large trees/ha	4	3	2
> 40% to 70% of the benchmark number of large trees/ha	6	5	4
> 70% to 100% of the benchmark number of large trees/ha	8	7	6
≥ the benchmark number of large trees/ha	10	9	8

Large trees are defined by diameter at breast height (dbh) - see EVC benchmark.

* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

Tree Canopy Cover — Score: 3

Category & Description	% Canopy Health * > 70%	30-70%	< 30%
< 10% of benchmark cover	0	0	0
< 50% or > 150% of benchmark cover	(3)	2	1
≥ 50% or ≤ 150% of benchmark cover	5	4	3

Tree canopy is defined as those canopy tree species reaching ≥ 80% of mature height - see EVC benchmark description.

* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

Lack of Weeds — Score: 2

Category & Description	'high threat' weeds* None	≤ 50%	> 50%
> 50% cover of weeds	4	(2)	0
25 - 50% cover of weeds	7	6	4
5 - 25% cover of weeds	11	9	7
< 5% cover of weeds**	15	13	11

* proportion of weed cover due to 'high threat' weeds - see EVC benchmark for guide.

'High threat' weed species are defined as those introduced species (including non-indigenous 'natives') with the ability to out-compete and substantially reduce one or more indigenous life forms in the longer term assuming on-going current site characteristics and disturbance regime.

The EVC benchmark lists typical weed species for the EVC in the bioregion and provides an estimate of their 'invasiveness' and 'impact'. In general, those weed species considered to have a *high impact* are considered *high threat* regardless of their invasiveness.

** if total weed cover is negligible (<1%) and high threat weed species are present then score '13'.

Understorey Life forms

LF Code from EVC benchmark	# spp observed / Benchmark spp.	% cover observed / Benchmark % cover	Present (✓)	Modified (✓)
IT	1/3	1/5	✓	✓
T	2/2	2/10	✓	✓
MS	2/10	2/30	x	—
SS	0/6	0/15	x	—
PS	0/2	0/5	x	—
LH	0/1	0/1	x	—
MH	0/6	0/10	x	—
LTG	1/2	1/10	✓	✓
LNG	0/1	0/5	x	—
MTG	2/6	5/10	✓	✓
MNG	0/2	0/5	x	—
GF	1/3	1/10	✓	✓
SC	1/3	1/5	✓	x
BL	na/na	0/10	x	—
	/	/	6/14	5/6
	/	/		

Present

For life forms with benchmark cover of < 10%, considered 'present' if
- any specimens are observed.

For life forms with benchmark cover of ≥ 10%, considered 'present' if
- the life form occupies at least 10% of benchmark cover.

Modified (apply only where life form is 'present')

For life forms with benchmark cover of <10%, then considered substantially 'modified' if the life form has either:
- < 50% of the benchmark species diversity; or
- no reproductively-mature specimens are observed.

For life forms with benchmark cover of ≥ 10%, then considered substantially 'modified' if the life form has either:
- < 50% of benchmark cover; or
- < 50% of benchmark species diversity; or
- ≥ 50% of benchmark cover due largely to immature canopy specimens but the cover of reproductively-mature specimens is < 10% of the benchmark cover.

Understorey — Score: 5

Category & Description		
All strata and lifeforms effectively absent		0
Up to 50% of life forms present		(5)
≥ 50% to 90% of lifeforms present	• of those present, ≥ 50% substantially modified	10
	• of those present, < 50% substantially modified	15
≥ 90% of lifeforms present	• of those present, ≥ 50% substantially modified	15
	• of those present, < 50% substantially modified	20
	• of those present, none substantially modified	25

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Vegetation Quality Field Assessment Sheet

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Recruitment

Score 0

Category & Description			High diversity*°	Low diversity*°
No evidence of a recruitment 'cohort'+	within EVC not driven by episodic events		0	0
	within EVC driven by episodic events^	clear evidence of appropriate episodic event	0	0
		no clear evidence of appropriate episodic event	5	5
Evidence of at least one recruitment 'cohort' in at least one life-form	proportion of native woody species present that have adequate recruitment°	< 30%	3	1
		30 - 70%	6	3
		≥ 70%	10	5

+ 'cohort' refers to a group of woody plants established in a single episode (can include suppressed canopy species individuals).

^ refer to EVC benchmark for clarification.

° treat multiple eucalypt canopy species as one species.

* high diversity defined as ≥ 50% of benchmark woody species diversity.

Species Recruitment

Woody species recorded in habitat zone	Adequate Recruitment (✓)
Eucalypt canopy (combined species)	✓
	0
number of woody spp. in EVC benchmark (SS and taller)	

Logs

Score 0

Category & Description	Large logs present*	Large logs absent#
< 10% of benchmark length	0	0
< 50% of benchmark length	3	2
≥ 50% of benchmark length	5	4

Large logs defined as those with diameter ≥ 0.5 of benchmark large tree dbh.

* present if large log length is ≥ 25% of EVC benchmark log length.

absent if large log length is < 25% of EVC benchmark log length.

Organic Litter

Score 5

Category & Description	Dominated by native organic litter	Dominated by non-native organic litter
< 10% of benchmark cover	0	0
< 50% or > 150% of benchmark cover	3	2
≥ 50% or ≤ 150% of benchmark cover	(5)	4

'Landscape Context Score'

Patch Size

Score 1

Category & Description	
< 2 ha	(1)
Between 2 and 5 ha	2
Between 5 and 10 ha	4
Between 10 and 20 ha	6
≥ 20 ha, but 'significantly disturbed'*	8
≥ 20 ha, but not 'significantly disturbed'*	10

* 'significantly disturbed' defined as per RFA 'Old Growth' analyses eg. roading, coupes, grazing etc. – effectively most patches within fragmented landscapes.

Distance to Core Area

Score 1

Distance	Core Area not significantly disturbed*	Core Area significantly disturbed*
> 5 km	0	0
1 to 5 km	2	(1)
< 1 km	4	3
contiguous	5	4

* defined as per RFA 'Old Growth' analyses.

Neighbourhood

Score 0

Radius from site	% Native vegetation*	Weighting	
100 m	20	0.03	0.6
1 km	20	0.04	0.8
5 km	20	0.03	3.6
subtract 2 if the neighbourhood is 'significantly disturbed'			-2
Add Values and 'round-off'			0

* to nearest 20%.

Multiply % native vegetation x Weighting for each radius from the zone (eg. 40% x 0.03 = 1.2); then add values to obtain final Neighbourhood Value.

Final Habitat Score

	'Site Condition Score'							'Landscape Context Score'			
Component	Large Trees	Tree Canopy Cover	Lack of Weeds	Understorey	Recruitment	Organic Litter	Logs	Patch Size	Neighbourhood	Distance to Core Area	Total
											100
Score	0	3	2	5	0	5	0	1	0	1	17

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Vegetation Quality Field Assessment Sheet

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Department of Sustainability and Environment

Site Name/No. 16002 - D Location Lake View Date 18/2/16

Assessor(s) A. HILL Map Name/No. ..... AMG .....

Tenure Private EVC 16 - LOWLAND FOREST Bioregion EAST GIPP. LOWLANDS

'Site Condition Score'

Large Trees — Score: 3

Category & Description	% Canopy Health*		
	> 70%	30-70%	< 30%
None present	0	0	0
> 0 to 20% of the benchmark number of large trees/ha	(3)	2	1
> 20% to 40% of the benchmark number of large trees/ha	4	3	2
> 40% to 70% of the benchmark number of large trees/ha	6	5	4
> 70% to 100% of the benchmark number of large trees/ha	8	7	6
≥ the benchmark number of large trees/ha	10	9	8

Large trees are defined by diameter at breast height (dbh) - see EVC benchmark.

* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

Tree Canopy Cover — Score: 3

Category & Description	% Canopy Health *		
	> 70%	30-70%	< 30%
< 10% of benchmark cover	0	0	0
< 50% or > 150% of benchmark cover	(3)	2	1
≥ 50% or ≤ 150% of benchmark cover	5	4	3

Tree canopy is defined as those canopy tree species reaching ≥ 80% of mature height - see EVC benchmark description.

* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

Lack of Weeds — Score: 2

Category & Description	'high threat' weeds*		
	None	≤ 50%	> 50%
> 50% cover of weeds	4	(2)	0
25 - 50% cover of weeds	7	6	4
5 - 25% cover of weeds	11	9	7
< 5% cover of weeds**	15	13	11

* proportion of weed cover due to 'high threat' weeds - see EVC benchmark for guide.

'High threat' weed species are defined as those introduced species (including non-indigenous 'natives') with the ability to out-compete and substantially reduce one or more indigenous life forms in the longer term assuming on-going current site characteristics and disturbance regime.

The EVC benchmark lists typical weed species for the EVC in the bioregion and provides an estimate of their 'invasiveness' and 'impact'. In general, those weed species considered to have a *high impact* are considered *high threat* regardless of their invasiveness.

** if total weed cover is negligible (<1%) and high threat weed species are present then score '13'.

Understorey Life forms

LF Code from EVC benchmark	# spp observed / Benchmark spp.	% cover observed / Benchmark % cover	Present (✓)	Modified (✓)
IT	2 / 2	15 / 5	✓	x
T	0 / 2	- / 10	x	-
MS	0 / 10	- / 30	x	-
SS	0 / 6	- / 15	x	-
PS	0 / 2	- / 5	x	-
LH	0 / 1	- / 1	x	-
MH	0 / 6	- / 10	x	-
LTG	0 / 2	- / 10	x	-
LNG	0 / 1	- / 5	x	-
MTG	2 / 6	2 / 10	✓	✓
MNG	0 / 2	- / 5	x	-
GF	0 / 3	- / 10	x	-
SC	0 / 3	- / 5	x	-
BL	na / na	0 / 10	x	-
	/	/	2 / 14	1/2
	/	/		

Present — For life forms with benchmark cover of < 10%, considered 'present' if
- any specimens are observed.

For life forms with benchmark cover of ≥ 10%, considered 'present' if
- the life form occupies at least 10% of benchmark cover.

Modified (apply only where life form is 'present') — For life forms with benchmark cover of <10%, then considered substantially 'modified' if the life form has either:
- < 50% of the benchmark species diversity; or
- no reproductively-mature specimens are observed.

For life forms with benchmark cover of ≥ 10%, then considered substantially 'modified' if the life form has either:
- < 50% of benchmark cover; or
- < 50% of benchmark species diversity; or
- ≥ 50% of benchmark cover due largely to immature canopy specimens but the cover of reproductively-mature specimens is < 10% of the benchmark cover.

Understorey — Score: 5

Category & Description		
All strata and lifeforms effectively absent		0
Up to 50% of life forms present		(5)
≥ 50% to 90% of lifeforms present	• of those present, ≥ 50% substantially modified	10
	• of those present, < 50% substantially modified	15
≥ 90% of lifeforms present	• of those present, ≥ 50% substantially modified	15
	• of those present, < 50% substantially modified	20
	• of those present, none substantially modified	25

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Date: 3 October 2018

Vegetation Quality Field Assessment Sheet

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Recruitment

Score: 0

Category & Description			High diversity*◊	Low diversity*◊
No evidence of a recruitment 'cohort'+	within EVC not driven by episodic events		0	0
	within EVC driven by episodic events^	clear evidence of appropriate episodic event	0	0
		no clear evidence of appropriate episodic event	5	5
Evidence of at least one recruitment 'cohort' in at least one life-form	proportion of native woody species present that have adequate recruitment°	< 30%	3	1
		30 - 70%	6	3
		≥ 70%	10	5

+ 'cohort' refers to a group of woody plants established in a single episode (can include suppressed canopy species individuals).

^ refer to EVC benchmark for clarification.

° treat multiple eucalypt canopy species as one species.

* high diversity defined as ≥ 50% of benchmark woody species diversity.

Species Recruitment

Woody species recorded in habitat zone	Adequate Recruitment (✓)
Eucalypt canopy (combined species)	X
	0
number of woody spp. in EVC benchmark (SS and taller)	

Logs

Score: 0

Category & Description	Large logs present*	Large logs absent#
< 10% of benchmark length	0	0
< 50% of benchmark length	3	2
≥ 50% of benchmark length	5	4

Large logs defined as those with diameter ≥ 0.5 of benchmark large tree dbh.

* present if large log length is ≥ 25% of EVC benchmark log length.

absent if large log length is < 25% of EVC benchmark log length.

Organic Litter

Score: 0

Category & Description	Dominated by native organic litter	Dominated by non-native organic litter
< 10% of benchmark cover	0	0
< 50% or > 150% of benchmark cover	3	2
≥ 50% or ≤ 150% of benchmark cover	5	4

'Landscape Context Score'

Patch Size

Score: 1

Category & Description	
< 2 ha	(1)
Between 2 and 5 ha	2
Between 5 and 10 ha	4
Between 10 and 20 ha	6
≥ 20 ha, but 'significantly disturbed'*	8
≥ 20 ha, but not 'significantly disturbed'*	10

* 'significantly disturbed' defined as per RFA 'Old Growth' analyses eg. roading, coupes, grazing etc. – effectively most patches within fragmented landscapes.

Distance to Core Area

Score: 1

Distance	Core Area not significantly disturbed*	Core Area significantly disturbed*
> 5 km	0	0
1 to 5 km	2	(1)
< 1 km	4	3
contiguous	5	4

* defined as per RFA 'Old Growth' analyses.

