ENFORCEABLE UNDERTAKING UNDER SECTION 9.5 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979
***given by* ACCS FAMILY HOLDINGS PTY LTD**
ACN 632 547 016

This undertaking is given to the Planning Secretary **(Secretary)** of the Department of Planning, Housing and Infrastructure (the **Department**), by ACCS Family Holdings Pty Ltd (ACN 632 547 016) (**ACCS**), for the purposes of s 9.5 of the *Environmental Planning and Assessment Act 1979* (**EPAA**), following an investigation conducted by Sutherland Shire Council (the **Council**).

The Council has recommended that the undertaking proffered by ACCS be accepted by the Secretary of the Department pursuant to s 9.5 of the EPAA.

PERSON GIVING THE UNDERTAKING

1 ACCS is a company which is the registered proprietor of the land situated at 50-68 David Road, Barden Ridge NSW, bearing NSW Land Registry reference: Lot 37 in DP 771531 (the **Land**). Amir Abu Abara is the sole director and secretary of ACCS. ACCS has its principal place of business at 9 Bataan Close, Illawong NSW 2234.

BACKGROUND TO THE DEVELOPMENT

Contraventions

2 On about 22 August 2023, following an investigation, the Council commenced proceedings against ACCS in the Local Court for alleged breaches of the EPAA, for:

(a) carrying out prohibited vegetation clearing on the Land contrary to s 4.3(a) of the EPAA (**Sequence 1, 2023/269852**);

(b) carrying out a development which was permissible only with development consent, without first obtaining such consent, being prohibited earthworks on the Land, contrary to s 4.2(1)(a) of the EPAA (**Sequence 2, 2023/269865**); and

(c) failing to comply with the terms of a development control order, namely, to cease all works on the Land, contrary to s 9.34 of the EPAA (**Sequence 3**). Sequence 3 was withdrawn by the Council.

3 Existing on the Land as at 20 June 2020 were 16 trees whose height and species are set out on the table below (**the Protected Trees**):

Tree no.	Species	Height (m)
1	Angophora Costata	12
2	Corymbia gummifera	15
3	Eucalyptus piperita	22
4	Eucalyptus piperita	25
5	Angophora costata	18
6	Corymbia gummifera	10
7	Angophora costata	16
8	Angophora costata	22
9	Corymbia gummifera	12
10	Angophora costata	16

11	Allocasuarina littoralis	12
12	Allocasuarina littoralis	12
13	Eucalyptus piperita	12
14	Eucalyptus piperita	12
15	Allocasuarina littoralis	12
16	Allocasuarina littoralis	12

4 On 9 September 2020, the Council received an application for a pre-application discussion in relation to the construction of a dwelling and swimming pool on the Land. The applicant was Nemco Design Pty Ltd (**Nemco**). Nemco's architect was Mr Abraham Nemra (**Architect**). The application form was signed by the director of ACCS. The Application was assigned reference PAD20/0038.

5 On 16 December 2020, a meeting was held in relation to PAD20/0038 between Council, the Director and the Architect regarding the proposed development on the Land.

6 On 9 July 2021, the Council wrote to Nemco outlining several constraints with the Premises which limited its development potential. The letter stated that:

(a) the Land was subject to the NSW Biodiversty Conservation framework, was mapped as "Environmentally Sensitive Land" and "Greenweb Core";

(b) the proposal required extensive cut and fill to be achieved which was not in keeping with the objectives of the E3 Environmental Management zone; and

(c) the relocation and design of the dwelling needed to be investigated to minimise the impacts on vegetation.

7 Between 1 June 2020 and 18 February 2022 the Protected Trees were cleared without the authority conferred by a permit granted by Council.

8 The clearing was carried out at the request of ACCS.

9 On or about 1 September 2021 to on or about 19 February 2022 earthworks were carried out on the Premises without development consent.

10 The earthworks comprised excavation and filling (**the Prohibited Earthworks**).

11 The Prohibited Earthworks were carried out at the request of ACCS. The Prohibited Earthworks comprised excavation of approximately 5,859m3 (to a maximum depth of 6m in some areas) and filling of approximately 3,555m3 (with a maximum fill of approximately 2.8m in some areas).

Response to the contraventions

Acknowledgement and apology

12 ACCS entered pleas of guilty to Sequences 1 and 2.

13 ACCS accepts that in aiding, abetting, counselling or procuring the unauthorised work by Auswide Civil Pty Ltd (ACN: 632 919 763) (**Auswide**) the subject of Sequences 1 and 2, it was accessorily liable for conduct capable of establishing those offences as averred by the Council (the **Contraventions**).

14 ACCS apologises to the community and the Council for the Contraventions.

15 In a written apology which has been filed and served in the Local Court proceedings, the director of ACCS stated that the conduct the subject of the Contraventions "*… was wrong and I sincerely apologise for the conduct of ACCS"*.

16 ACCS acknowledges the community impacts which arise from the Contraventions including the harm occasioned to the regulatory scheme which establishes an orderly method for the obtaining of planning approvals prior to carrying out development by local and State government.

17 Development carried out without consent – including vegetation clearing and excavation – does not undergo prior impact assessment which would allow for the avoidance or mitigation of those impacts.

Compliance with the regulatory scheme

18 ACCS have submitted a development application to the Council's independent Planning Panel bearing NSW Planning Portal identifier **PAN-513820** for the Land (the **Development Application**).

19 The Development Application has not been determined by the Planning Panel, however, ACCS has borne the costs of proposing suitable conditions of consent to be complied with to develop the Land and "*undo the distress caused the community,* [with the] *hope*[s] *that it will go at least some way in correcting* [its] *actions*". ACCS is committed to ensuring compliance with the regulatory scheme in the future.

UNDERTAKING

Commencement of undertaking

20 This undertaking come into effect when both:

(a) it is duly executed by ACCS by its duly appointed officeholder; and

(b) following the execution by ACCS, when it is duly executed by the Secretary, or his/her delegate

(the **Commencement Date**).

