



December 2015

25 - 35 ANNALISE PLACE, OREWA

# Ecological Impact Assessment

**Submitted to:**  
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Coastal Properties Orewa Limited



Report Number: 1542568\_7410-002-R-Rev1

REPORT





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### 1.0 INTRODUCTION

This report<sup>1</sup>, prepared by Golder Associates (NZ) Limited (“Golder”) for Coastal Properties Orewa Limited, presents an ecological impact assessment in support of a resource consent application for a coastal retirement resort at 25 – 35 Annalise Place, Orewa, Auckland. The proposed development involves the removal of all existing dwellings with the exception of one historic building which will be relocated and restored on site. Selected exotic and native vegetation across the site will be removed allowing earthworks to be carried out for the construction of a basement, building platforms and contouring of the site.

The objectives of this ecological impact assessment are to:

- Undertake an inventory of the sites ecological characteristics and features.
- Prepare an ecological impact assessment based on the proposed construction of the coastal retirement resort.
- Prepare a native vegetation restoration methodology and provide a native planting concept to support the landscape planting plan for the riparian area and northern boundary.
- Provide recommendations for the management of any native flora and fauna onsite during development.
- Prepare a lizard management plan.

The scope of the following ecological impact assessment focuses on the 1.2 ha site which is described as 25 – 35 Annalise Place, Orewa and the adjacent receiving environment. The receiving environment has been identified as the Nukumea Stream located on the northern boundary. A site walkover was carried out by a Golder ecologist on the 16 October 2015 to ascertain the current ecological value and to identify any habitats or native flora or fauna that may be impacted by the proposed development. A second site walkover was carried out with Auckland Council Arborist (Gavin Donaldson) on the 4 November 2015 to discuss vegetation management and removal.

### 2.0 SITE DESCRIPTION

The site is considered urban and highly modified containing five dwellings with large open grassed areas with a mixture of native and exotic tree species. The large exotic and native tree species are restricted to the northern boundary and around the existing dwellings within the centre of the site. No Significant Ecological Areas (SEA’s) are located within the sites boundary. The Nukumea Stream is located along the northern boundary with the 15 ha Alice Eaves Scenic Reserve located on the northern stream bank (Figure 1). The Nukumea Stream is considered one of the most intact streams in Auckland with the majority of the catchment to the north and west covered in native vegetation. The catchment to the south of the site is predominantly urban, and comprised of residential housing, shared green spaces and the Orewa town centre.

<sup>1</sup> This report is subject to Golder’s Standard Report Limitations which are provided in full in Appendix A.



Figure 1: Site Location.

### 3.0 ECOLOGICAL FEATURES AND SIGNIFICANCE

#### 3.1 Terrestrial Flora and Fauna

The site is characterised by a stand of large pohutukawa's (*Metrosideros excelsa*) on the northern eastern boundary and a large Norfolk Pine (*Araucaria heterophylla*) located at the entrance of the site on Annalise Place. A descriptive and quantitative survey of the current native and exotic vegetation across the site to be retained or removed is documented within the arborists report (Andrew Barrell Consultant Arborist, November 2015). In brief, significant native vegetation on the northern boundary within area 1 and 2 (as specified within the Arborist report) and within the centre of the site includes: kauri (*Agathis australis*), puriri (*Vitex lucens*), mahoe (*Meliclytus ramiflorus*), nikau (*Rhopalostylis sapida*), coprosma (*Coprosma* sp.), karaka (*Corynocarpus laevigatus*), cabbage tree (*Cordyline australis*), karo (*Pittosporum crassifolium*), tarata (*Pittosporum eugenioides*) and pohutukawa (*Metrosideros excelsa*). With the exception of the stand of pohutukawa, the density of the above species across the site is low with the majority found in groups of three or less. The quality of the understory throughout the site is considered low due to the infestation of herbaceous weed species.



The site is likely to be utilised by common native bird species that frequent urban environments at certain times of the year for either nesting or foraging activities. The quality of the bird habitat on the site is considered low due to it being fragmented and sparse. The majority of the native bird population frequenting the site is likely to be residence from the Alice Eaves Scenic Reserve due to the higher quality habitat. No bird surveys were conducted during the site visit.