Neighbourhood

Score: 0

Radius from site	% Native vegetation *	Weighting	
100 m	0·2	0.03	0·6
1 km	0·2	0.04	0·8
5 km	0·2	0.03	2·6
subtract 2 if the neighbourhood is 'significantly disturbed'			−2
		Add Values and 'round-off'	0

* to nearest 20%.

Multiply % native vegetation x Weighting for each radius from the zone (eg. 40% x 0.03 = 1.2); then add values to obtain final Neighbourhood Value.

Final Habitat Score

Component	'Site Condition Score'							'Landscape Context Score'			Total
	Large Trees	Tree Canopy Cover	Lack of Weeds	Understorey	Recruitment	Organic Litter	Logs	Patch Size	Neighbourhood	Distance to Core Area	100
Score	3	3	2	5	0	0	0	1	0	1	15

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Vegetation Quality Field Assessment Sheet

Version 1.3 - October 2004

Department of Sustainability and Environment

Site Name/No. 16002 - E Location Lake View Date 18/2/16

Assessor(s) A. HILL Map Name/No. ..... AMG .....

Tenure Private EVC 151 Plains Grassy Forest Bioregion EAST GIPP. LOWLANDS

'Site Condition Score'

Large Trees — Score: 5

Category & Description	% Canopy Health* > 70%	30-70%	< 30%
None present	0	0	0
> 0 to 20% of the benchmark number of large trees/ha	3	2	1
> 20% to 40% of the benchmark number of large trees/ha	4	3	2
> 40% to 70% of the benchmark number of large trees/ha	6	(5)	4
> 70% to 100% of the benchmark number of large trees/ha	8	7	6
≥ the benchmark number of large trees/ha	10	9	8

Large trees are defined by diameter at breast height (dbh) - see EVC benchmark.

* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

Tree Canopy Cover — Score: 5

Category & Description	% Canopy Health * > 70%	30-70%	< 30%
< 10% of benchmark cover	0	0	0
< 50% or > 150% of benchmark cover	3	2	1
≥ 50% or ≤ 150% of benchmark cover	(5)	4	3

Tree canopy is defined as those canopy tree species reaching ≥ 80% of mature height - see EVC benchmark description.

* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

Lack of Weeds — Score: 4

Category & Description	'high threat' weeds* None	≤ 50%	> 50%
> 50% cover of weeds	4	2	0
25 - 50% cover of weeds	7	6	(4)
5 - 25% cover of weeds	11	9	7
< 5% cover of weeds**	15	13	11

* proportion of weed cover due to 'high threat' weeds - see EVC benchmark for guide.

'High threat' weed species are defined as those introduced species (including non-indigenous 'natives') with the ability to out-compete and substantially reduce one or more indigenous life forms in the longer term assuming on-going current site characteristics and disturbance regime.

The EVC benchmark lists typical weed species for the EVC in the bioregion and provides an estimate of their 'invasiveness' and 'impact'. In general, those weed species considered to have a *high impact* are considered *high threat* regardless of their invasiveness.

** if total weed cover is negligible (<1%) and high threat weed species are present then score '13'.

Understorey Life forms

LF Code from EVC benchmark	# spp observed / Benchmark spp.	% cover observed / Benchmark % cover	Present (✓)	Modified (✓)
IT	2 / 2	5 / 5	✓	x
T	0 / 3	– / 15	x	–
MS	4 / 6	5 / 20	✓	✓
SS	1 / 3	1 / 5	✓	✓
PS	1 / 2	1 / 5	✓	x
LH	0 / 3	– / 5	x	–
MH	2 / 6	3 / 10	✓	✓
SH	2 / 2	10 / 5	✓	x
LTG	0 / 2	– / 10	x	–
LNG	0 / 1	– / 5	x	–
MTG	4 / 4	15 / 15	✓	x
MNG	1 / 2	5 / 1	✓	x
GF	0 / 2	– / 10	x	–
BL	na / na	– / 10	x	–
	/	/	8/14	3/8
	/	/		

Present

For life forms with benchmark cover of < 10%, considered 'present' if
- any specimens are observed.

For life forms with benchmark cover of ≥ 10%, considered 'present' if
- the life form occupies at least 10% of benchmark cover.

Modified (apply only where life form is 'present')

For life forms with benchmark cover of <10%, then considered substantially 'modified' if the life form has either:
- < 50% of the benchmark species diversity; or
- no reproductively-mature specimens are observed.

For life forms with benchmark cover of ≥ 10%, then considered substantially 'modified' if the life form has either:
- < 50% of benchmark cover; or
- < 50% of benchmark species diversity; or
- ≥ 50% of benchmark cover due largely to immature canopy specimens but the cover of reproductively-mature specimens is < 10% of the benchmark cover.

Understorey — Score: 15

Category & Description		
All strata and lifeforms effectively absent		0
Up to 50% of life forms present		5
≥ 50% to 90% of lifeforms present	• of those present, ≥ 50% substantially modified	10
	• of those present, < 50% substantially modified	(15)
≥ 90% of lifeforms present	• of those present, ≥ 50% substantially modified	15
	• of those present, < 50% substantially modified	20
	• of those present, none substantially modified	25

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Recruitment

Score: 0

Category & Description			High diversity*°	Low diversity*°
No evidence of a recruitment 'cohort'+	within EVC not driven by episodic events		0	0
	within EVC driven by episodic events^	clear evidence of appropriate episodic event	0	0
		no clear evidence of appropriate episodic event	5	5
Evidence of at least one recruitment 'cohort' in at least one life-form	proportion of native woody species present that have adequate recruitment°	< 30%	3	1
		30 - 70%	6	3
		≥ 70%	10	5

+ 'cohort' refers to a group of woody plants established in a single episode (can include suppressed canopy species individuals).

^ refer to EVC benchmark for clarification.

° treat multiple eucalypt canopy species as one species.

* high diversity defined as ≥ 50% of benchmark woody species diversity.

Species Recruitment

Woody species recorded in habitat zone	Adequate Recruitment (✓)
Eucalypt canopy (combined species)	X
	0
number of woody spp. in EVC benchmark (SS and taller)	

Logs

Score: 0

Category & Description	Large logs present*	Large logs absent#
< 10% of benchmark length	0	0
< 50% of benchmark length	3	2
≥ 50% of benchmark length	5	4

Large logs defined as those with diameter ≥ 0.5 of benchmark large tree dbh.

* present if large log length is ≥ 25% of EVC benchmark log length.

absent if large log length is < 25% of EVC benchmark log length.

Organic Litter

Score: 2

Category & Description	Dominated by native organic litter	Dominated by non-native organic litter
< 10% of benchmark cover	0	0
< 50% or > 150% of benchmark cover	3	(2)
≥ 50% or ≤ 150% of benchmark cover	5	4

'Landscape Context Score'

Patch Size

Score: 1

Category & Description	
< 2 ha	(1)
Between 2 and 5 ha	2
Between 5 and 10 ha	4
Between 10 and 20 ha	6
≥ 20 ha, but 'significantly disturbed'*	8
≥ 20 ha, but not 'significantly disturbed'*	10

* 'significantly disturbed' defined as per RFA 'Old Growth' analyses eg. roading, coupes, grazing etc. – effectively most patches within fragmented landscapes.

Distance to Core Area

Score: 1

Distance	Core Area not significantly disturbed*	Core Area significantly disturbed*
> 5 km	0	0
1 to 5 km	2	(1)
< 1 km	4	3
contiguous	5	4

* defined as per RFA 'Old Growth' analyses.

Neighbourhood

Score: 0

Radius from site	% Native vegetation *	Weighting	
100 m	20	0.03	0.6
1 km	20	0.04	0.8
5 km	20	0.03	0.6
subtract 2 if the neighbourhood is 'significantly disturbed'			-2
Add Values and 'round-off'			0

* to nearest 20%.

Multiply % native vegetation x Weighting for each radius from the zone (eg. 40% x 0.03 = 1.2); then add values to obtain final Neighbourhood Value.

Final Habitat Score

	'Site Condition Score'							'Landscape Context Score'			
Component	Large Trees	Tree Canopy Cover	Lack of Weeds	Understorey	Recruitment	Organic Litter	Logs	Patch Size	Neighbourhood	Distance to Core Area	Total
											100
Score	5	5	4	6	0	2	0	1	0	1	33

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Department of Sustainability and Environment

Site Name/No. 16602 - F Location Lake Victoria Date 18/2/16

Assessor(s) A. HILL Map Name/No. ..... AMG .....

Tenure Private EVC 16 - LOWLAND FOREST Bioregion EAST GIPPS LOWLANDS

'Site Condition Score'

Large Trees — Score: 0

Category & Description	% Canopy Health* > 70%	30-70%	< 30%
None present	0	0	0
> 0 to 20% of the benchmark number of large trees/ha	3	2	1
> 20% to 40% of the benchmark number of large trees/ha	4	3	2
> 40% to 70% of the benchmark number of large trees/ha	6	5	4
> 70% to 100% of the benchmark number of large trees/ha	8	7	6
≥ the benchmark number of large trees/ha	10	9	8

Large trees are defined by diameter at breast height (dbh) - see EVC benchmark.

* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

Tree Canopy Cover — Score: 0

Category & Description	% Canopy Health * > 70%	30-70%	< 30%
< 10% of benchmark cover	0	0	0
< 50% or > 150% of benchmark cover	3	2	1
≥ 50% or ≤ 150% of benchmark cover	5	4	3

Tree canopy is defined as those canopy tree species reaching ≥ 80% of mature height - see EVC benchmark description.

* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

Lack of Weeds — Score: 7

Category & Description	'high threat' weeds* None	≤ 50%	> 50%
> 50% cover of weeds	4	2	0
25 - 50% cover of weeds	7	6	4
5 - 25% cover of weeds	11	9	(7)
< 5% cover of weeds**	15	13	11

* proportion of weed cover due to 'high threat' weeds - see EVC benchmark for guide.

'High threat' weed species are defined as those introduced species (including non-indigenous 'natives') with the ability to out-compete and substantially reduce one or more indigenous life forms in the longer term assuming on-going current site characteristics and disturbance regime.

The EVC benchmark lists typical weed species for the EVC in the bioregion and provides an estimate of their 'invasiveness' and 'impact'. In general, those weed species considered to have a *high impact* are considered *high threat* regardless of their invasiveness.

** if total weed cover is negligible (<1%) and high threat weed species are present then score '13'.

Understorey Life forms

LF Code from EVC benchmark	# spp observed / Benchmark spp.	% cover observed / Benchmark % cover	Present (✓)	Modified (✓)
IT	0 / 0	— / 5	x	–
T	0 / 2	— / 10	x	–
MS	4 / 16	5 / 30	✓	✓
SS	2 / 6	10 / 15	✓	✓
PS	1 / 2	2 / 5	✓	x
LH	1 / 1	1 / 1	✓	x
MH	4 / 6	8 / 10	✓	x
LTH	0 / 2	— / 10	x	–
LNG	0 / 1	— / 5	x	–
MTG	3 / 6	10 / 10	✓	x
MNG	4 / 2	5 / 5	✓	x
GF	1 / 3	50 / 10	✓	✓
SC	2 / 3	5 / 5	✓	x
BL	na / na	0 / 10	x	–
	1	1	9 / 14	3 / 9
	1	1		

Present

For life forms with benchmark cover of < 10%, considered 'present' if
- any specimens are observed.

For life forms with benchmark cover of ≥ 10%, considered 'present' if
- the life form occupies at least 10% of benchmark cover.

Modified (apply only where life form is 'present')

For life forms with benchmark cover of <10%, then considered substantially 'modified' if the life form has either:
- < 50% of the benchmark species diversity; or
- no reproductively-mature specimens are observed.

For life forms with benchmark cover of ≥ 10%, then considered substantially 'modified' if the life form has either:
- < 50% of benchmark cover; or
- < 50% of benchmark species diversity; or
- ≥ 50% of benchmark cover due largely to immature canopy specimens but the cover of reproductively-mature specimens is < 10% of the benchmark cover.

Understorey — Score: 15

Category & Description		
All strata and lifeforms effectively absent		0
Up to 50% of life forms present		5
≥ 50% to 90% of lifeforms present	• of those present, ≥ 50% substantially modified	10
	• of those present, < 50% substantially modified	(15)
≥ 90% of lifeforms present	• of those present, ≥ 50% substantially modified	15
	• of those present, < 50% substantially modified	20
	• of those present, none substantially modified	25

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Recruitment

Score 3

Category & Description			High diversity*°	Low diversity*°
No evidence of a recruitment 'cohort'+	within EVC not driven by episodic events		0	0
	within EVC driven by episodic events^	clear evidence of appropriate episodic event	0	0
		no clear evidence of appropriate episodic event	5	5
Evidence of at least one recruitment 'cohort' in at least one life-form	proportion of native woody species present that have adequate recruitment°	< 30%	3	1
		30 - 70%	6	(3)
		≥ 70%	10	5

+ 'cohort' refers to a group of woody plants established in a single episode (can include suppressed canopy species individuals).

^ refer to EVC benchmark for clarification.

° treat multiple eucalypt canopy species as one species.

* high diversity defined as ≥ 50% of benchmark woody species diversity.