Steps to be taken by ACCS

21 ACCS undertakes for the purposes of s 9.5 of the EPAA, that it will carry out or cause to be carried out the steps specified below:

(a) *First,* within 30 days of the Commencement Date, to make a financial contribution to the Council in the amount of **$70,000.00** to be used for public works at its discretion (**Financial Contribution**) by direct electronic deposit into the below nominated bank account maintained by the Council:

Redacted

(b) *Second, within 30 days of the Commencement Date, to make a further financial contribution to the Council in the amount of $39,000.00 for its legal costs in prosecuting the Contraventions (Further Sum) by direct electronic deposit into the below nominated bank account maintained by the Council:*

Redacted

(c) *Third, within 30 days of the Commencement Date, and upon provision of a direction from either the Secretary or his/her delegate,*

(i) ACCS will pay the Department the sum of **$1,000.00** for its legal costs associated with accepting this undertaking (**Department Costs**); and

(ii) pay the Department Costs by direct electronic deposit into the below nominated bank account maintained by the Department:

Bank: Westpac
Account Name: DPIE Operating ACC No 2
BSB: 032-001
Account Number: 114428

(iii) Email to the Director - Compliance and Investigations of the Department of Planning, Housing and Infrastructure at compliance@planninq.nsw.qov.au enclosing a copy of the bank statement or transaction receipt which confirms that the payment described in paragraph 21(c) has been made, within 7 days of making that payment.

(d) *Fourth, the director of ACCS is to provide a witness statement to the Council prosecutor in the Local Court proceedings bearing NSW JusticeLink number: 2023/269867, being proceedings commenced by the Council against Auswide (Auswide Proceedings).*

Such a witness statement is to:

(i) set out full and frank disclosure of the Director's knowledge in connection with the clearing of the Protected Trees and the Prohibited Earthworks; and

(ii) provided within 7 days of the Commencement Date).

(e) *Fifth and subject to the conditions of the Development Application, as granted or modified, to ameliorate the environmental impacts of the removal of the Protected Trees and the carrying out of the Prohibited Earthworks, carry out replanting works on the Land (Replanting) in accordance with the Vegetation Management Plan prepared by Anderson Environmental (Version 3, dated 28/06/2023) which is annexed to the Undertaking and marked "A" (VMP).*

(i) The Replanting Works are to be completed within 18 months of the Commencement Date.

(ii) If within 18 months of the Commencement Date, development consent is granted under the EPAA for the construction of a dwelling house on the Land, the Replanting Works are to be completed within 24 months of any construction certificate being issued in relation to that consent or prior to the occupation of the approved dwelling house (whichever is the earlier).

(iii) ACCS may request amendment(s) to the VMP, if such amendment(s) are required by any development consent granted under the EPAA, or any modification application granted under s 4.55 of the EPAA.

(iv) If Council accepts amendment(s) to the VMP, then the Replanting Works are to be undertaken in accordance with the amended VMP.

(v) Within 7 days of the completion of the Replanting, certification is to be provided by a suitably qualified person that the Replanting has been undertaken in accordance with the VMP.

(vi) The Replanting is to be maintained for a minimum period of two (2) years from the date certification is provided in this paragraph (d)(v).

(f) *Sixth, to agree to the withdrawal of Sequences 1 and 2, with no order as to costs, upon the Council making such an application to the Court (with the attendant consequence that the notice of motion filed on 8 February 2024 for costs of the adjournment of Sequences 1 and 2 under s 216 of the Criminal Procedure Act 1986 is also withdrawn).*

ACKNOWLEDGEMENTS

Acknowledgements by the Council

22 The Council acknowledges:

(a) that compliance with the undertaking is not contingent on the Council securing a conviction (or convictions) of Auswide in the Auswide Proceedings; or any proceeding (however so defined) related to the Auswide Proceedings

(including, without limitation, any extension of criminal liability said to ground charge(s) against the officeholder(s) of Auswide personally);

(b) that it will formally withdraw Sequences 1 and 2 within 7 days of payment of the contributions and costs referred to in paragraphs 21(a)-(c) above; having advised the Registrar of the Local Court in advance of the next-in-Court date; and

(c) that the withdrawal of Sequences 1 and 2 will be with no order as to costs.

Acknowledgements by ACCS

23 ACCS acknowledges that this undertaking:

(a) may be made publicly available from time-to-time, and be referred to in the media or publications by the Council or the Department, including but not limited to, publication on the Department's public register of undertakings available on their website;

(b) will be disclosed to Auswide in the Auswide Proceedings, and may be tendered in such proceedings;

(c) is not a representation that its Development Application will be approved or conditionally approved by the relevant consent authority, as the undertaking relates to the Contraventions which cannot be a relevant factor in the decision to approve, refuse, or conditionally approve the Development Application;

(d) does not derogate from the Council's power to conduct compliance audits in supervision or enforcement of this Undertaking; and

(e) does not derogate from the rights and remedies available to any other person outside of ACCS, the Council and/or the Department, arising from the Contraventions.

EXECUTED AS AN UNDERTAKING UNDER SECTION 9.5 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

EXECUTED BY ACCS FAMILY HOLDINGS PTY LTD (ACN 632 547 016) pursuant to s 127(1) of the *Corporations Act 2001* (Cth):

Signed by:
Anthony Romeo
050BBBDC952D4E3...

Signature of witness

Anthony Romeo

Solicitor for ACCS Family Holdings Pty Ltd

30 April 2025

Signed by:
Amir Abara
AC593BCD2E364DE...

Signature of director

Amir Abara

Sole director and secretary of ACCS Family Holdings Pty Ltd

30 April 2025

EXECUTED BY SUTHERLAND SHIRE COUNCIL

Council has negotiated the undertaking with ACCS FAMILY HOLDINGS PTY LTD (ACN 632 547 016) in relation to Council's functions under the EP&A Act and recommends that the Secretary accepts the Undertaking

Signature of Chief Executive Officer, Sutherland Shire Council

30 April 2025

EXECUTED BY THE SECRETARY OF THE DEPARTMENT OF PLANNING, HOUSING AND INFRASTRUCTURE

This undertaking, upon the recommendation of the Sutherland Shire Council, is accepted by the Planning Secretary of the Department of Planning, Housing and Infrastructure :

…… ……

Signature of the Planning Secretary of the Department of Planning, Housing and Infrastructure, or by his/her duly appointed delegate

15 July 2025

"A"

VEGETATION MANAGEMENT PLAN

FOR

50-68 DAVID ROAD BARDEN RIDGE (LOT 37, DP 771531)

SUTHERLAND SHIRE COUNCIL

LOCAL GOVERNMENT AREA

Job number: 2445

Anderson Environmental Pty Ltd 87 164 830 728
Ph: 1300 302 507 Fax: (02) 8580 4731
Suite 19, 103 George Street, Parramatta 2150
www.andenviro.com.au

Version 3

Version	Date drafted	Drafted by
1	24/02/2023	Bo Davidson
2	23/05/2023	Bo Davidson
3	28/06/2023	Jason Anderson
Version	**Date reviewed**	**Reviewed by**
1	28/02/2023	Jason Anderson
2	23/05/2023	
3	28/06/2023	Jason Anderson

Approved by	Date
Jason Anderson (Director)	28/06/2023

Executive Summary

Introduction

Anderson Environmental Pty Ltd (Anderson Environmental) was engaged to draft a Vegetation Management Plan (VMP) to restore and revegetate portions of 50-68 David Road, Barden Ridge in the Sutherland Shire Council Local Government Area (LGA), hereafter referred to as the Subject Land. The Subject Land is currently subject to notice of intention to give a development control order (file ref CR21-543626). Sutherland Shire Council (Council) determined that these works were not carried out under any existing consent or approval and have requested ameliorative measures be made.