The Department of Conservation Herptofauna Database was searched with no native lizard records being found for the site. Ornate skinks (*Oligosoma ornatum*; At Risk: Declining) and Copper skinks (*Oligosoma aeneum*; Not Threatened) skinks have been found approximately 2.7 km south of the site at the Millwater development. It is considered possible that native skink or geckos could be present onsite based on the presence of physical habitat and the proximity of the Alice Eaves Scenic Reserve. No lizard surveys were carried out during the site visit and a conservative approach is being applied.

The North Island long-tailed bat (*Chalinolobus tuberculatus* "North Island"; Threatened: Nationally Vulnerable) is known to be within the nearby West Hoe and Riverhead catchments. No trees on the site that are proposed to be removed are of a sufficient size for bat roosting (i.e. > 80 cm diameter at breast height; DBH) and no confirmed bat sightings have been recorded in the immediate area. On that basis it is reasonable to conclude that minor vegetation removal onsite will not cause any adverse effects to any native bat populations.

### 3.2 Freshwater Fauna and Water Quality

The Nukumea Stream is described as an Inland Water General Zone within the Auckland Council District Plan – Operative Rodney Section, Chapter 11 which specifies objectives which aim to avoid adverse effects on landscape values, water quality, wildlife and vegetation removal. The current ecological state of the Nukumea Stream is important as a baseline to ascertain if the proposed development may have any impact on the stream environment.

The New Zealand Freshwater Fish Database was searched on the 11 December 2015 to ascertain the absence or presence of native and exotic fish within the Nukumea Stream. The Nukumea Stream supports a diverse range of native fish further supporting the high attributed ecological significance and value of the stream. Nine native, one marine and one exotic fish species were found. The native fish species are: shortfin eel (*Anguilla australis*), longfin eel (*Anguilla dieffenbachii*), torrentfish (*Cheimarrichthys fosteri*), giant kokopu (*Galaxias argenteus*), banded kokopu (*Galaxias fasciatus*), inanga (*Galaxias maculatus*), common bully (*Gobiomorphus cotidianus*), common smelt (*Retropinna retropinna*). Grey mullet (*Mugil cephalus*) have also has been recorded which is a typical marine wandering species that is common in low land streams in the Auckland region. The one exotic fish species recorded was dart goby (*Parioglossus marginalis*).

The Auckland Council monitors water quality within the Nukumea Stream as part of the State of the Environment Reporting. Water quality is classified as excellent based on a Water Quality Index (WQI) of between 70 and 90. The WQI ranges from poor having a score of 50 or lower to excellent with scores of 90 or greater. The WQI is comprised of seven water quality parameters which are: dissolved oxygen, pH, turbidity, ammoniacal nitrogen, temperature, total phosphorus and total nitrogen. The high water quality of the Nukumea Stream is reflective of land use in the upper catchment which is relatively unimpacted.

### 4.0 ASSESSMENT OF ECOLOGICAL EFFECTS

The adverse ecological effects likely to arise from this development are the reduction of native bird and lizard habitat and the generation and discharge of sediment laden water into the Nukumea Stream impacting water quality and the native aquatic fauna. Adverse ecological effects potentially arising from the proposed vegetation removal and development of the site will be adequately managed and mitigated resulting in the effects being less than minor overall.



The removal of selected native and exotic vegetation across the site, as detailed within the arborist report, will result in negligible long term or short term adverse ecological effects if managed appropriately. The arborist report outlines how selected vegetation will be removed without damaging the remaining trees. A landscape concept plan (Transurban, 2015) has been designed for the whole site with the riparian area and northern boundary being used as an ecological restoration and enhancement opportunity. All native vegetation within the riparian area and northern boundary will be retained and inter-planted with native species increasing the connectivity of the site with the adjacent Alice Eaves Scenic Reserve. Enhancing the riparian corridor will also contribute to an increase in ecological function of the immediate stream reach such as shade, allochthonous input of detritus and diffusion of overland flows. The planting plan for the riparian area and northern boundary has been developed using native species such as cabbage tree (*Cordyline australis*), flax (*Phormium cookianum* var.), wiggly-wig (*Meuhlenbeckia astonii*), kowhai (*Sophora chathamica*), whau (*Entela arborescens*), puriri (*Vitex lucens*) and pigeonwood (*Hedycarya arborea*). All these species have high yields of fruits and or flowers and will provide an important food source for native birds and lizards. An ecological restoration plan has been developed as part of this report to ensure that the restored areas will be adequately maintained and the weed infestation is appropriately managed.