Species Recruitment

Woody species recorded in habitat zone	Adequate Recruitment
Eucalypt canopy (combined species)	✓
Acacia mearnsii	✓
A. longifolia	x
Leucopogon parviflorum	✓
Rhagodia candolleana	x
Hibbertia aspera	✓
	3/6
number of woody spp. in EVC benchmark (SS and taller)	19

Logs

Score 0

Category & Description	Large logs present*	Large logs absent#
< 10% of benchmark length	0	0
< 50% of benchmark length	3	2
≥ 50% of benchmark length	5	4

Large logs defined as those with diameter ≥ 0.5 of benchmark large tree dbh.

* present if large log length is ≥ 25% of EVC benchmark log length.

absent if large log length is < 25% of EVC benchmark log length.

Organic Litter

Score 5

Category & Description	Dominated by native organic litter	Dominated by non-native organic litter
< 10% of benchmark cover	0	0
< 50% or > 150% of benchmark cover	3	2
≥ 50% or ≤ 150% of benchmark cover	(5)	4

'Landscape Context Score'

Patch Size

Score 1

Category & Description	
< 2 ha	(1)
Between 2 and 5 ha	2
Between 5 and 10 ha	4
Between 10 and 20 ha	6
≥ 20 ha, but 'significantly disturbed'*	8
≥ 20 ha, but not 'significantly disturbed'*	10

* 'significantly disturbed' defined as per RFA 'Old Growth' analyses eg. roading, coupes, grazing etc. – effectively most patches within fragmented landscapes.

Distance to Core Area

Score 1

Distance	Core Area not significantly disturbed*	Core Area significantly disturbed*
> 5 km	0	0
1 to 5 km	2	(1)
< 1 km	4	3
contiguous	5	4

* defined as per RFA 'Old Growth' analyses.

Neighbourhood

Score 1

Radius from site	% Native vegetation *	Weighting	
100 m	40	0.03	1.2
1 km	20	0.04	0.8
5 km	20	0.03	0.6
	subtract 2 if the neighbourhood is 'significantly disturbed'		-2
		Add Values and 'round-off'	1

* to nearest 20%.

Multiply % native vegetation x Weighting for each radius from the zone (eg. 40% x 0.03 = 1.2); then add values to obtain final Neighbourhood Value.

Final Habitat Score

	'Site Condition Score'							'Landscape Context Score'			
Component	Large Trees	Tree Canopy Cover	Lack of Weeds	Understorey	Recruitment	Organic Litter	Logs	Patch Size	Neighbourhood	Distance to Core Area	Total
											100
Score	0	0	7	15	3	5	0	1	1	1	33

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9.5 Appendix 5: Advice from DELWP regarding offset calculation method

Attached below is email advice received from DELWP regarding calculation of offsets, including compensation for removal of native vegetation currently protected by a Section 173 Agreement.

RE: 189 Palmers Road Lakes Entrance - 366/2013/P (Dept ref: SP449595)

brett.whitfield@delwp.vic.gov.au

Sent: Mon 7/03/2016 4:19 PM
To: Amie Hill

Hi Amie,

Thank you for your email below to outline what we have been discussing on the phone. As I explained on the phone (7/03), I can confirm that our previous advice provided on the 29th Feb is still the required process. The easiest way to do this is to produce two BIOR reports, one for just the offset site and one for all the native vegetation including the offset site. If you add the GBEU's required from both those reports you will have your total offset requirements.

Cheers,
Brett

Brett Whitfield | Senior Biodiversity Officer | Environment and Natural Resources
Regional Services | Department of Environment, Land, Water & Planning
71 Hotham Street, Traralgon, Victoria 3844
T: 03 5172 2183 | M: 0457 552 877 | E: brett.whitfield@delwp.vic.gov.au

www.delwp.vic.gov.au

From: brett.whitfield@delwp.vic.gov.au [mailto:brett.whitfield@delwp.vic.gov.au]
Sent: Monday, 29 February 2016 11:09 AM
To: Amie@ethosnrm.com.au
Cc: Gippsland.Planning@delwp.vic.gov.au; feedback@egipps.vic.gov.au; Mick.Bramwell@delwp.vic.gov.au
Subject: 189 Palmers Road Lakes Entrance - 366/2013/P (Dept ref: SP449595)

Hi Amie,

Thank you for your enquiry regarding the offset site located at 189 Palmers Road, Lakes Entrance. If Council elects to terminate the Section 173 agreement and permit the removal of native vegetation I can confirm the following process is required to be fulfilled. The General Biodiversity Equivalence Units required to offset the removal of native vegetation from the area currently protected by the Section 173 Agreement as determined by a Biodiversity Offset and Impact Report must be doubled.

The departments position that has been communicated to Council and the applicant is that the Section 173 Agreement should be retained to preserve the offset site. The department understands that EGSC is responsible for the decision concerning the termination or retention of the existing agreement.

Please give me a call if you have any questions.

Cheers,
Brett

Brett Whitfield | Senior Biodiversity Officer | Environment and Natural Resources
Regional Services | Department of Environment, Land, Water & Planning
71 Hotham Street, Traralgon, Victoria 3844
T: 03 5172 2183 | M: 0457 552 877 | E: brett.whitfield@delwp.vic.gov.au

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9.6 Appendix 6: DELWP Biodiversity Impact and Offset Reports

Two separate BIOR reports were obtained from DELWP as follows:

- Full extent of Vegetation Removal - *DELWP ref: ETH_0076*
- Vegetation within s173 Agreement area - *DELWP ref: ETH_0075*

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Biodiversity impact and offset requirements report

This report **does not represent an assessment by DELWP** of the proposed native vegetation removal. It provides additional biodiversity information to support moderate and high risk-based pathway applications for permits to remove native vegetation under clause 52.16 or 52.17 of planning schemes in Victoria.

Date of issue: **18/04/2016**
Time of issue: **10:03 am**

DELWP ref: ETH_0076

Project ID	16002_LVS_V2

Summary of marked native vegetation

Risk-based pathway	**Moderate**
Total extent	1.446 ha
Remnant patches	1.235 ha
Scattered trees	3 trees
Location risk	A

Strategic biodiversity score of all marked native vegetation	0.202

Offset requirements if a permit is granted

If a permit is granted to remove the marked native vegetation, a requirement to obtain a native vegetation offset will be included in the permit conditions. The offset must meet the following requirements:

Offset type	**General offset**
General offset amount (general biodiversity equivalence units)	0.162 general units
General offset attributes	
Vicinity	East Gippsland Catchment Management Authority (CMA) **or** East Gippsland Shire Council
Minimum strategic biodiversity score	0.161[1]

See Appendices 1 and 2 for details in how offset requirements were determined.

NB: values presented in tables throughout this document may not add to totals due to rounding

[1] Minimum strategic biodiversity score is 80 per cent of the weighted average score across habitat zones where a general offset is required

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Next steps

Any proposal to remove native vegetation must meet the application requirements of the moderate risk-based pathway and it will be assessed under the moderate risk-based pathway.

If you wish to remove the marked native vegetation you are required to apply for a permit from your local council. Council will then refer your application to DELWP for assessment, as required. **This report is not a referral assessment by DELWP.**

The biodiversity assessment report from NVIM and this biodiversity impact and offset report should be submitted with your application for a permit to remove native vegetation you plan to remove, lop or destroy.

The Biodiversity assessment report generated by the tool within NVIM provides the following information:

- The location of the site where native vegetation is to be removed.
- The area of the patch of native vegetation and/or the number of any scattered trees to be removed.
- Maps or plans containing information set out in the *Permitted clearing of native vegetation – Biodiversity assessment guidelines*
- The risk-based pathway of the application for a permit to remove native vegetation

This report provides the following information to meet application requirements for a permit to remove native vegetation:

- Confirmation of the risk-based pathway of the application for a permit to remove native vegetation
- The strategic biodiversity score of the native vegetation to be removed
- Information to inform the assessment of whether the proposed removal of native vegetation will have a significant impact on Victoria's biodiversity, with specific regard to the proportional impact on habitat for any rare or threatened species.
- The offset requirements should a permit be granted to remove native vegetation.

Additional application requirements must be provided with an application for a permit to remove native vegetation in the moderate or high risk-based pathways. These include:

- A habitat hectare assessment report of the native vegetation that is to be removed
- A statement outlining what steps have been taken to ensure that impacts on biodiversity from the removal of native vegetation have been minimised
- An offset strategy that details how a compliant offset will be secured to offset the biodiversity impacts of the removal of native vegetation.

Refer to the *Permitted clearing of native vegetation – Biodiversity assessment guidelines* and for a full list and details of application requirements.

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Authorised by the Victorian Government, 8 Nicholson Street, East Melbourne.

For more information contact the DELWP Customer Service Centre 136 186

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Obtaining this publication does not guarantee that an application will meet the requirements of clauses 52.16 or 52.17 of the Victoria Planning Provisions or that a permit to remove native vegetation will be granted.

Notwithstanding anything else contained in this publication, you must ensure that you comply with all relevant laws, legislation, awards or orders and that you obtain and comply with all permits, approvals and the like that affect, are applicable or are necessary to undertake any action to remove, lop or destroy or otherwise deal with any native vegetation that apply to matters within the scope of clauses 52.16 or 52.17 of the Victoria Planning Provisions.

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Appendix 1 – Biodiversity impact of removal of native vegetation

Habitat hectares

Habitat hectares are calculated for each habitat zone within your proposal using the extent and condition scores in the GIS data you provided.

Habitat zone	Site assessed condition score	Extent (ha)	Habitat hectares
1-1-A	0.470	0.702	0.330
2-1-F	0.330	0.115	0.038
3-1-B	0.320	0.289	0.092
4-1-C	0.170	0.045	0.008
5-1-E	0.330	0.073	0.024
6-1-G	0.200	0.070	0.014
7-1-H	0.200	0.070	0.014
8-1-I	0.200	0.070	0.014
9-1-D	0.150	0.010	0.002
TOTAL			**0.536**

Impacts on rare or threatened species habitat above specific offset threshold

The specific-general offset test was applied to your proposal. The test determines if the proposed removal of native vegetation has a proportional impact on any rare or threatened species habitats above the specific offset threshold. The threshold is set at 0.005 per cent of the total habitat for a species. When the proportional impact is above the specific offset threshold a specific offset for that species' habitat is required.

The specific-general offset test found your proposal does not have a proportional impact on any rare or threatened species' habitats above the specific offset threshold. No specific offsets are required. A general offset is required as set out below.

Clearing site biodiversity equivalence score(s)

The general biodiversity equivalence score for the habitat zone(s) is calculated by multiplying the habitat hectares by the strategic biodiversity score.

Habitat zone	Habitat hectares	Proportion of habitat zone with general offset	Strategic biodiversity score	General biodiversity equivalence score (GBES)
1-1-A	0.330	100.000 %	0.202	0.066
2-1-F	0.038	100.000 %	0.202	0.008
3-1-B	0.092	100.000 %	0.202	0.019
4-1-C	0.008	100.000 %	0.202	0.002
5-1-E	0.024	100.000 %	0.201	0.005
6-1-G	0.014	100.000 %	0.201	0.003
7-1-H	0.014	100.000 %	0.201	0.003
8-1-I	0.014	100.000 %	0.201	0.003
9-1-D	0.002	100.000 %	0.201	0.000

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Biodiversity impact and offset requirements report

Mapped rare or threatened species' habitats on site

This table sets out the list of rare or threatened species' habitats mapped at the site beyond those species for which the impact is above the specific offset threshold. These species habitats do not require a specific offset according to the specific-general offset test.

Species number	Species common name	Species scientific name
10045	Lewin's Rail	Lewinia pectoralis pectoralis
10220	Grey Goshawk	Accipiter novaehollandiae novaehollandiae
10226	White-bellied Sea-Eagle	Haliaeetus leucogaster
10230	Square-tailed Kite	Lophoictinia isura
10238	Black Falcon	Falco subniger
10246	Barking Owl	Ninox connivens connivens
10248	Powerful Owl	Ninox strenua
10498	Chestnut-rumped Heathwren	Calamanthus pyrrhopygius
10598	Painted Honeyeater	Grantiella picta
11061	Common Dunnart	Sminthopsis murina murina
11280	Grey-headed Flying-fox	Pteropus poliocephalus
12283	Lace Monitor	Varanus varius
13117	Brown Toadlet	Pseudophryne bibronii
13125	Southern Toadlet	Pseudophryne semimarmorata
501253	Coast Grey-box	Eucalyptus bosistoana
502145	Giant Honey-myrtle	Melaleuca armillaris subsp. armillaris
502709	Maroon Leek-orchid	Prasophyllum frenchii
505337	Austral Crane's-bill	Geranium solanderi var. solanderi s.s.

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Appendix 2 – Offset requirements detail

If a permit is granted to remove the marked native vegetation the permit condition will include the requirement to obtain a native vegetation offset.

To calculate the required offset amount required the biodiversity equivalence scores are aggregated to the proposal level and multiplied by the relevant risk multiplier.