This VMP relates to the ecological requirements of point 1 of the notice of intention to give a development control order, which states that revegetation works are required to restore (to the extent reasonably possible) of the Subject Land to the condition they were prior to the works being undertaken.

The Subject Land is also the subject of a current Development Application (DA), DA06/1422, which was conditionally approved of 3 December 2007 but, Council is of the opinion that this DA had lapsed or did not provide any lawful authority for the works described above.

The purpose of this plan is to provide a management regime for the rehabilitation of cleared areas as per the above notice. This plan outlines the objectives for vegetation management of the Subject Land and the ongoing requirements to maintain and improve native vegetation values over a five-year period.

Site Assessment and Determination of Constraints

The Subject Land is an approximately 7.3ha irregularly shaped lot located to the east of David Road on the eastern outskirts of the suburb of Barden Ridge. It currently supports no infrastructure aside from an access road, some underground stormwater infrastructure and the large, cleared area which is the focus of this plan. The remainder is dominated by remnant native forest and woodlands.

The lands surrounding the Subject Land consist of a mixture of suburban lots to the west and native vegetation to the north, south and east. The Woronora River is located approximately 100m to the east of the Subject Land and an unnamed ephemeral tributary of this river passes through the Subject Land from the south-west to north-east.

The vegetation of the Subject Land most strongly conformed to three distinct Plant Community Types (PCTs), with reference to the NSW BioNet Vegetation Classification database:

- Sydney Coastal Sandstone Gully Forest (PCT 3595);
    - This PCT is predominant to the west of the central drainage and includes the lands disturbed by clearing works.
- Sydney Hinterland Enriched Sandstone Bloodwood Forest (PCT 3619); and
    - This PCT is predominant to the east of the central drainage and is largely in an unmodified condition.
- Coastal Sandstone Riparian Scrub (PCT 1292).

- This PCT occurred as a narrow band along the central drainage on the edge of the disturbance area.

None of these PCTs conformed to a Threatened Ecological Community (TEC) under the NSW *Biodiversity Conservation Act* (BC Act) or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Native vegetation was in overall good condition within the areas not impacted by the cleared works. The poorest condition vegetation was located along the lower (eastern) margin of the disturbed area. This area was observed to contain significant exotic weed populations as well as large areas impacted by migrated sediment from failed sediment control devices upslope.

Priority weeds (under the *Biosecurity Act 2015* for the management region of the Greater Sydney region) identified on the Subject Land comprised *Asparagus aethiopicus* (Sprenger's Asparagus), *Lantana camara* (Lantana) and *Senecio madagascariensis* (Fireweed). Weed infestations are generally low across the Subject Land; however, the central creekline contained several large populations of *L. camara*.

The greatest immediate threat to vegetation of the Subject Land are the ongoing impacts of the cleared area. Large amounts of unconsolidated sediment was observed to have moved into areas of native vegetation downslope. The Proposal has the potential to present several additional threats to retained native vegetation. These include new opportunities for exotic weed colonisation of disturbed areas, changes to local microclimates and conditions in areas of retained vegetation, increased trampling and dumping pressure and increased predation pressure from introduced domestic exotic predators (dogs and cats).

Management Plan

For the purposes of vegetation management, the Subject Land is divided into the following management zones:

- **Zone 1**: Cleared and disturbed lands above the creekline;
- **Zone 2**: Portion of creekline directly downslope of the disturbance area; and
- **Zone 3**: 10 m buffer along creekline and 20 m buffer east and west of disturbance area into good condition native vegetation. This is the portion of adjacent vegetation most prone to secondary impacts from the cleared area.

These zones require varying management regimes to appropriately manage the varying land use practices and vegetation threats present. The management and rehabilitation of retained native vegetation will consist of site stabilisation, weed suppression, tubestock planting and ongoing monitoring.

Tubestock planting will form the primary management concern of this VMP. Zones 1 and 2 will require extensive planting of understory, shrub and tree species. Zone 3 does not require planting but will need to be managed to suppress emerging weed population.

This VMP details the works required for the rehabilitation and management of the floral values of the above management zones. The plan covers a five-year lifespan during which time the

aim is to have all weeds well controlled, and a sound cover of native vegetation established in line with the benchmarks in all relevant zones as outlined in this plan. The works involved during all phases of this plan area as follows:

- Regular works to control weeds populations on the Subject Land at the intervals detailed in this plan;
- Extensive tubestock planting and ongoing management until well established in all planting zones;
- Regular inspection of the Subject Land by a qualified bush regenerator to carry out vegetation quadrat surveys and identify new weed populations or other emerging management issues; and
- Regular reports to Council outlining the condition of the Subject Land and the works undertaken.

Any site stabilisation works or any other works which are required to be done within the Tree Protection Zone (TPZ) of any tree on site will need to follow the tree protection requirements detailed in Australian Standard (AS) 4970 – 2009 (+A1).

Site and Vegetation Maintenance

Significant additional sediment controls will need to be installed and maintained to manage sediment outflows from the disturbed area. These controls should be governed by the geotechnical report and managed under a dedicated sediment control plan.

As described above these works should include surveys of vegetation monitoring 5x5m ($25m^2$) quadrats. A total of six quadrats are to be installed, distributed across the management zones as detailed in this plan. Quadrats shall be identified using permanent, durable markers (star pickets).

During each inspection period the species diversity and Foliage Projection Cover (FPC) for each stratum is to be recorded as well as weed density and abundance. The performance criteria listed in this plan is based on the FPC and species diversity data for the PCTs present in the NSW BioNet Vegetation Classification database. These data are to be presented along with all other management data (weed control works, new management issues etc.) in annual reports to Council.