The removal of vegetation within the site could potentially impact on nesting native birds during the peak of the breeding season from October to March inclusive. Therefore, all vegetation should be removed outside of the bird breeding season peak. If this isn't possible, then areas should be checked by an ecologist for nesting birds and if detected vegetation removal should be put on hold until the area is deemed clear of nesting birds. Adherence to this methodology is a standard practice mitigation measure to avoid any adverse effects on nesting birds.

While native lizard species have not been recorded on site, the removal of any dwellings and vegetation could potentially impact any native lizard populations that may be present. Therefore any potential adverse effects on native lizards should be appropriately managed. Prior to the removal of any dwellings and or vegetation an ecologist should search these areas relocating any lizards found to a suitable known site in close proximity. A lizard management plan has been developed (Appendix B) as part of this report to ensure any adverse effects on potential onsite lizard populations are appropriately managed and mitigated.

The vegetation removal and weed control activities within the riparian area have the potential to disturb soil increasing the risk of generating sediment laden water resulting in a discharge into the Nukumea Stream. Although the base material of the site is predominantly sand the stream banks and top soil across the site may contain clay deposits. Due to clay having a smaller particle size, its potential for entrainment is greater. Any vegetation removal or weed control within the riparian area should be conducted using current best practice for the minimisation of any soil disturbance. Therefore, weed control should be done by hand or chemical application. All root systems of any vegetation removed should be left in place treating stumps with herbicide paste. After vegetation removal and weed control any bare soil areas should be covered in coco-fibre matting further minimising the risk of generating sediment laden water. After vegetation removal but prior to earthworks a super silt fence, as per Auckland Regional Council Technical Publication No.90 (TP90), should be erected between the riparian margin and the site. Based on the slope and nature of the base material across the site a super silt fence is considered appropriate to retain sediment laden water or other debris further managing any adverse ecological effects.

## 5.0 ECOLOGICAL RESTORATION PLAN

An ecological restoration plan is proposed for the riparian and northern boundary areas. This restoration plan includes the removal of all exotic vegetation within area 1 and 2 as per the arborists report. These areas will be inter-planted with native species that will enhance native flora and fauna across the site while providing a usable amenity space.



### 5.1 Objectives

Specific objectives of this ecological restoration plan are:

- Provide an ecological restoration plan which includes mitigation for the removal of a selected native vegetation as identified within appendix 3 of the arborist report resulting in a net ecological benefit to the site and Nukumea Stream.
- Improve the native floral biodiversity value of the site.
- Restore a self-sustaining coastal ecosystem which promotes natural regeneration of native plant species.
- Establish and maintain suitable food sources and habitat for native bird, lizard and fish communities that may utilise the site and surrounds.

### 5.2 Scope

This ecological restoration plan includes:

- Site preparation and planting methodology.
- Native plant schedule including plant height, approximate percentage cover and food source contribution.
- Weed control and plant maintenance methodology.

### 5.3 Site Preparation and Planting Methodology

Site preparation will include the removal of all exotic canopy tree species using a qualified arborist. The root systems of the exotic trees will remain in place and be poisoned preventing regrowth reducing soil disturbance and promoting soil and slope stability. Exotic weedy understory species will be controlled using herbicide treatment prior to inter-planting of native vegetation. Exotic plant species with waxy cuticles such as periwinkle or tradescantia may be manually removed if herbicide treatment is not effective. Any slope areas that are classified as either erosion prone or eroding will be protected using cocofibre matting fixed to the ground or a similar technique. All planting will be conducted within the planting season between May and September. Planting spaces and quantities will be determined at the time of planting by the contractor however the plant density used must result in canopy closure within 3 years of planting with a 90 % plant survival rate. Due to sand being nutrient poor fertilizer tablets will be used deposited at the base of the root zone.

### 5.4 Native planting schedule for area 1 and 2

The below species list (Table 1) should be read in conjunction with the landscape concept (Transurban, 2015) landscape plan for the riparian and northern boundary areas.