Offsets also have required attributes:

- General offsets must be located in the same Catchment Management Authority (CMA) boundary or Local Municipal District (local council) as the clearing and must have a minimum strategic biodiversity score of 80 per cent of the clearing.[2]

The offset requirements for your proposal are as follows:

Offset type	Clearing site biodiversity equivalence score	Risk multiplier	Offset requirements	
			Offset amount (biodiversity equivalence units)	Offset attributes
General	0.108 GBES	1.5	0.162 general units	Offset must be within East Gippsland CMA or East Gippsland Shire Council Offset must have a minimum strategic biodiversity score of 0.161

[2] Strategic biodiversity score is a weighted average across habitat zones where a general offset is required

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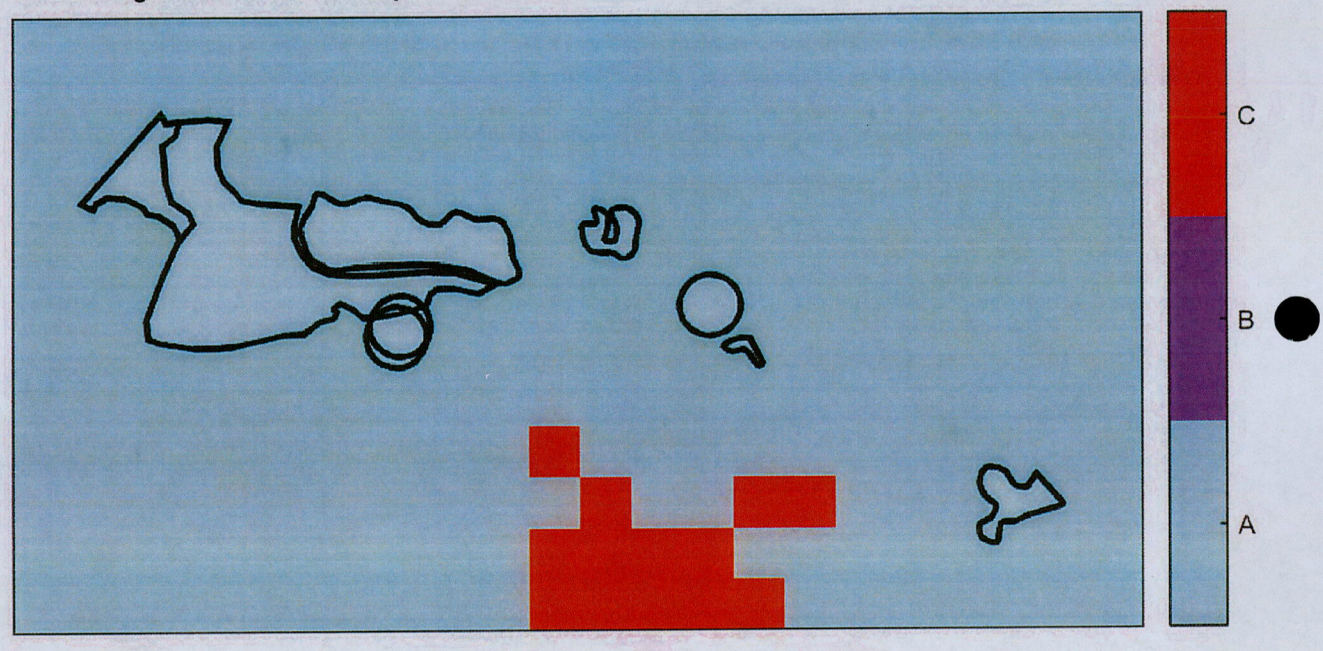
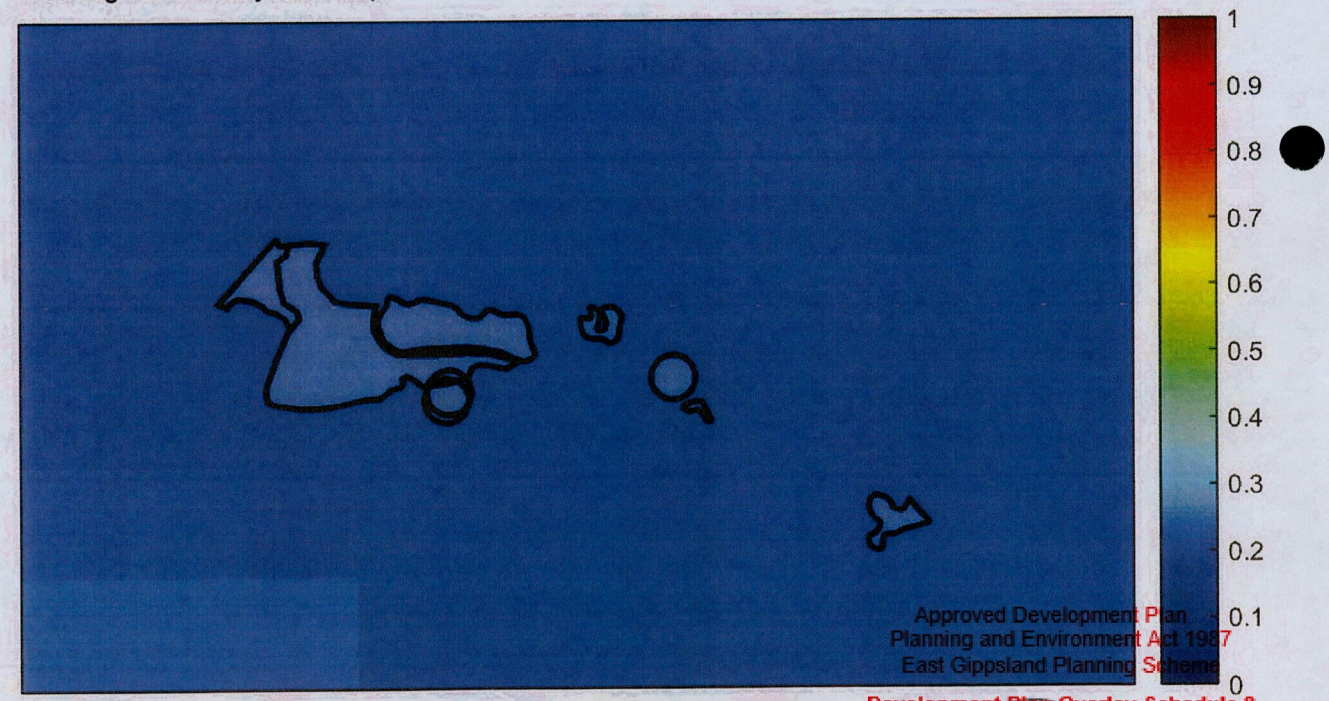
Appendix 3 – Images of marked native vegetation

1. Native vegetation location risk map



2. Strategic biodiversity score map



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3. Aerial photograph showing marked native vegetation





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Glossary

Condition score

This is the site-assessed condition score for the native vegetation. Each habitat zone in the clearing proposal is assigned a condition score according to the habitat hectare assessment method. This information has been provided by or on behalf of the applicant in the GIS file.

Dispersed habitat

A dispersed species habitat is a habitat for a rare or threatened species whose habitat is spread over a relatively broad geographic area greater than 2,000 hectares.

General biodiversity equivalence score

The general biodiversity equivalence score quantifies the relative overall contribution that the native vegetation to be removed makes to Victoria's biodiversity. The general biodiversity equivalence score is calculated as follows:

$$\textit{General biodiversity equivalence score} = \textit{habitat hectares} \times \textit{strategic biodiversity score}$$

General offset amount

This is calculated by multiplying the general biodiversity equivalence score of the native vegetation to be removed by the risk factor for general offsets. This number is expressed in general biodiversity equivalence units and is the amount of offset that is required to be provided should the application be approved. This offset requirement will be a condition to the permit for the removal of native vegetation.

$$\textit{Risk adjusted general biodiversity equivalence score} = \textit{general biodiversity equivalence score clearing} \times 1.5$$

General offset attributes

General offset must be located in the same Catchment Management Authority boundary or Municipal District (local council) as the clearing site. They must also have a strategic biodiversity score that is at least 80 per cent of the score of the clearing site.

Habitat hectares

Habitat hectares is a site-based measure that combines extent and condition of native vegetation. The habitat hectares of native vegetation is equal to the current condition of the vegetation (condition score) multiplied by the extent of native vegetation. Habitat hectares can be calculated for a remnant patch or for scattered trees or a combination of these two vegetation types. This value is calculated for each habitat zone using the following formula:

$$\textit{Habitat hectares} = \textit{total extent (hectares)} \times \textit{condition score}$$

Habitat importance score

The habitat importance score is a measure of the importance of the habitat located on a site for a particular rare or threatened species. The habitat importance score for a species is a weighted average value calculated from the habitat importance map for that species. The habitat importance score is calculated for each habitat zone where the habitat importace map indicates that species habitat occurs.

Habitat zone

Habitat zone is a discrete contiguous area of native vegetation that:

- is of a single Ecological Vegetation Class
- has the same measured condition.

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Highly localised habitat

A highly localised habitat is habitat for a rare or threatened species that is spread across a very restricted area (less than 2,000 hectares). This can also be applied to a similarly limited sub-habitat that is disproportionately important for a wide-ranging rare or threatened species. Highly localised habitats have the highest habitat importance score (1) for all locations where they are present.

Minimum strategic biodiversity score

The minimum strategic biodiversity score is an attribute for a general offset.

The strategic biodiversity score of the offset site must be at least 80 per cent of the strategic biodiversity score of the native vegetation to be removed. This is to ensure offsets are located in areas with a strategic value that is comparable to, or better than, the native vegetation to be removed. Where a specific and general offset is required, the minimum strategic biodiversity score relates only to the habitat zones that require the general offset.

Offset risk factor

There is a risk that the gain from undertaking the offset will not adequately compensate for the loss from the removal of native vegetation. If this were to occur, despite obtaining an offset, the overall impact from removing native vegetation would result in a loss in the contribution that native vegetation makes to Victoria's biodiversity.

To address the risk of offsets failing, an offset risk factor is applied to the calculated loss to biodiversity value from removing native vegetation.

$$\textbf{\textit{Risk factor for general offsets}} = 1.5$$

$$\textbf{\textit{Risk factor for specific offset}} = 2$$

Offset type

The specific-general offset test determines the offset type required.

When the specific-general offset test determines that the native vegetation removal will have an impact on one or more rare or threatened species habitat above the set threshold of 0.005 per cent, a specific offset is required. This test is done at the permit application level.

A general offset is required when a proposal to remove native vegetation is not deemed, by application of the specific-general offset test, to have an impact on any habitat for any rare or threatened species above the set threshold of 0.005 per cent. All habitat zones that do not require a specific offset will require a general offset.

Proportional impact on species

This is the outcome of the specific-general offset test. The specific-general offset test is calculated across the entire proposal for each species on the native vegetation permitted clearing species list. If the proportional impact on a species is above the set threshold of 0.005 per cent then a specific offset is required for that species.

Specific offset amount

The specific offset amount is calculated by multiplying the specific biodiversity equivalence score of the native vegetation to be removed by the risk factor for specific offsets. This number is expressed in specific biodiversity equivalence units and is the amount of offset that is required to be provided should the application be approved. This offset requirement will be a condition to the permit for the removal of native vegetation.

$$\textbf{\textit{Risk adjusted specific biodiversity equivalence score}} = \textbf{\textit{specific biodiversity equivalence score clearing}} \times 2$$

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Biodiversity impact and offset requirements report

Specific offset attributes

Specific offsets must be located in the modelled habitat for the species that has triggered the specific offset requirement.

Specific biodiversity equivalence score

The specific biodiversity equivalence score quantifies the relative overall contribution that the native vegetation to be removed makes to the habitat of the relevant rare or threatened species. It is calculated for each habitat zone where one or more species habitats require a specific offset as a result of the specific-general offset test as follows:

$$\textit{Specific biodiversity equivalence score} = \textit{habitat hectares} \times \textit{habitat importance score}$$

Strategic biodiversity score

This is the weighted average strategic biodiversity score of the marked native vegetation. The strategic biodiversity score has been calculated from the *Strategic biodiversity map* for each habitat zone.

The strategic biodiversity score of native vegetation is a measure of the native vegetation's importance for Victoria's biodiversity, relative to other locations across the landscape. The *Strategic biodiversity map* is a modelled layer that prioritises locations on the basis of rarity and level of depletion of the types of vegetation, species habitats, and condition and connectivity of native vegetation.

Total extent (hectares) for calculating habitat hectares

This is the total area of the marked native vegetation in hectares.

The total extent of native vegetation is an input to calculating the habitat hectares of a site and in calculating the general biodiversity equivalence score. Where the marked native vegetation includes scattered trees, each tree is converted to hectares using a standard area calculation of 0.071 hectares per tree. This information has been provided by or on behalf of the applicant in the GIS file.

Vicinity

The vicinity is an attribute for a general offset.

The offset site must be located within the same Catchment Management Authority boundary or Local Municipal District as the native vegetation to be removed.

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Biodiversity impact and offset requirements report

This report **does not represent an assessment by DELWP** of the proposed native vegetation removal. It provides biodiversity information for low risk-based pathway applications for permits to remove native vegetation under clause 52.16 or 52.17 of the planning schemes in Victoria.

Date of issue: **09/03/2016**
Time of issue: **11:49 am**

DELWP ref: ETH_0075

Project ID	16002_LVS173_V1

Summary of marked native vegetation

Risk-based pathway	**Low**
Total extent	0.524 ha
Remnant patches	0.524 ha
Scattered trees	0 trees
Location risk	A

Strategic biodiversity score of all marked native vegetation	0.202

Offset requirements if a permit is granted

If a permit is granted to remove the marked native vegetation, a requirement to obtain a native vegetation offset will be included in the permit conditions. The offset must meet the following requirements:

Offset type	**General offset**
General offset amount (general biodiversity equivalence units)	0.066 general units
General offset attributes	
Vicinity	East Gippsland Catchment Management Authority (CMA) **or** East Gippsland Shire Council
Minimum strategic biodiversity score	0.161[1]

See Appendices 1 and 2 for details in how offset requirements were determined.