Ecological restoration must always be undertaken by qualified and experienced professionals (Certificate II Bushland Regeneration or a Certificate III Natural Area Restoration (or equivalent)) or ecologists with proven bush regeneration experience (documented previous bush regeneration projects).

Landowners may undertake weed control and rehabilitation work under the guidance/supervision of an appropriately qualified bush regenerator. Supervisors must have a relevant Certificate IV or Diploma level qualification in bush regeneration.

Certification

I certify that this report has been undertaken in accordance with the current legislative requirements and that report was undertaken without bias and the findings would be the same regardless of the client or their objectives and is an entirely independent report based solely on the site conditions and background information available at the time of the assessment.

Yours Sincerely

Jason Anderson

Jason Anderson
B.App.Sc – 1992 (Conservation Technology - University of New England)
BAAS17059 Certified Biodiversity Method Assessor under the Biodiversity Conservation Act 2016 (NSW)
Certified Practicing Ecological Consultant (#5) – Ecological Consultants Association of NSW

Table of Contents

LIST OF FIGURES

LIST OF TABLES

LIST OF PHOTGRAPHS

1. INTRODUCTION AND BACKGROUND

Anderson Environmental Pty Ltd (Anderson Environmental) was engaged to draft a Vegetation Management Plan (VMP) to govern the vegetation restoration and maintenance of an area impacted by unregulated clearing at 50-68 David Road, Barden Ridge (lot 37 DP 771531) in the Sutherland Shire Council Local Government Area (LGA), hereafter referred to as the Subject Land. The Subject Land is currently subject to notice of intention to give a development control order (file ref CR21-543626). Sutherland Shire Council (Council) determined that these works were not carried out under any existing consent or approval.

Consequently, Council has given notice pursuant to Schedule 5, Part 6 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) that Council intends to give an Order No 10 Restore Works pursuant to Section 9.34 of the EP&A Act.

This VMP relates to the ecological requirements of point 1 of the notice of intention to give a development control order, which states "*engage the services of suitably qualified and registered geotechnical, engineering, arboricultural and ecological experts to provide a full assessment and detailed report regarding the unauthorised works (including excavation and rock-breaking) and extensive tree removal undertaken at the Premises.*

The reports are to also detail the necessary geotechnical, engineering and revegetation works (including maintenance) required for the restoration (to the extent reasonably possible) of the Premises to the condition they were in prior to unauthorised works being undertaken".

The Subject Land is also the subject of a current Development Application (DA), DA06/1422, which was conditionally approved of 3 December 2007 but, Council is of the opinion that this DA had lapsed or did not provide any lawful authority for the works described above.

This plan provides a detailed site-specific management regime to manage and restore the native vegetation values of the disturbed areas and in areas of retained bushland on the Subject Land. The aims of this VMP are as follows:

- Address items detailed in the notice of intention to give a development control order detailed above;
- Achieve the relevant objectives identified within the Sutherland Shire Local Environmental Plan (SLEP) 2015 and Development Control Plan (SDCP) 2015; and
- Be consistent with other related environmental legislation and policies, for example *Biodiversity Conservation Act 2016* (BC Act), the *Biosecurity Act 2015* (Bio Act) and *Water Management Act 2002* (WM Act).

1.1 APPLICABLE RESTORATION CONDITIONS

The points relevant to this VMP from the notice of intention to give a development control order and where they are addressed in this plan are detailed below in **Table 1.1**.

Table 1.1: Relevant restoration conditions

Consent condition	Where addressed in this plan
Engage the services of suitably qualified and registered geotechnical, engineering, arboricultural and ecological experts to provide a full assessment and detailed report regarding the unauthorised earthworks (including excavation and rock-breaking) and extensive tree removal undertaken at the Premises	Section 1.3
The reports are to also detail the necessary geotechnical, engineering and revegetation works (including maintenance) required for the restoration (to the extent reasonably possible) of the Premises to the condition they were in prior to the unauthorised works being undertaken	This plan
Carry out all necessary works as detailed in the reports and any plan(s) referred to in point one (1) above. All works are to be carried out under the direct supervision of the suitably qualified and experienced professionals who prepared the reports and plan(s)	Section 1.3 Sections 3-6
On completion of the works being carried out, provide Council with certification from the suitably qualified person(s) who prepared the reports and plan(s), confirming that the proposed works have been undertaken in accordance with their reports and plan(s) as referred to in point one (1) above	Sections 4 and 5
The Premises are mapped as environmentally sensitive land (terrestrial biodiversity) under clause 6.5 of the SLEP 2015 and as environmentally sensitive land (riparian land and water courses) under clause 6.7 of the SLEP 2015. There has been not assessment undertaken as to the impact of the unauthorised works in relation to the objectives and requirements of these clauses. The Premises are also mapped "Greenweb Core" within Council's biodiversity strategy and there has been no assessment of the impact of the unauthorised works with regards to the objectives and controls contained within Chapter 39 of Council's Development Control Plan 2015	Section 2
The unauthorised development has resulted in a number of key biodiversity impacts including: the disturbance of a significant amount of native vegetation; • The removal of fauna habitat features, including hollow-bearing trees and sandstone outcropping; and • The removal of habitat for threatened fauna — including the Powerful Owl, the presence of which has been observed on the Premises (see Flora and Fauna Survey and Assessment prepared by Ambrose Ecological Service Pty Ltd in 2007)	Section 3

Ecological restoration must always be undertaken by qualified and experienced professionals (Certificate II Bushland Regeneration or a Certificate III Natural Area Restoration (or equivalent)) or ecologists with proven bush regeneration experience (documented previous jobs). Landowners may undertake weed control and rehabilitation work under the guidance/supervision of an appropriately qualified bush regenerator.

Supervisors must have a relevant Certificate IV or Diploma level qualification in bush regeneration

1.2 SUBJECT LAND

The Subject Land is located in 50-68 David Road, Barden Ridge. **Figure 1.1** below shows the Subject Land and its local context.