**Table 1: Plant species used for inter-planting.**

Area	Zone	Common name	Botanical name	Relative density	
Area 1	Viewing platform	Carex	<i>Carex secta</i>	0.5 m densities	
	Stream edge	Oioi	<i>Apodasmia similis</i>	0.5 m densities	
	Riparian cluster	Cabbage tree	<i>Cordyline australis</i>	9 individual trees in clusters of 3	
		Mahoe	<i>Melicytus ramiflorus</i>	4 individual trees	
		Pigeonwood	<i>Hedycarya arborea</i>	1 or 2 specimen trees	
		Puriri	<i>Vitex lucens</i>	1 or 2 specimen trees	
		Kowhai	<i>Sophora chathamica</i>	6 individual trees	
		Whau	<i>Entela arborescens</i>	2 individual trees	
		Nikau	<i>Rhopalostylis sapida</i>	9 individual trees in clusters of 3	
		Karaka	<i>Corynocarpus laevigatus</i>	2 individual trees	
		Wiggy-wig	<i>Muehlenbeckia astonii</i>	1 m densities	
		Understory or edge	Hangehange	<i>Geniostoma ligustrifolium</i>	1 m densities
			Coastal five finger	<i>Pseudopanax lessonii</i>	1 m densities
			Rangiora	<i>Brachyglottis repanda</i>	1 m densities
		Koroio	<i>Corokia cotoneaster</i>	1 m densities	
Area 2	Canopy	Pohutukawa	<i>Metrosideros excelsa</i>	6 existing individual trees	
	Understory or edge	Wiggy-wig	<i>Muehlenbeckia astonii</i>	1 m densities	

## 5.5 Weed Control and Maintenance

A weed control and maintenance programme is considered to be a necessary part of removing established weeds and controlling re-infestations. Proposed weed control methods suitable for this site include hand weeding, slashing, physical removal and or spraying. Any exotic vines within trees will be cut at ground level, treating the stumps with herbicide paste. The vine will be left to naturally decay from the tree rather than being physically removed which could potentially result in damaging foliage of the tree. The appropriate methodology for weed control and maintenance will vary and be dependant of weed morphology, infestation level and time of the year. All exotic trees will be removed by a qualified arborist and all herbicide will be used in accordance with manufacturer's recommendations implemented by a growsafe certified person or the land owner.

- Herbaceous ground cover weeds – herbicides will be used on all herbaceous ground cover weeds such as exotic pasture grass species, tradescantia and periwinkle. A sticking agent will be used on tradescantia and periwinkle; if herbicide applications are unsuccessful they will be physically removed.
- Shrub weeds – slashing in conjunction with herbicide gel will be used to control woody shrub weeds.



- Exotic trees – exotic trees are proposed to be physically removed leaving stumps cut at ground level and root systems. All stumps will be painted with herbicide gel to prohibit regrowth.

Maintenance is an important component of any ecological restoration programme treating any weeds before the site becomes re-infested impacting the survival rate of new native plantings. The site should be checked every two months for the first 12 months post planting. Any new weed infestations will be controlled using the above methodology and weeds will be managed long term on site to a level less than 5 %.

## 6.0 LIMITATIONS

Your attention is drawn to the document “Report Limitations” which is attached in Appendix A. The statements presented in that document are intended to advise you of what your realistic expectations of this report should be, and to present you with recommendations on how to minimise the risks to which this report relates which are associated with this project. The document is not intended to exclude or otherwise limit the obligations necessarily imposed by law on Golder Associates (NZ) Limited, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.

## 7.0 SUMMARY

This report describes the ecological features located within the site and identifies the impact of the proposed development on the receiving environment. An ecological restoration plan is proposed to remedy and mitigate any associated effects of vegetation removal providing an overall net ecological gain to onsite biodiversity values. The proposed works are predicted to lead to less than minor adverse ecological effects if the recommended management and mitigation techniques are implemented.

## 8.0 REFERENCES

Arboricultural Report – Annalise Place, Orewa – Construction of a Retirement Resort. Prepared by Andrew Barrell Consultant Arborist, dated November 2015.

Landscape Concept – Forest Glen – Retirement Village Orewa, 02. Prepared by Transurban, dated 15 December 2015.



# **APPENDIX A**

## **Report Limitations**



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# **APPENDIX B**

## **25 - 35 Annalise Place Lizard Management Plan**



December 2015

## LIZARD MANAGEMENT PLAN

# 25 - 35 Annalise Place, Orewa Auckland

**Submitted to:**  
Coastal Properties Orewa Limited

REPORT



**Report Number.** 1542568\_7410-003-R-Rev1





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## 1.0 INTRODUCTION

### 1.1 Background

Coastal Properties Orewa Limited proposes to construct a coastal retirement resort at 25 – 35 Annalise Place, Orewa, Auckland. The proposed development involves the removal of existing dwellings and selected native and exotic vegetation across the site. The Department of Conservation Herpetofauna Database has no records of native lizards being found onsite, however it is possible that some native skinks or geckos may be present. It is proposed that a conservative approach is applied and it's recommended that a search only Lizard Management Plan (LMP) is appropriate to the scale of impact across the site. This LMP is in support of a resource consent application for the above site and should be read in conjunction with the Ecological Impact Assessment (December 2015).