NB: values presented in tables throughout this document may not add to totals due to rounding

[1] Minimum strategic biodiversity score is 80 per cent of the weighted average score across habitat zones where a general offset is required

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Next steps

This proposal to remove native vegetation must meet the application requirements of the low risk-based pathway and it will be assessed under the low risk-based pathway.

If you wish to remove the marked native vegetation you are required to apply for a permit from your local council. Council will then refer your application to DELWP for assessment, as required. **This report is not a referral assessment by DELWP.**

The biodiversity assessment report from NVIM and this biodiversity impact and offset report should be submitted with your application for a permit to remove native vegetation you plan to remove, lop or destroy.

This report provides the following information to meet application requirements for a permit to remove native vegetation:

- Confirmation of the risk-based pathway of the application for a permit to remove native vegetation
- The area of the patch of native vegetation and/or the number of any scattered trees to be removed
- The strategic biodiversity score of the native vegetation to be removed
- The offset requirements should a permit be granted to remove native vegetation.

Refer to the *Permitted clearing of native vegetation – Biodiversity assessment guidelines* and for a full list and details of application requirements.

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For more information contact the DELWP Customer Service Centre 136 186

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Obtaining this publication does not guarantee that an application will meet the requirements of clauses 52.16 or 52.17 of the Victoria Planning Provisions or that a permit to remove native vegetation will be granted.

Notwithstanding anything else contained in this publication, you must ensure that you comply with all relevant laws, legislation, awards or orders and that you obtain and comply with all permits, approvals and the like that affect are applicable or are necessary to undertake any action to remove, lop or destroy or otherwise deal with any native vegetation or that apply to matters within the scope of clauses 52.16 or 52.17 of the Victoria Planning Provisions

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Biodiversity impact and offset requirements report

Appendix 1 – Biodiversity impact of removal of native vegetation

Habitat hectares

Habitat hectares are calculated for each habitat zone within your proposal using the extent and condition scores in the GIS data you provided.

Habitat zone	Site assessed condition score	Extent (ha)	Habitat hectares
1-0-A	0.470	0.346	0.163
2-0-B	0.320	0.177	0.057
TOTAL			**0.219**

Clearing site biodiversity equivalence score(s)

The general biodiversity equivalence score for the habitat zone(s) is calculated by multiplying the habitat hectares by the strategic biodiversity score.

Habitat zone	Habitat hectares	Strategic biodiversity score	General biodiversity equivalence score (GBES)
1-0-A	0.163	0.201	0.033
2-0-B	0.057	0.202	0.011

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Appendix 2 – Offset requirements detail

If a permit is granted to remove the marked native vegetation the permit condition will include the requirement to obtain a native vegetation offset.

To calculate the required offset amount required the biodiversity equivalence scores are aggregated to the proposal level and multiplied by the relevant risk multiplier.

Offsets also have required attributes:

- General offsets must be located in the same Catchment Management Authority (CMA) boundary or Local Municipal District (local council) as the clearing and must have a minimum strategic biodiversity score of 80 per cent of the clearing.[2]

The offset requirements for your proposal are as follows:

Offset type	Clearing site biodiversity equivalence score	Risk multiplier	Offset requirements	
			Offset amount (biodiversity equivalence units)	Offset attributes
General	0.044 GBES	1.5	0.066 general units	Offset must be within East Gippsland CMA or East Gippsland Shire Council Offset must have a minimum strategic biodiversity score of 0.161

[2] Strategic biodiversity score is a weighted average across habitat zones where a general offset is required

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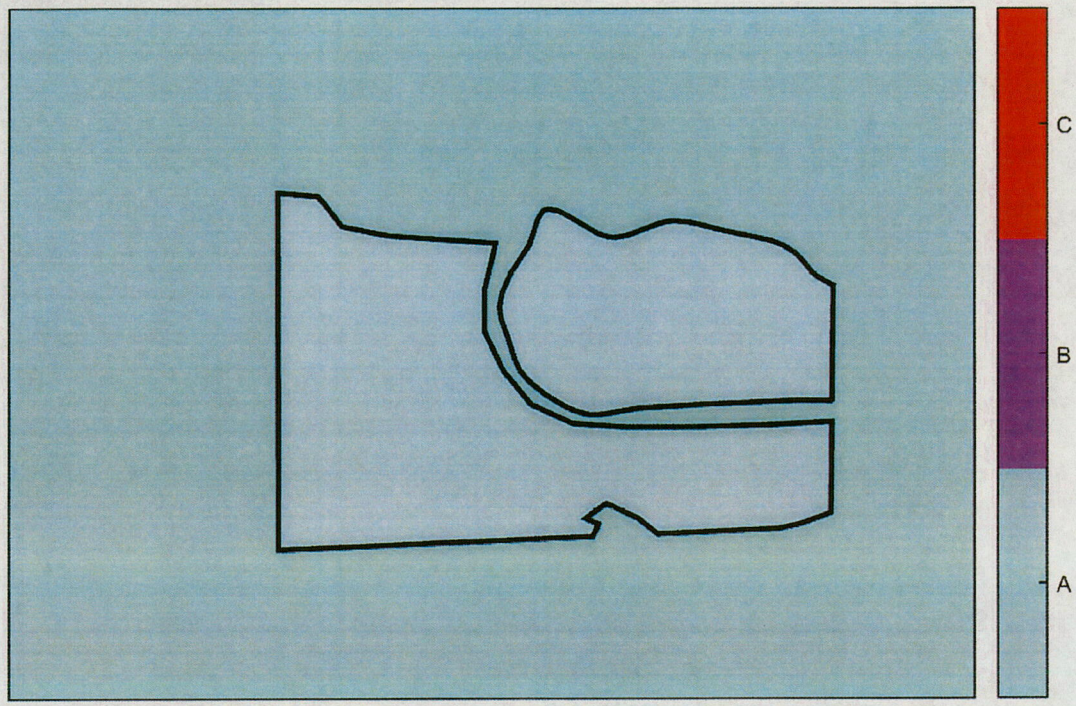
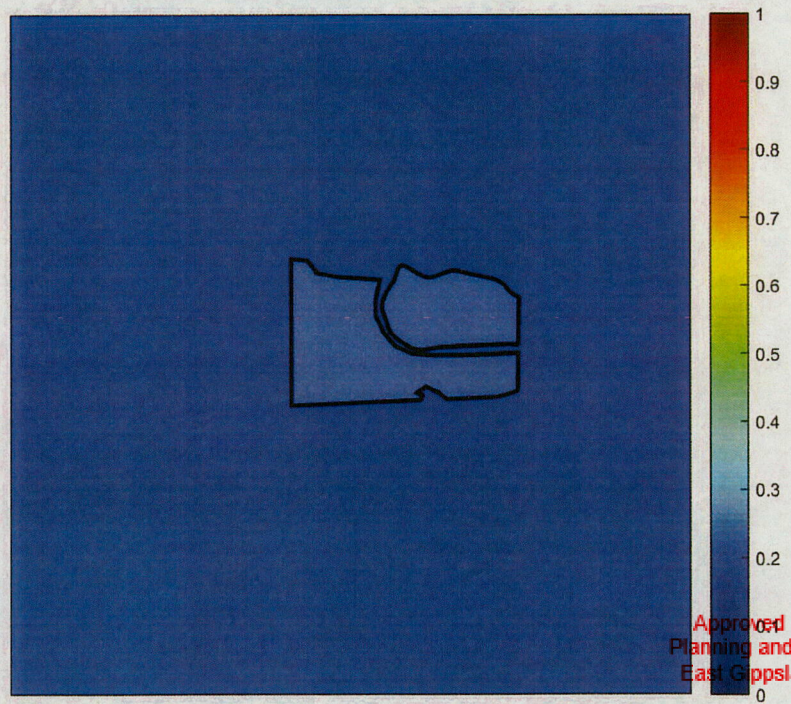
Appendix 3 – Images of marked native vegetation

1. Native vegetation location risk map



2. Strategic biodiversity score map



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3. Aerial photograph showing marked native vegetation





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Glossary

Condition score

This is the site-assessed condition score for the native vegetation. Each habitat zone in the clearing proposal is assigned a condition score according to the habitat hectare assessment method. This information has been provided by or on behalf of the applicant in the GIS file.

Dispersed habitat

A dispersed species habitat is a habitat for a rare or threatened species whose habitat is spread over a relatively broad geographic area greater than 2,000 hectares.

General biodiversity equivalence score

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$$\textit{General biodiversity equivalence score} = \textit{habitat hectares} \times \textit{strategic biodiversity score}$$

General offset amount

This is calculated by multiplying the general biodiversity equivalence score of the native vegetation to be removed by the risk factor for general offsets. This number is expressed in general biodiversity equivalence units and is the amount of offset that is required to be provided should the application be approved. This offset requirement will be a condition to the permit for the removal of native vegetation.

$$\textit{Risk adjusted general biodiversity equivalence score} = \textit{general biodiversity equivalence score clearing} \times 1.5$$

General offset attributes

General offset must be located in the same Catchment Management Authority boundary or Municipal District (local council) as the clearing site. They must also have a strategic biodiversity score that is at least 80 per cent of the score of the clearing site.

Habitat hectares

Habitat hectares is a site-based measure that combines extent and condition of native vegetation. The habitat hectares of native vegetation is equal to the current condition of the vegetation (condition score) multiplied by the extent of native vegetation. Habitat hectares can be calculated for a remnant patch or for scattered trees or a combination of these two vegetation types. This value is calculated for each habitat zone using the following formula:

$$\textit{Habitat hectares} = \textit{total extent}\ (\textit{hectares}) \times \textit{condition score}$$

Habitat importance score

The habitat importance score is a measure of the importance of the habitat located on a site for a particular rare or threatened species. The habitat importance score for a species is a weighted average value calculated from the habitat importance map for that species. The habitat importance score is calculated for each habitat zone where the habitat importace map indicates that species habitat occurs.

Habitat zone

Habitat zone is a discrete contiguous area of native vegetation that:

- is of a single Ecological Vegetation Class
- has the same measured condition.

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Biodiversity impact and offset requirements report

Highly localised habitat

A highly localised habitat is habitat for a rare or threatened species that is spread across a very restricted area (less than 2,000 hectares). This can also be applied to a similarly limited sub-habitat that is disproportionately important for a wide-ranging rare or threatened species. Highly localised habitats have the highest habitat importance score (1) for all locations where they are present.

Minimum strategic biodiversity score

The minimum strategic biodiversity score is an attribute for a general offset.

The strategic biodiversity score of the offset site must be at least 80 per cent of the strategic biodiversity score of the native vegetation to be removed. This is to ensure offsets are located in areas with a strategic value that is comparable to, or better than, the native vegetation to be removed. Where a specific and general offset is required, the minimum strategic biodiversity score relates only to the habitat zones that require the general offset.

Offset risk factor

There is a risk that the gain from undertaking the offset will not adequately compensate for the loss from the removal of native vegetation. If this were to occur, despite obtaining an offset, the overall impact from removing native vegetation would result in a loss in the contribution that native vegetation makes to Victoria's biodiversity.

To address the risk of offsets failing, an offset risk factor is applied to the calculated loss to biodiversity value from removing native vegetation.

$$\textit{Risk factor for general offsets} = 1.5$$

$$\textit{Risk factor for specific offset} = 2$$

Offset type

The specific-general offset test determines the offset type required.

When the specific-general offset test determines that the native vegetation removal will have an impact on one or more rare or threatened species habitat above the set threshold of 0.005 per cent, a specific offset is required. This test is done at the permit application level.

A general offset is required when a proposal to remove native vegetation is not deemed, by application of the specific-general offset test, to have an impact on any habitat for any rare or threatened species above the set threshold of 0.005 per cent. All habitat zones that do not require a specific offset will require a general offset.

Proportional impact on species

This is the outcome of the specific-general offset test. The specific-general offset test is calculated across the entire proposal for each species on the native vegetation permitted clearing species list. If the proportional impact on a species is above the set threshold of 0.005 per cent then a specific offset is required for that species.

Specific offset amount

The specific offset amount is calculated by multiplying the specific biodiversity equivalence score of the native vegetation to be removed by the risk factor for specific offsets. This number is expressed in specific biodiversity equivalence units and is the amount of offset that is required to be provided should the application be approved. This offset requirement will be a condition to the permit for the removal of native vegetation.

$$\textit{Risk adjusted specific biodiversity equivalence score} = \textit{specific biodiversity equivalence score clearing} \times 2$$

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Specific offset attributes

Specific offsets must be located in the modelled habitat for the species that has triggered the specific offset requirement.

Specific biodiversity equivalence score

The specific biodiversity equivalence score quantifies the relative overall contribution that the native vegetation to be removed makes to the habitat of the relevant rare or threatened species. It is calculated for each habitat zone where one or more species habitats require a specific offset as a result of the specific-general offset test as follows:

$$\textit{Specific biodiversity equivalence score} = \textit{habitat hectares} \times \textit{habitat importance score}$$

Strategic biodiversity score

This is the weighted average strategic biodiversity score of the marked native vegetation. The strategic biodiversity score has been calculated from the *Strategic biodiversity map* for each habitat zone.