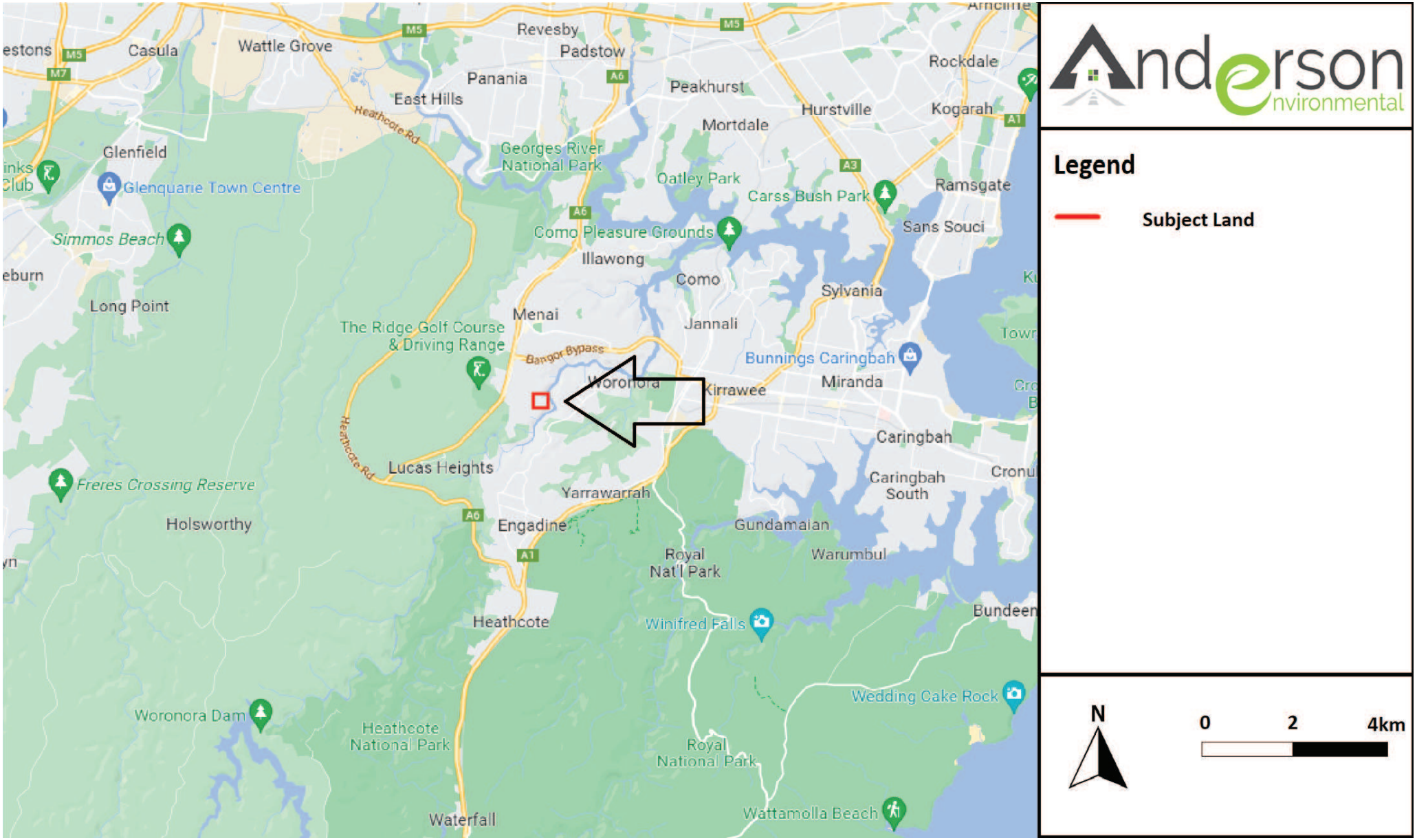


Figure 1.1: Location of the Subject Land showing local context

The Subject Land is an approximately 7.3ha irregularly shaped lot located to the east of David Road on the eastern outskirts of the suburb of Barden Ridge. It currently supports no infrastructure aside from an access road, some underground stormwater infrastructure and the large, cleared area which is the focus of this plan. The remainder is dominated by remnant native forest and woodlands.

The lands surrounding the Subject Land consist of a mixture of suburban lots to the west and native vegetation to the north, south and east. The Woronora River is located approximately 100m to the east of the Subject Land and an unnamed tributary of this river passes through the Subject Land from the south-west to north-east.

The Subject Land has a strong easterly aspect, dropping away from David Road towards the Woronora River. The geology of the locality is mapped as part of the Hawkesbury landscape, described as "*Hawkesbury Sandstone—medium to coarse-grained quartz sandstone with minor shale and laminite lenses. Sandstones are either massive or cross-bedded sheet facies with vertical or sub vertical joint sets. The combination of bedding planes and widely spaced joints gives sand-stone outcrops a distinctive blocky appearance*" with reference to the NSW Espade soil mapping database (NSW Department of Planning and Environment, 2022).

1.3 QUALIFICATION OF PLAN AUTHORS

This plan has been drafted by Bo Davidson, who also undertook a site inspection to collect relevant data and photographs (October 2022). Bo has a Masters of Environment (2013) and nine years' experience as a consulting ecologist. Bo has been responsible for the drafting of numerous VMPs, including of sites disturbed by unauthorised clearing.

This report has been reviewed and approved by Jason Anderson. Jason has Bachelor of Applied Science (1992) and over 20 years' experience as a consulting ecologist. Jason has been responsible for numerous VMPs, including planning and overseeing the works detailed in these plans and follow-up monitoring and reporting.

1.4 LIMITATIONS OF ACHIEVING PROPOSED WORKS WITHIN THE LIFESPAN OF THE PLAN

The works proposed in this plan are based on an assessment of Subject Land prior to the commencement of works. Unforeseen site conditions and future events can affect the performance of these works and the ability to achieve the performance criteria within the life of the plan. Such events include bushfires, flooding, sedimentation from upslope work areas, accidental or deliberate grazing by domestic livestock etc. Unforeseen site conditions can include unnaturally high nutrient levels in soil (from upslope sources), long dry periods affecting vegetation recovery and grazing by native and exotic herbivores (wallabies, rabbits etc.).

These factors are not always within the ability of the responsible party to manage. Consideration of these factors must be taken at all stages of the plan and appropriate concessions given if performance criteria goals are impacted by such events/conditions.

The performance criteria for native vegetation under this VMP is the benchmark species diversity and Projective Foliage Cover (FPC) values for the respective native vegetation community, as defined in the Department of Planning, Industry and Environment (DoPIE)

BioNet Vegetation Classification database or from quadrats in good quality bushland of the Subject Land or nearby. In highly denuded sites which lack all or some of the strata listed (overstory, mid-story, grasses, shrubs and other groundcovers) achieving these benchmark values within the five-year scope of a standard VMP will be unlikely to impossible for some of these strata due to plant growth rates. In these circumstances revised performance criteria incorporating only the appropriate strata (e.g., ground covers and shrubs) are applied.