### 1.2 Objectives of this Plan

This LMP<sup>1</sup> sets out management actions to avoid / minimise adverse ecological effects of the development on native lizards.

The objectives of the LMP are to:

- Provide a lizard relocation methodology to ensure that any lizards within the works footprint are relocated to safe sites prior to, or during the process of dwelling or vegetation removal.
- Provide details of any ecological protection/enhancement actions required to improve the viability of relocated lizard populations.

## 2.0 SITE AND LIZARD HABITAT

The site is considered urban and highly modified containing five dwellings with large open grassed areas with a mixture of native and exotic tree species. If native lizards are present, their distributions are likely to be confined to underneath dwellings, within surrounding small buildings or within the foliage of native and exotic trees.

## 3.0 LIZARD RELOCATION PLAN

### 3.1 Strategy

Native lizards are opportunistic and quick to colonise available urban habitat. Native lizard populations are likely to be small and localised, as potential habitat patches are small and poorly connected. Lizard relocation methods proposed in this LMP are restricted to using manual search/capture methods which is considered appropriate relative to the level of impact across the site and that no known populations of native lizards are found on site.

A relocation site will be identified prior to the commencement of works, however it is likely that the Alice Eaves Scenic Reserve will be used as it has favourable habitat and is close proximity to the site.

<sup>1</sup> This report is subject to the limitations attached in Appendix A.



### 3.2 Methods

The proposed methods for lizard management are as follows:

#### 1) Lizard habitat identification

A suitably qualified and experienced herpetologist (Project Herpetologist) will undertake a site walkover to identify areas of potential lizard habitat that will be affected by works. All potential habitat will be recorded and mapped.

#### 2) Manual habitat searches

Manual habitat searches will involve searching any dwelling or associated building 24 hours prior to its removal. Any garden areas or understory vegetation around the dwellings will also be searched. The search methodology will primarily involve lifting or turning over logs, rocks, and any other cover, and capturing any lizards present beneath. All native lizards captured will be released at an approved release site.

All vegetation proposed to be removed will be spotlighted for geckos within 24 hrs of removal. All searches will be based on an effort of 4 person hours. The works arborist will be advised that all vegetation proposed to be removed is clear of native geckos prior to tree removal.

#### 3) Supervised vegetation clearance

Capturing lizards during habitat clearance will be undertaken to account for uncertainty in relation to lizard detection prior to habitat removal. Supervised vegetation clearance will involve the Project Herpetologist working closely with the works arborist to capture any lizards remaining in the habitat areas when works commence.

### 3.3 Release Site Habitat Enhancement and Post-relocation Monitoring

The Project Herpetologist to confirm will confirm an appropriate release site with Auckland Council prior to any lizard monitoring. If the habitat at the release site is of poor quality then appropriate habitat enhancement will be applied (e.g., natural refuges such as log disks will be provided) or an alternative suitable release site will be found. No post-release monitoring or pest control is proposed.

### 3.4 Implementation and Considerations

Communications between Auckland Council and the Project Herpetologist implementing the LMP will include:

- Written confirmation that the mitigation programme is being carried out according to the approved programme at least two working days prior to the removal of the dwellings or vegetation.
- Confirmation of the release site.
- Confirmation that individuals of any species found (aside from rainbow skinks) have been relocated.
- Submission of completed Amphibian and Reptile Distribution Scheme (ARDS) card to DOC with a copy to be forwarded to Council's Ecologist.
- Preparation of a summary letter describing lizard management activities carried out under the LMP, locations where lizards were found and locations of the release site.



### **3.5 Permitting and Translocation of Lizards**

Department of Conservation permits are required to handle and translocate lizards. The Project Herpetologist must hold a valid permit which allows for the capture, handling and relocation of protected lizards for the duration of LMP implementation.

### **3.6 Conclusion**

The implementation of this LMP is intended to manage and mitigate any adverse effects that the proposed development may have on native lizard populations onsite using current standard best practices.



# APPENDIX A

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