The strategic biodiversity score of native vegetation is a measure of the native vegetation's importance for Victoria's biodiversity, relative to other locations across the landscape. The *Strategic biodiversity map* is a modelled layer that prioritises locations on the basis of rarity and level of depletion of the types of vegetation, species habitats, and condition and connectivity of native vegetation.

Total extent (hectares) for calculating habitat hectares

This is the total area of the marked native vegetation in hectares.

The total extent of native vegetation is an input to calculating the habitat hectares of a site and in calculating the general biodiversity equivalence score. Where the marked native vegetation includes scattered trees, each tree is converted to hectares using a standard area calculation of 0.071 hectares per tree. This information has been provided by or on behalf of the applicant in the GIS file.

Vicinity

The vicinity is an attribute for a general offset.

The offset site must be located within the same Catchment Management Authority boundary or Local Municipal District as the native vegetation to be removed.

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9.7 Appendix 7: Photos of areas of vegetation removal (18/2/16)

Habitat Zone A – Lowland Forest



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Habitat Zone A – Lowland Forest



Habitat Zones A & B – Lowland Forest



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Habitat Zones A, B & F – Lowland Forest





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Habitat Zone B





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Habitat Zone C– Lowland Forest



Habitat Zone D – Lowland Forest



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Habitat Zone E – Plains Grassy Forest





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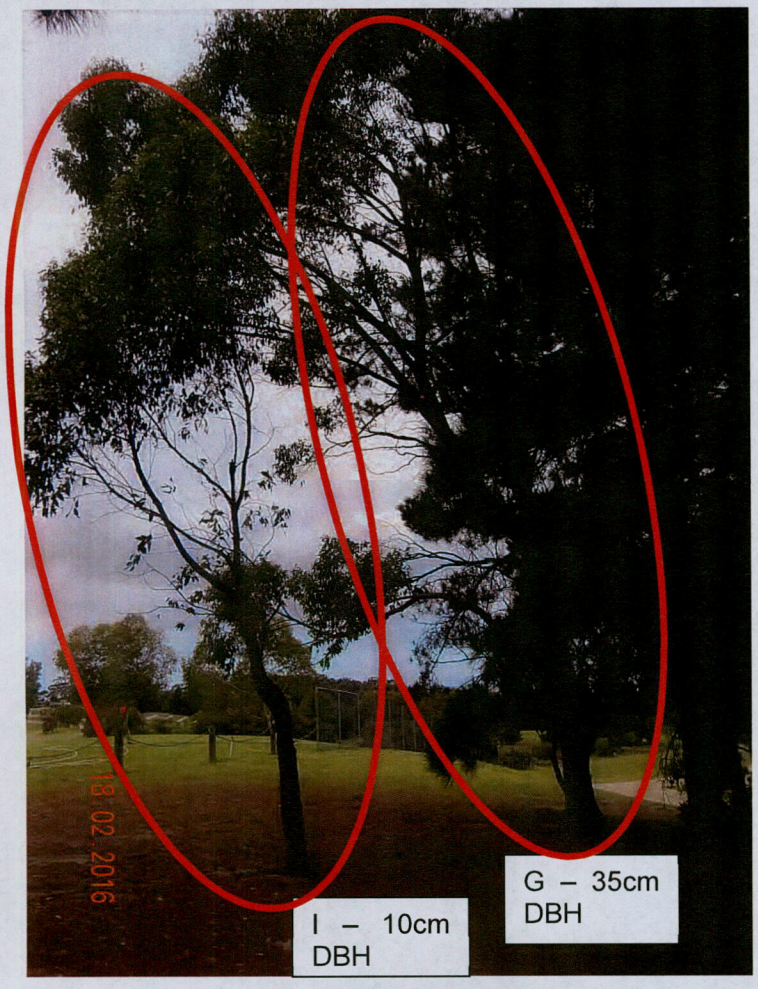
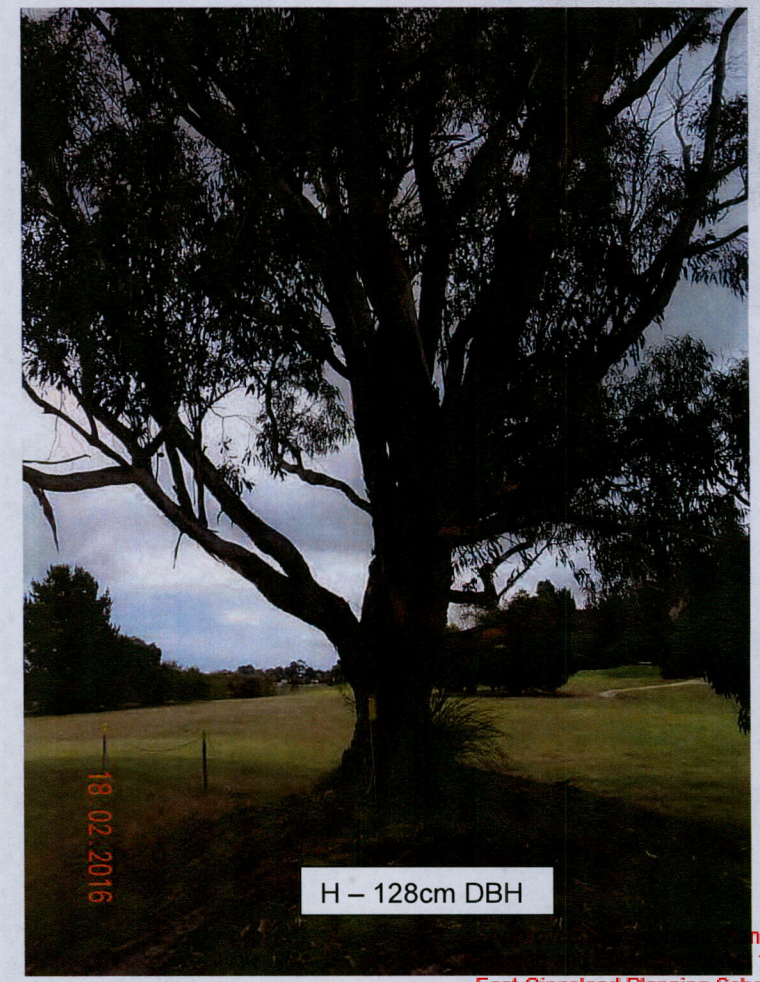
Scattered Trees G & I –

Yellow Stringybark (*Eucalyptus muelleriana*)



Scattered Tree H –

Mountain Grey Gum (*Eucalyptus cypellocarpa*)



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1987
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Director, East Gippsland Shire Council
Date: ....3 October 2018...

Planted Vegetation (reference map for photo locations)



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Enlargement showing old tree guards.

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9.8 Appendix 8: Offset Availability Confirmation Letter

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(Lakes Entrance Northern Growth Area)
Signed:
Director, East Gippsland Shire Council
Date: ....3 October 2018...

ETHOSNRM

Our Ref: OT1607
Your Ref:

28th April, 2016

Di and Don Dickson
NicDic Developments Pty Ltd
PO Box 91
LAKES ENTRANCE, VIC 3909

Dear Di and Don,

Re: Availability of Native Vegetation Offset Credits

Ethos NRM Pty Ltd, being a Victorian Department of Environment Land Water and Planning (DELWP) *Accredited Organisation* for assessment and brokering of Native Vegetation Offset Credits in accordance with the *Native Vegetation Permitted Clearing Regulations*, confirms that the third party Native Vegetation Offset Credits listed below are currently available on the DELWP / Bushbroker Native Vegetation Credit Register.

Offsets Required	Unit / Measure
General Offsets	0.228 GBEUs
Minimum Strategic Biodiversity Score	0.161
Vicinity	East Gippsland Catchment Management Authority *or* East Gippsland Shire area

Please contact us directly should you wish to proceed with the purchase of these Credits. This Availability Statement is not a Contract of Sale, nor a Credit Trade Agreement.

Yours sincerely,

ERIC SJERP

Ethos NRM Pty Ltd

ETHOS NRM PTY LTD

ABN: 44-104 999 528

PO Box 204, 162 Macleod St
Bairnsdale, Vic. 3875
Telephone: 03-5153 0037
Facsimile: 03-5153 0038
E-mail: info@ethosnrm.com.au
Website: www.ethosnrm.com.au

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9.9 Appendix 9: EPBC Protected Matters Search

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Director, East Gippsland Shire Council
Date: ....3 October 2018...

Australian Government
Department of the Environment

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 29/03/16 08:39:18

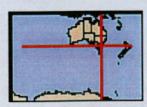
Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates
Buffer: 5.0Km



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Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	52
Listed Migratory Species:	47

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	80
Whales and Other Cetaceans:	12
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	4
Regional Forest Agreements:	2
Invasive Species:	47
Nationally Important Wetlands:	2
Key Ecological Features (Marine)	1

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Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Gippsland lakes	Within Ramsar site

Listed Threatened Ecological Communities		[Resource Information]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.		
Name	Status	Type of Presence
Gippsland Red Gum (Eucalyptus tereticornis subsp. mediana) Grassy Woodland and Associated Native Grassland	Critically Endangered	Community likely to occur within area
Littoral Rainforest and Coastal Vine Thickets of Eastern Australia	Critically Endangered	Community likely to occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Diomedea epomophora epomophora Southern Royal Albatross [25996]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora sanfordi Northern Royal Albatross [82331]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans antipodensis Antipodean Albatross [82269]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans exulans Tristan Albatross [82337]	Endangered	Species or species habitat may occur within area
Diomedea exulans gibsoni Gibson's Albatross [82271]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area

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Name	Status	Type of Presence
Fregetta grallaria grallaria White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Breeding known to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Lathamus discolor Swift Parrot [744]	Endangered	Species or species habitat likely to occur within area
Macronectes giganteus Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat may occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pterodroma leucoptera leucoptera Gould's Petrel [26033]	Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Breeding known to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta cauta Shy Albatross, Tasmanian Shy Albatross [82345]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche cauta salvini Salvin's Albatross [82343]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche cauta steadi White-capped Albatross [82344]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris impavida Campbell Albatross [82449]	Vulnerable	Species or species habitat may occur within

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Name	Status	Type of Presence
		area
Thinornis rubricollis rubricollis Hooded Plover (eastern) [66726]	Vulnerable	Species or species habitat known to occur within area
Fish		
Galaxiella pusilla Eastern Dwarf Galaxias, Dwarf Galaxias [56790]	Vulnerable	Species or species habitat likely to occur within area
Prototroctes maraena Australian Grayling [26179]	Vulnerable	Species or species habitat known to occur within area
Frogs		
Heleioporus australiacus Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat likely to occur within area
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat likely to occur within area
Litoria littlejohni Littlejohn's Tree Frog, Heath Frog [64733]	Vulnerable	Species or species habitat may occur within area
Litoria raniformis Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog [1828]	Vulnerable	Species or species habitat may occur within area
Mammals		
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Potorous tridactylus tridactylus Long-nosed Potoroo (SE mainland) [66645]	Vulnerable	Species or species habitat known to occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Plants		
Acacia caerulescens Limestone Blue Wattle, Buchan Blue, Buchan Blue Wattle [21883]	Vulnerable	Species or species habitat likely to occur within area
Caladenia tessellata Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat likely to occur within area
Dianella amoena Matted Flax-lily [64886]	Endangered	Species or species habitat may occur within area
Glycine latrobeana Clover Glycine, Purple Clover [13910]	Vulnerable	Species or species habitat likely to occur within area

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Name	Status	Type of Presence
Prasophyllum frenchii		
Maroon Leek-orchid, Slaty Leek-orchid, Stout Leek-orchid, French's Leek-orchid, Swamp Leek-orchid [9704]	Endangered	Species or species habitat likely to occur within area
Thesium australe		
Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Sharks		
Carcharodon carcharias		
Great White Shark [64470]	Vulnerable	Breeding known to occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Diomedea antipodensis		
Antipodean Albatross [64458]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena		
Tristan Albatross [66471]	Endangered*	Species or species habitat may occur within area
Diomedea epomophora (sensu stricto)		
Southern Royal Albatross [1072]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans (sensu lato)		
Wandering Albatross [1073]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea gibsoni		
Gibson's Albatross [64466]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi		
Northern Royal Albatross [64456]	Endangered*	Foraging, feeding or related behaviour likely to occur within area
Macronectes giganteus		
Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli		
Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Phoebetria fusca		
Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area

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Name	Threatened	Type of Presence
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Foraging, feeding or related behaviour likely to occur within area
Sterna albifrons Little Tern [813]		Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta (sensu stricto) Shy Albatross, Tasmanian Shy Albatross [64697]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable*	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Carcharodon carcharias Great White Shark [64470]	Vulnerable	Breeding known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur

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Name	Threatened	Type of Presence within area
Megaptera novaeangliae		
Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca		
Killer Whale, Orca [46]		Species or species habitat may occur within area
Rhincodon typus		
Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus		
White-throated Needletail [682]		Species or species habitat known to occur within area
Merops ornatus		
Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis		
Black-faced Monarch [609]		Species or species habitat known to occur within area
Myiagra cyanoleuca		
Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons		
Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Ardea alba		
Great Egret, White Egret [59541]		Breeding known to occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus		
Red Knot, Knot [855]		Species or species habitat known to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris ruficollis		
Red-necked Stint [860]		Species or species habitat known to occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Limosa lapponica		
Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Pandion haliaetus		
Osprey [952]		Species or species habitat likely to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat known to occur