Table 1.2 below details the estimated recovery times (for the community to reach the benchmark levels for all strata) for highly disturbed, moderately disturbed and lightly disturbed revegetation areas.

Table 1.2: Estimated vegetation recovery times for varying levels of site degradation

Condition	Description	Estimated recovery period
Lightly disturbed	Largely intact native bushland. Small areas of cleared or exotic dominated vegetation may be present but can be easily managed	0-5 years
Moderately disturbed	Native vegetation present but restricted to only a few strata (typically canopy and/or mid-story). Understory and shrub layers can be totally or predominantly dominated by exotic species	Where native canopy and/or mid story present 3-10 years Where canopy and mid-story absent 10-20 years
Highly disturbed	Native vegetation virtually absent or restricted to a few canopy and/or mid-story individuals. Areas almost entirely dominated by exotic species also considered highly disturbed. Typically associated with cleared areas, old farm paddocks or dense stands of exotic woody weeds such as *Lantana* sp. (Lantana) and *Ligustrum* sp. (Privet)	20-40 years

With appropriate sourcing of native species for moderately and highly disturbed areas the benchmark species diversity may be attainable within the five-year scope. However, many species are difficult to source from nurseries, are difficult to propagate and do not survive well in exposed areas. The 'Recovering bushland on the Cumberland Plain Best practice guidelines for the management and restoration of bushland' by the Department of Environment and Conservation (DEC, now Department of Planning and Environment (DPE)) recommends a staged planting approach, where more resilient canopy and groundcovers are established first before introducing a larger suite of species at a later date.

Assessment of the performance of a management zone must consider the practical limitations present and realistic time scales.

2. SITE ASSESSMENT AND DETERMINATION OF CONSTRAINTS

2.1 Flora and Fauna Values

The Subject Land is largely dominated by native vegetation, with a fairly consistent condition throughout. The disturbed area formally contained access tracks and other minor cleared areas (based on previous aerial imagery) and would have likely contained some existing weed populations. Weed populations were observed colonising the edges of the disturbance area as well as already established along the unnamed drainage line.

The Subject Land supports a variety of microhabitat features, including flowering and fruiting native trees and shrubs, an unnamed tributary of the Woronora River, hollow-bearing trees, large areas of exposed sandstone shelving, low cliffs and boulders, deep leaf litter and large woody debris. **Photograph 2.1** below shows the best condition vegetation above (west) of the disturbance area.

Photograph 2.1: Good condition native vegetation above the disturbance area

2.1.1 Condition of Vegetation

The vegetation of the Subject Land most strongly conformed to three distinct Plant Community Types (PCTs), with reference to the NSW BioNet Vegetation Classification database:

- Sydney Coastal Sandstone Gully Forest (PCT 3595);
    - This PCT is predominant to the west of the central drainage and includes the lands disturbed by clearing works.
- Sydney Hinterland Enriched Sandstone Bloodwood Forest (PCT 3619); and
    - This PCT is predominant to the east of the central drainage and is largely in an unmodified condition.
- Coastal Sandstone Riparian Scrub (PCT 1292).
    - This PCT occurred as a narrow band along the central drainage on the edge of the disturbance area.

None of these PCTs conformed to a Threatened Ecological Community (TEC) under the NSW BC Act or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Native vegetation was in overall good condition within the areas not impacted by the cleared works. The poorest condition vegetation was located along the lower (eastern) margin of the disturbed area. This area was observed to contain significant exotic weed populations as well as large areas impacted by migrated sediment from failed sediment control devices upslope, see **Photograph 2.2**.

Photograph 2.2: Poorest condition vegetation along the central drainage line

2.2 Habitat and Corridor Values

The Subject Land forms part of the vegetated corridor along the western bank of the Woronora River. This corridor allows for the movement of native fauna along the Woronora River into Heathcote National Park to the south.

2.3 Topsoil/Litter Quality

Based on the Espade soil mapping service, the Subject Land forms part of the Hawkesbury soils group, with soils described as "*shallow (<50 cm), discontinuous Lithosols/Siliceous Sands (Uc1.21, Uc6) associated with rock outcrop; Earthy Sands (Uc5.11, Uc5.23), Yellow Earths (Gn2.21) and locally deep sands on inside of benches and along joints and fractures; localised Yellow Podzolic Soils and Red Podzolic Soils (Dy4.11, Dr5.41, Dy5.21) associated with shale lenses; Siliceous Sands (Uc1.21) on narrow valley flats*", and field observations concur with this mapping (NSW Department of Planning and Environment, 2022).

Topsoil and litter quality in the Subject Land were variable, with continuous, deep litter present in the undisturbed vegetation in the east and west of the Subject Land and poorest within and adjacent to the cleared lands in the centre.

2.4 Hydrology/hydraulics

The Woronora River waterway is located approximately 100m to the east of the Subject Land.

An unnamed tributary of this waterway flows through the Subject Land from the south-west to north east. This waterway was observed to consist of a shallow, sandstone-lined drainage with minor pools and low falls. Low flow of water was observed but this waterway is ephemeral with flows restricted to periods of significant rainfall.

2.5 Stock and Herbivore Access

The Subject Land did not contain grazing livestock and no infrastructure (fencing) suitable to their keeping was present. Minor grazing by native macropods and exotic herbivores (European Rabbit (*Oryctolagus cuniculus*)) was apparent.

2.6 Drainage and Topography

The Subject Land has a moderate to strongly sloping easterly aspect, draining towards the Woronora River to the east. Local drainage in the centre east of the Subject Land is to the west, towards the central drainage line.

2.7 Rubbish and Debris Removal

No major areas of rubbish dumping were observed on the Subject Land during the site inspection by Anderson Environmental staff. Minor windblown rubbish and detached portions of sediment fencing used on the Subject Land were observed in places.

2.8 Fauna Habitat

A total of three habitat-bearing trees were observed on the Subject Land during surveys by Anderson Environmental staff (see **Figure 3.1**). These were all located on the periphery of the disturbed area and the uncleared portions of the Subject Land would support additional habitat trees. The removal of other habitat trees likely occurred as a result of the land clearing works.

An FFA was drafted for the former DA by Ambrose Ecological Service Pty Ltd in 2007. This report documented the presence of one threatened species on the Subject Land, the Powerful Owl (*Ninox strenua*) – listed as vulnerable under the BC Act. The Subject Land contains suitable roosting and breeding resources for this species.

Large areas of exposed sandstone sheeting and low cliffs are also present on the Subject Land, predominantly in the western portion (between David Road and the disturbed area) as well as along the western bank of the central drainage (see **Photograph 2.1**).

2.9 Current and Potential Future Threats to Native Vegetation

The primary threat to remnant native vegetation on the Subject Land is the recently cleared lands. These works have resulted in the removal of large areas of native vegetation, disturbance to native fauna habitat and resulted in the mobilisation of unconsolidated sediment which is smothering downslope vegetation and discharging to lower in the sub-catchment along the central drainage line. See **Photograph 2-3** below for an example of sediments impacts.

Photograph 2-3: Impacts of sediment discharge into remnant native vegetation downslope of the disturbance area

This central drainage is also the vector for existing weed populations on the Subject Land, primarily *Lantana camara* (Lantana). Large populations of this weed were observed along this drainage line during the site visit. Due to their size, they are considered likely to have been present prior to the clearing works. However, these works have provided opportunities for these populations to spread as well as for new populations of this and other weeds to become established on the Subject Land.

Activities by the landowner following development will also affect retained vegetation due to increased trampling of understory vegetation and the introduction of new exotic species in domestic gardens etc. Domestic pets will also introduce new predation pressures on resident native fauna.

3 SITE MANAGEMENT

3.1 Management Zones

For the purposes of vegetation management, the Subject Land has been divided into the following zones:

- **Zone 1**: Cleared and disturbed lands above the creekline;
- **Zone 2**: Portion of creekline directly downslope of the disturbance area; and
- **Zone 3**: 10 m buffer along creekline and 20 m buffer east and west of disturbance area into good condition native vegetation. This is the portion of adjacent vegetation most prone to secondary impacts from the cleared area.

The distribution of these management zones within the Subject Land is provided below in **Figure 3.1**.

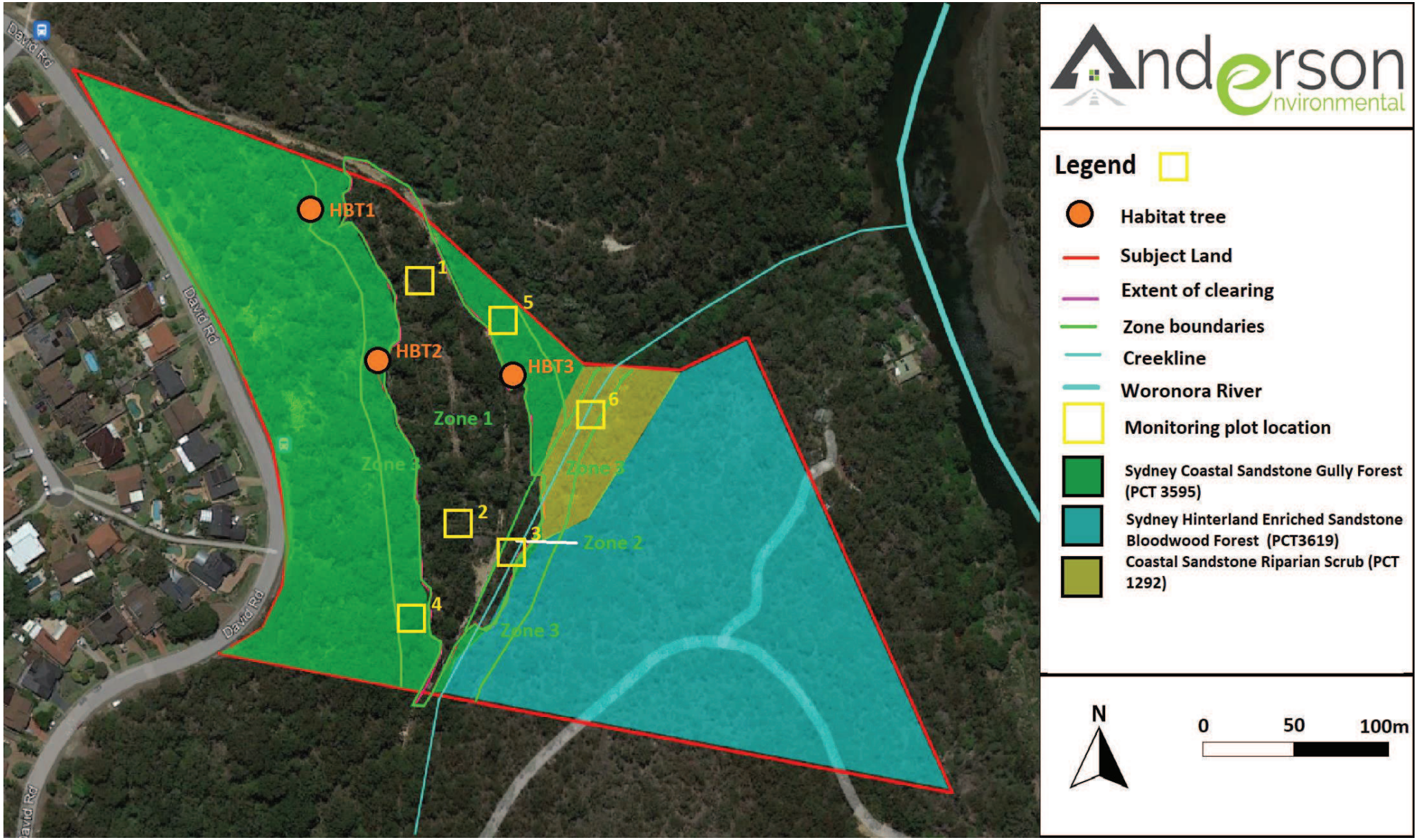


Figure 3.1: Vegetation management site plan

SIX Maps November 2022

3.1.1 Zone 1

Zone 1 comprises the majority of the cleared area. As per the Council letter, this area is required to be rehabilitated to a condition comparable to that prior to clearing.

Objectives of zone:

- To restore and rehabilitate cleared / degraded areas;
- Improve the overall quality of native vegetation and fauna habitat; and
- Control environmental and priority weeds.