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Signed:
Date: 3 October 2018

Name	Threatened	Type of Presence within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Breeding known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]		Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Catharacta skua Great Skua [59472]		Species or species habitat may occur within area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Diomedea dabbenena Tristan Albatross [66471]	Endangered*	Species or species

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Pursuant to Section 36 of the 1987
East Gippsland Planning Scheme
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Name	Threatened	Type of Presence
		habitat may occur within area
Diomedea epomophora (sensu stricto) Southern Royal Albatross [1072]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans (sensu lato) Wandering Albatross [1073]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea gibsoni Gibson's Albatross [64466]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered*	Foraging, feeding or related behaviour likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Breeding known to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Himantopus himantopus Black-winged Stilt [870]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Endangered	Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Macronectes giganteus Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat may occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area

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Name	Threatened	Type of Presence
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Foraging, feeding or related behaviour likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Sterna albifrons Little Tern [813]		Species or species habitat may occur within area
Sterna fuscata Sooty Tern [794]		Breeding known to occur within area
Sterna nereis Fairy Tern [796]		Breeding known to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta (sensu stricto) Shy Albatross, Tasmanian Shy Albatross [64697]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable*	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat known to occur within area
Thinornis rubricollis rubricollis Hooded Plover (eastern) [66726]	Vulnerable	Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Fish		
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down		Species or species

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Director, East Gippsland Shire Council
Date: 3 October 2018

Name	Threatened	Type of Presence
Pipefish, Eastern Upside-down Pipefish [66227]		habitat may occur within area
Hippocampus abdominalis Big-belly Seahorse, Eastern Potbelly Seahorse, New Zealand Potbelly Seahorse [66233]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Hippocampus minotaur Bullneck Seahorse [66705]		Species or species habitat may occur within area
Hippocampus whitei White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]		Species or species habitat may occur within area
Histiogamphelus briggsii Crested Pipefish, Briggs' Crested Pipefish, Briggs' Pipefish [66242]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Hypselognathus rostratus Knifesnout Pipefish, Knife-snouted Pipefish [66245]		Species or species habitat may occur within area
Kaupus costatus Deepbody Pipefish, Deep-bodied Pipefish [66246]		Species or species habitat may occur within area
Kimblaeus bassensis Trawl Pipefish, Bass Strait Pipefish [66247]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Mitotichthys semistriatus Halfbanded Pipefish [66261]		Species or species habitat may occur within area
Mitotichthys tuckeri Tucker's Pipefish [66262]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Solegnathus robustus Robust Pipehorse, Robust Spiny Pipehorse [66274]		Species or species habitat may occur within area
Solegnathus spinosissimus Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within

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Date: 5 October 2018

Name	Threatened	Type of Presence
		area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Stigmatopora olivacea a pipefish [74966]		Species or species habitat may occur within area
Stipecampus cristatus Ringback Pipefish, Ring-backed Pipefish [66278]		Species or species habitat may occur within area
Syngnathoides biaculeatus Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Mammals		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Breeding likely to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Breeding likely to occur within area

Whales and other Cetaceans

[Resource Information]

Name	Status	Type of Presence
Mammals		
Balaenoptera acutorostrata Minke Whale [33]		Species or species habitat may occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Balaenoptera musculus Blue Whale [36]	Endangered	Species or species habitat likely to occur

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Name	Status	Type of Presence
		within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Delphinus delphis Common Dophin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Species or species habitat known to occur within area
Grampus griseus Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat likely to occur within area
Orcinus orca Killer Whale, Orca [46]		Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Bancroft Bay - Kalimna G.L.R.	VIC
Gippsland Lakes Coastal Park	VIC
Lake Tyers	VIC
Rigby Island G.L.R.	VIC

Regional Forest Agreements	[Resource Information]

Note that all areas with completed RFAs have been included.

Name	State
East Gippsland RFA	Victoria
Gippsland RFA	Victoria

Invasive Species	[Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur

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Name	Status	Type of Presence within area
Alauda arvensis Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Carduelis chloris European Greenfinch [404]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Turdus philomelos Song Thrush [597]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur

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Name	Status	Type of Presence within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Asparagus scandens Asparagus Fern, Climbing Asparagus Fern [23255]		Species or species habitat likely to occur within area
Carrichtera annua Ward's Weed [9511]		Species or species habitat may occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species

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Name	Status	Type of Presence
		habitat likely to occur within area
Nassella neesiana Chilean Needle grass [67699]		Species or species habitat likely to occur within area
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Olea europaea Olive, Common Olive [9160]		Species or species habitat may occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Protasparagus densiflorus Asparagus Fern, Plume Asparagus [5015]		Species or species habitat likely to occur within area
Protasparagus plumosus Climbing Asparagus-fern, Ferny Asparagus [11747]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Ulex europaeus Gorse, Furze [7693]		Species or species habitat likely to occur within area

Nationally Important Wetlands [Resource Information]

Name	State
Lake Bunga	VIC
Lake King Wetlands	VIC

Key Ecological Features (Marine) [Resource Information]

Key Ecological Features are the parts of the marine ecosystem that are considered to be important for the biodiversity or ecosystem functioning and integrity of the Commonwealth Marine Area.

Name	Region
Upwelling East of Eden	South-east

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Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-37.86237 148.00166

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Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Parks and Wildlife Commission NT, Northern Territory Government
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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Director, East Gippsland Shire Council
Date: ....3 October 2018...

Hydrology Report

189 Palmers Road, Lakes Entrance

Prepared for:
Nicdic Development Pty Ltd

Prepared by:
Crossco Consulting Pty Ltd
PO Box 858
Bairnsdale Vic 3875

Version: V2

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Document revision

Version	Date	Prepared by	Comments
Draft	11/5/2018	M Supplitt Crossco Consulting	Stormwater Management Plan - Draft to C&S
V1	05/07/2018	M Supplitt Crossco Consulting	Distribution – C&S
V2	14/07/2018	M Supplitt Crossco Consulting	Distribution – C&S

Notice:

This Stormwater Plan:

1. *Has been prepared by Crossco Consulting Pty Ltd for Nicdic Developments Pty Ltd.*
2. *Is for the use of Nicdic Developments Pty Ltd in satisfying the requirements of East Gippsland Shire Council in seeking approval of a Development Plan.*
3. *Must not be amended or reproduced without the permission of Crossco Consulting Pty Ltd.*

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1 Background

Crossco Consulting Pty Ltd (Crossco) has been engaged by *Nicdic Pty Ltd* under instruction by *Crowther & Sadler Licensed Surveyors and Town Planners*, to provide a report to satisfy one of the requirements of East Gippsland Planning Scheme in considering a development plan application.

If the development plan is approved a planning permit application must be submitted and a planning permit approved prior to works commencing.

This report has been prepared to satisfy the Development Plan application requirements at Clause 3.0 of DPO8 and provide a clear path to satisfy the requirements of Clause 2.0 of DPO8 when a planning permit application is submitted in the future.

2 Requirements

2.1 Development Plan Overlay

The subject land is located within the boundary of land affected by Schedule 8 the Development Plan Overlay (DPO8) of the East Gippsland Planning Scheme.

Of relevance to stormwater management, the schedule requirements are:

2.0 Conditions and requirements for permits

2.1 Application requirements

The following information must be provided with any permit application for subdivision as appropriate:

- *A stormwater management plan*

2.2 Development Requirements

The following development requirements should be achieved with a permit application for subdivision, as appropriate:

- *The subdivision shall not result in any additional stormwater flows outside the Lakes Entrance Northern Growth Area*
- *Stormwater design must be generally in accordance with the "Northern Growth Area Lakes Entrance Development Concept Plan Hydrology, Water Technology (October 2013)".*

3.0 Requirements for development plan

3.1 Components of the development plan in accordance with the Lakes Entrance Northern Growth Area Outline Development Plan (October, 2013)

The development plan should show:

- *A hydrology report that identifies all flow paths, flood extents, flood levels and velocities for existing and proposed conditions are generally in accordance with the Northern Growth Area Lakes Entrance Development Concept Plan Hydrology, Water Technology October 2013)*

This report is prepared to satisfy the requirements of Clause 3.0 above, to support an application for the approval of a development plan.
The requirements of Clause 2.0 will be satisfied at the time a planning permit application is submitted.
While this report has been prepared to satisfy the requirements of Clause 3.0 the requirements of Clause 2.0 are considered.

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Nicdic Development Pty Ltd
Country Club Drive, Lakes Entrance
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Director, East Gippsland Shire Council
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2.2 Lakes Entrance Northern Growth Area (LENGA) DCP

The subject land is located within the LENGA DCP area. The proposed development is subject to fees and charges levied through the LENGA DCP. The stormwater management proposed herein outfalls to catchments identified in LENGA DCP supporting documentation. The relevant LENGA DCP internal catchments and associated retarding basins (RBs) are identified within this report.
Crossco is instructed that our Client is satisfied that the delivery of the project requires payments to Council consistent with the DCP, and Council's program to deliver relevant DCP infrastructure is consistent with the project's infrastructure requirements.

2.3 Previous Stages

Crossco is familiar with the site and designed and supervised construction of infrastructure for previous stages of the development, which occurred prior to the LENGA ODP and associated DCP being adopted and/or incorporated into the planning scheme. This has resulted in previous assumptions and allowances for future stages being reconsidered, as the subject land is now part of a DCP and stormwater retarding, and treatment is provided for through DCP contributions rather than on-site management as was previously anticipated.

In particular stormwater management for previous stages incorporated retarding of flow in the reserve that outfalls to the south to DCP Internal Catchment 9 (refer to Crossco Drawing at Appendix 1), and anticipated that development of future stages would require the expansion of the existing basin to comply with the (pre-LENGA) that discharges off-site not exceed with undeveloped flow-rates. This requirement has been negated through the adoption of LENGA.

2.4 Stormwater Design

The requirement of DPO8 Clause 2.2 Development Requirements has been considered and complied with in the preparation of this report:

> *Stormwater design must be generally in accordance with the "Northern Growth Area Lakes Entrance Development Concept Plan Hydrology, Water Technology (October 2013)"* (LENGA WT 2013).

The recommendations of this report are "generally in accordance" with the *"Northern Growth Area Lakes Entrance Development Concept Plan Hydrology, Water Technology (October 2013)"* report as demonstrated by the incorporation of flow-paths, catchments and wetlands being shown and/or referenced in this report.

2.5 Infrastructure Standards

Where the requirements of DPO8 are silent on stormwater infrastructure standards, the requirements of the Infrastructure Design Manual[1] (IDM) have been adopted.

This report considers the following requirements as outlined below:

IDM Clause	Response
3.3 Specific Information Required during the planning Approval Process	DPO8 includes specific requirements at Clause 3.0. The *LENGA WT 2013 report* provides the information required and has been adopted in this

[1] Infrastructure Design Manual, Version 5.1, Release date 11 January 2018

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Director, East Gippsland Shire Council
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IDM Clause	Response
3.3.3 Development Plan 3.3.4 Flooding	report.
3.3.4 Planning Permit 3.3.4.3 Stormwater 3.3.4.4 Flooding	These clauses are considered but not explicitly satisfied in this report, as the report does not support an application for a planning permit.
11 Stormwater Management Strategy	As per IDM Cl 11.2 *Council will normally expect a comprehensive Stormwater Management Strategy to comprise one or both of the following components:* - *Stormwater impact assessment report (SIAR)* - *Stormwater Management Assessment Report (SMAR)* The *LENGA WT 2013* report is regarded as the SIAR. The SMAR is a requirement at the planning permit stage. A Stormwater Management Strategy has not been prepared, however this report is prepared with the preparation of a Stormwater Management Strategy to support a permit application in the future.
16 Urban Drainage	Crossco is instructed that the *LENGA WT 2013* report takes precedence over the IDM, therefore the aspects of Clause 16 that are addressed in the *LENGA WT 2013* report including the following are not relevant: - Major and Minor Drainage Systems (Major drainage (WLRBs and drainage lines) are adopted from LENGA, Minor drainage is designed within the proposed development – refer to drawing at Appendix 1) - Hydrology (Major drainage system – adopted from *LENGA* and Minor drainage from IDM requirements) - Rainfall Data – adopted from *LENGA*[2] - Annual Exceedance Probability – adopted from IDM (20% AEP for Urban Residential Areas) Runoff coefficients – adopted from

[2] Northern Growth Areas – Lakes Entrance Development Concept Plan Hydrology, Water Technology, July 2012 (Noted later 2013 Version of report does not duplicate this information)

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IDM Clause	Response
	LENGA[3] - Minor drainage system hydraulic design, pipe specifications etc are adopted from the IDM. - Major drainage system hydraulic design and infrastructure is adopted from *WT LENGA 2013*.

3 DPO8 Requirements

The following sections address the specific requirements of the "Hydrology Report" required at Cl 3.1 of the East Gippsland Planning Scheme Development Plan Overlay Schedule 8 (DPO8) which requires that the "Hydrology Report" *for existing and proposed conditions* includes*:*

- flowpaths
- flood extents
- flood levels
- velocities

is generally in accordance with Northern Growth Area Lakes Entrance Development Concept Plan Hydrology, Water Technology October 2013).

3.1 Flow paths

2.1.1 Existing conditions

The existing flowpaths are shown on the Crossco drawing at Appendix 1.

The flowpaths are illustrated as:

- Designated waterway (blue dashed line)
- Stormwater pipes (shows as SWD)
- Stormwater outfalls
- Overland flow direction (shown as ⇨)
- The stormwater flow at existing allotments is not shown. House drainage is discharged to the nearest downslope stormwater pipe, and overland flow is consistent with the contours shown.
- The flowpaths are *generally in accordance* with the waterway features and internal catchment boundaries identified in the *LENGA WT 2013* report. As this report and the Crossco drawing at Appendix 1 is site rather than precinct specific (as in the *LENGA WT 2013* report), the flowpaths and catchment boundaries are shown in more detail on the Crossco drawing.

The stormwater pipes (SWD) are regarded as part of the "minor drainage system" along with the existing stormwater pits. The size and capacity of the existing pipes meets the requirements of the IDM.

[3] Northern Growth Areas – Lakes Entrance Development Concept Plan Hydrology, Water Technology, July 2012 (Noted later 2013 Version of report does not duplicate this information)

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Figure 1: RORB Model Structure

Ref: Figure 3-1. *"Northern Growth Area Lakes Entrance Development Concept Plan Hydrology, Water Technology (October 2013)"* (LENGA WT 2013).

Figure 1 shows the "flowpaths" (reaches / nodes" adopted in the *WT LENGA 2013*, which are consistent with the existing conditions, with existing stormwater outfalls at the points identified in Figure 1 as:

- Meeting point of "O", "P" and "N"
- "AE"

The subject land is located across LENGA Catchments 5 and 9 shown in Figure 2. The allotments shown to the west of Catchment 9 are the existing development allotments.

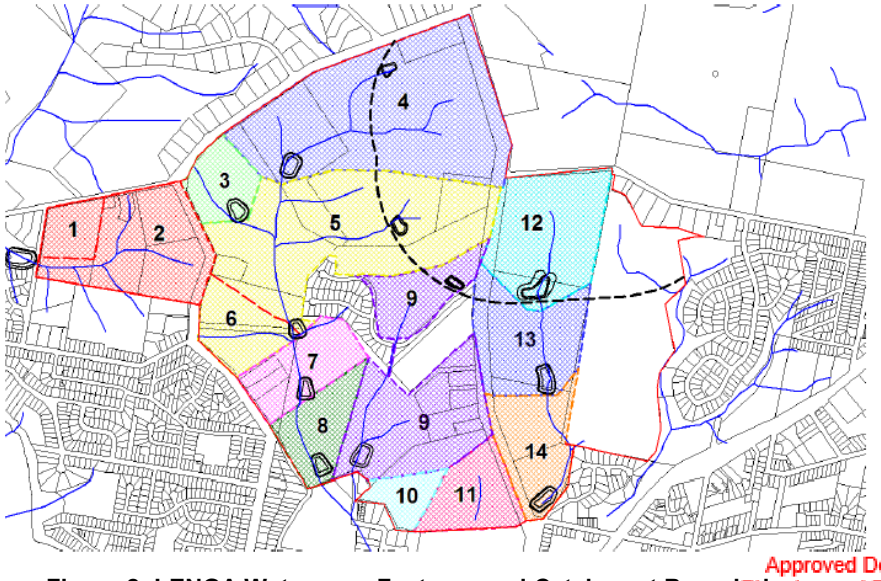

Figure 2: LENGA Waterways Features and Catchment Boundaries

Ref: Figure 2-1. *"Northern Growth Area Lakes Entrance Development Concept Plan Hydrology, Water Technology (October 2013)"* (LENGA WT 2013).

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The existing stormwater infrastructure outfalls to DCP internal catchments 7 and 9 (refer to Crossco Drawing 1965-004-B at Appendix 1).

2.1.2 Proposed conditions

The proposed developed flowpaths are shown on Crossco Drawing 1965/004-B at Appendix 1. The drawing shows the subject land in three sub-catchments with stormwater outfalling into three (3) DCP internal catchments as noted in the table below:

Sub-catchment	Label	
Catchment 1	(C1)	Discharge to existing municipal stormwater infrastructure adjacent at Country Club Drive which outfalls to DCP internal catchment 7 to the west of the subject land, and proposed RB4 shown on Figure 3a. Figure 1 - Meeting point of "O", "P" and "N"
Catchment 2	(C2)	Discharge to existing municipal stormwater infrastructure to DCP internal Catchment 9 at south of the subject land, and proposed RB7 shown on Figure 3a. Figure 1 – Point "AE"
Catchment 3	(C3)	Discharge to north-west of the subject land to DCP internal Catchment 5 above proposed RB4. Figure 1 – Point "M"

The *WT LENGA 2013* report, in addition to catchments, identifies Part 1 and Part 2 areas (refer to Figures 3a and 3b respectively). The proposal is within the boundaries of Part 1 only, and drainage basins shown in Part 2 have not been considered in this report.



Figure 3-3 Proposed Part 1 Storage Basin Locations (aerial imagery)

Figure 3a: Proposed retarding basins – Part 1

Ref: Figure 3-3. *"Northern Growth Area Lakes Entrance Development Concept Plan Hydrology, Water Technology (October 2013)"*

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Figure 4-2 Proposed Part 2 Storage Basin Locations (aerial imagery)

Figure 4b: Proposed retarding basins – Part 2

Ref: Figure 3-3. *"Northern Growth Area Lakes Entrance Development Concept Plan Hydrology, Water Technology (October 2013)"*

3.2 Flood extents, flood levels and velocities

2.2.1 Existing conditions

The elevation of the subject land is 62m AHD to 40m AHD.
Existing development on Country Club Drive has not been subject to flooding.

As stated in the hydrology report by Water Technology (ref: Northern Growth Area – Lakes Entrance Development Concept Plan Hydrology, Water Technology, July 2012):

> *The site is not impacted by any currently defined floodways. Given the elevated location of the NGA, regional flooding is not anticipated to be of concern to the NGA. The current FO / LSIO boundaries are depicted in* Figure 4 below.

As stated in the hydrology report by Water Technology (ref: Northern Growth Area – Lakes Entrance Development Concept Plan Hydrology, Water Technology, 2013):

> *Current planning overlays show the areas are not subject to either a Flood Overlay (FO) or Land Subject to Inundation Overlay (LSIO).*
> There are designated waterways present.

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Figure 5: Extent of Flooding

Ref: Figure 5-1. Northern Growth Area – Lakes Entrance Development Concept Plan Hydrology, Water Technology, July 2012

2.2.2 Proposed conditions

Detailed design of stormwater drainage infrastructure will be consistent with the LENGA ODP, LENGA DCP, Australian Rainfall and Runoff (ARR) and the adopted East Gippsland Shire IDM requirements. Subject to the ongoing maintenance and management of the system to ensure optimal operation, localised flooding is not anticipated.

3.3 Velocities

2.4.1 Existing conditions

The existing stormwater infrastructure including pipes and outfalls has been designed in accordance with Council requirements and is maintained by Council.

2.4.2 Proposed conditions

Design overland flow depths will be consistent with Council requirements. From the IDM, Clause 16.7 Major Drainage Requirements:

> *The depth of overland flows in urban areas should be controlled by freeboard to properties or by the upper limits of surface flow depth/velocity consistent with public safety, as detailed in Austroads Road Design Guidelines Part 5A Drainage – Road Surfaces, Networks, Basins and Subsurface and any VicRoads supplement to those guidelines.*

The stormwater infrastructure velocities adopted during detailed design will be consistent with Council's adopted IDM as follows:

Minimum pipe grades (Table 16.8.2)	1:300
Minimum velocity (Table 16.8.2)	1.0m/sec

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Stormwater outlet velocities will be minimised to ensure scour does not occur at or adjacent to outlets as required by current Council and subject to detailed design. Techniques to be adopted subject to detailed design may include:

- Drop structures
- Beaching and /or stilling pools
- Minimum pipe grades

Council's *Urban Waterway Guidelines* (March 2013), along with the IDM provide criteria and guidance for the design and construction of stormwater outfalls. The photograph at Figure 6 provides an indication of the placement of beaching at a stormwater outfall to minimise outfall velocity and consequential scouring of drainage lines / water courses. Subject to Council and Catchment Management Authority requirements at the time of a planning permit application being submitted this type of treatment may be required and incorporated into project landscaping.



Figure 6: Beaching at stormwater outfall

4 Conclusion

Post development stormwater generated within each of the identified sub-catchments is proposed to be managed as follows:

Sub-catchment	Label	
Sub-catchment 1	(C1)	Discharge to existing municipal stormwater infrastructure adjacent at Country Club Drive which outfalls to the designated waterway to the west of the site.
Sub-catchment 2	(C2)	Discharge to existing municipal stormwater infrastructure at south of proposed Reserve. The existing dam and is proposed to continue be retained with stormwater from the site discharging to proposed RB7
Sub-catchment 3	(C3)	Discharge to designated waterway at north-west extent of the subject land above proposed storage basin RB4.

The flowpaths and catchments are consistent with the LENGA reports as required. Where the LENGA reports are silent Council's IDM is adopted.

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Flood is not considered to be a risk at the site subject to stormwater drainage infrastructure being designed to meet current standards / requirements, and ongoing maintenance of infrastructure.

The retarding and treatment of stormwater is the subject of LENGA DCP, as identified in *Northern Growth Area Lakes Entrance Development Concept Plan Hydrology, Water Technology (2013)*. The proponent is satisfied that delivery of the project requires DCP contributions must be made to the Responsible Authority for these aspects of stormwater management.

Minor drainage infrastructure will be consistent with Council's IDM, with flowpaths and outfalls consistent with LENGA reports.

5 Reference Documents

Documents referenced in the preparation of this report include but are not limited to:

- *Northern Growth Area Lakes Entrance Development Concept Plan Hydrology, Water Technology (July 2012)*
- *Northern Growth Area Lakes Entrance Development Concept Plan Hydrology, Water Technology (2013)*
- Infrastructure Design Manual
- East Gippsland Planning Scheme

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14/07/2018

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APPENDIX 1

Crossco Drawing No 1965/004-B

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APPENDIX - 1

TO DCP INTERNAL CATCHMENT 5 & RB 4

PROVIDE ROCK BEACHED STILLING BASIN, (SUBJECT TO DETAILED DESIGN AND THE APPROVAL OF THE EAST GIPPSLAND SHIRE COUNCIL)



DCP INTERNAL CATCHMENT 5

FOR FULL DRAINAGE CATCHMENT AREA REFER TO LAKES ENTRANCE GROWTH AREA DEVELOPMENT CONTRIBUTION PLAN, FIGURE 3

DCP INTERNAL CATCHMENT 9

PALMERS ROAD

N



C1 TO DISCHARGE TO EXISTING PIT SUBJECT TO DETAILED DESIGN

DRIVE

RESERVE

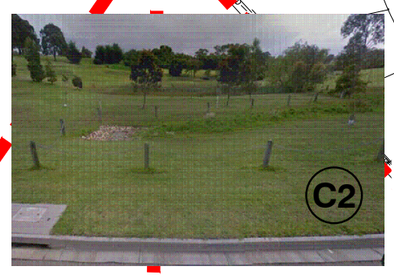
CLUB

COUNTRY

EXISTING BASIN

DCP INTERNAL CATCHMENT 6

DCP INTERNAL CATCHMENT 7 & RB 4



C2 TO DISCHARGE FROM SITE VIA EXISTING PIT AND PIPE UNDER ROAD

PROVIDE ROCK BEACHED STILLING BASIN, (SUBJECT TO DETAILED DESIGN AND THE APPROVAL OF THE EAST GIPPSLAND SHIRE COUNCIL)

DCP INTERNAL CATCHMENT 8

DCP INTERNAL CATCHMENT 9

NOT FOR CONSTRUCTION (CONCEPT LAYOUT ONLY) FOR DEVELOPMENT PLAN PURPOSES ONLY

FOR DISCUSSION PURPOSE ONLY

THIS DRAWING IS AN APPENDIX, AND MUST BE READ IN CONSULTATION WITH THE REPORT

20 10 0 20 40 60 80

1 : 1000 AT A1
1 : 2000 AT A3

LEGEND:

- PROPOSED STORMWATER
- PROPOSED STORMWATER PIT
- WATERCOURSE
- DCP INTERNAL CATCHMENT. REF: NORTHERN GROWTH AREA- LAKES ENTRANCE DEVELOPMENT CONCEPT PLAN HYDROLOGY, WATER TECHNOLOGY, OCT 2013, FIGURE 2.1
- PROPOSED FULLY MOUNTABLE KERB
- EXISTING EDGE OF SEAL
- EXISTING KERB
- EXISTING STORMWATER DRAINAGE
- DEVELOPMENT SUBCATCHMENTS
- SURFACE WATER DIRECTION
- DEVELOPED ALLOTMENT HOUSE DRAIN DIRECTION

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NICDIC DEVELOPMENTS P/L

189 PALMERS ROAD, LAKES ENTRANCE

FUTURE STORMWATER MANAGEMENT PLAN
LOTS 1-56

DRAWING No.

1965/004-B

DATE: 11 MAY 2018

CAD FILE NAME: R:\1965 Country Club Drive\ACAD\Prelim\1965-004.dwg