Actions:

1. Initial actions within this management zone will be extensive slope stabilisation, laying of jute mat and cor logs and suppression of existing weed populations prior to planting of canopy, shrub and groundcovers;
2. Purchase and application of certified weed and pathogen free topsoil and mulch, from the same or similar plant community type;
3. Planting with the species and at the densities detailed in this plan;
4. Watering as required;
5. Following planting and ongoing maintenance, follow-up weeding will be undertaken as required in response to scheduled monitoring; and
6. Replacement planting throughout the duration of the VMP as required.
7. Respread piled rocks and any fallen timber to a natural level on the land for fauna habitat.

3.1.2 Zone 2

Zone 2 comprises the portion of the central drainage line that was also impacted by clearing works. This zone contains the most significant weed populations and is the primary vector for the spread of weed seed and propagules into areas downstream. This zone is to be the focus of primary weed control and regular ongoing weed management in addition to replanting with native vegetation.

Objectives of zone:

- To restore and rehabilitate cleared / degraded areas;
- To enhance and protect the area of intact native vegetation;
- Remove existing major weed populations;
- Suppress recovering and newly emerging weed populations;
- Improve the overall quality of native vegetation and fauna habitat; and
- Control environmental and priority weeds.

Actions:

1. Initial actions within this management zone will be extensive slope stabilisation, removal of major weed populations, laying of jute mat and cor logs and suppression of existing weed populations prior to planting of canopy, shrub and groundcovers;
2. Purchase and application of certified weed and pathogen free topsoil and mulch, from the same or similar plant community type;
3. Planting with the species and at the densities detailed in this plan;
4. Watering as required;
5. Following planting and ongoing maintenance, follow-up weeding will be undertaken

as required in response to scheduled monitoring;
6. Replacement planting throughout the duration of the VMP as required;
7. Monitor for recovering and newly emerging weed populations; and
8. Ongoing weed suppression as detailed in this plan.
9. Respread any timber from the clearing in a natural manner for fauna habitat.

3.1.3 Zone 3

Zone 3 comprises a 10m buffer either side of central drainage and a 20m buffer into retained native vegetation outside of the disturbance area. This is the portion of the retained native vegetation that will be most vulnerable to future weed colonisation and other impacts as a result of the clearing.

Objectives of zone:

- To enhance and protect the area of intact native vegetation;
- Remove existing major weed populations;
- Suppress recovering and newly emerging weed populations;
- Improve the overall quality of native vegetation and fauna habitat; and
- Control environmental and priority weeds.

Actions:

1. Initial actions within this management zone will survey of the zone for unidentified weed populations and control as required;
2. Monitor for recovering and newly emerging weed populations; and
3. Ongoing weed suppression as detailed in this plan.
4. Installation of 4 Powerful Owl nest boxes in the gully on suitable trees at suitable heights.

3.2 Proposed Regeneration/Revegetation Strategy, Extent of Subject Land to be Regenerated/Revegetated

3.2.1 Site Preparation

All bushland/native vegetation restoration shall be carried out to best practice standards as per Recovering Bushland on the Cumberland Plain: Best practice guidelines for the management and restoration of bushland (NSW Department of Environment and Conservation, 2005). Actions shall be consistent with related environmental legislation and policies, including, but not limited to the NSW BC Act, the Bio Act the WM Act, as well as the federal EPBC Act. As per the notice of intention to give a development control order, the goal of revegetation will be the "*restoration (to the extent reasonably possible) of the Premises to the condition they were in prior to the unauthorised works being undertaken*".

The disturbance area will be re-established with the native PCT identified at the Subject Land to the objectives and actions previously outlined, and in a manner that is suited to the natural topography and hydrology of the Subject Land. This will require significant slope stabilisation followed by wide-scale replanting of these areas as detailed in this plan.

Prior to the planting of tubestock in the disturbance areas, the unconsolidated soil of the newly formed landform will need to be stabilised with jute matting and cor logs. Jute matting rolls are to be run across slope and pined with wire pins as required, with additional reinforcement

in areas subject to significant water flow. Cor logs are to be placed at five-meter intervals along drainage and secured with star pickets. Respreading of piled rock and timber to a natural density.

These are general slope stabilisation measures and the actions detailed in this plan should be read in conjunction with the geotechnical plan and accommodate whatever stabilisation measures are recommended by this plan.

3.2.2 Weed Control

All priority weeds must be eradicated within the first year of works, across all management zones.

Other environmental weeds must be maintained to <10% cover within the first year and the continually reduced for the life of the VMP works. At the end of the term of the VMP, environmental weeks must contribute to <5% ground cover.

It is envisaged that some herbicides may be required for weed control, although non-chemical methods are preferred wherever possible. In areas within and adjacent to standing water along the central drainage the use of herbicides and pesticides must be restricted to only those that do not bioaccumulate and are safe for use in close association with a waterway. Use of chemicals are not to be used during wet and windy conditions.

All weeds present on the Subject Land, their statuses under the Bio Act and recommended control methods are provided in **Appendix 2**.

3.2.3 Revegetation

Revegetation activities are to be undertaken by a professional bush regenerator with a minimum of five years practical experience in bushland restoration and management on the Cumberland Plain. The bush regenerator is required to hold a Certificate IV in Conservation and Land Management or equivalent tertiary qualifications, as a minimum.

Two methods of planting native plants are usually considered. These are:

a) Direct seeding; and
b) Planting established seedlings.

The planting of seedlings (tubestock) is often the best method because the plants to be planted already have already germinated and have with well- developed root systems so that establishment is much more effective. For the Subject Land, most of the plants should be tubestock sourced from a local native nursery to ensure the plants are seasoned to local conditions specialising in plants of the PCTs present on the Subject Land. Grass species may be direct seeded as recommended. The recommended numbers of trees, shrubs, herbs and grass mix are detailed within the zones' management requirements and shown in **Table 3.1** and **Table 3.2**. Tubestock must be inspected at the time of purchase and on receipt, to ensure they are weed and pathogen free, and quality specimens that will help achieve the 90% plant survival rate.

Weed matting/ native mulch should be used to prevent weeds encroaching on plantings. Stiff

tree guards are to be used to protect plantings from predation from grazing fauna species. Guards must be removed as the plants establish. All waste associated with the regeneration actions must be removed over the course of the VMP.

3.2.3.1 Planting Densities

The extent of the zones to be regenerated/revegetated is shown in **Table 3.1**. The following planting numbers are to be adhered to within the zone 1 and zone 2:

- Trees planted at 1 per 20 m²;
- Shrubs at 2 per 10 m²; and
- Groundcovers at 3 plants per 1 m².

Table 3.1: Planting density per zone

	Zone 1	Zone 2
Area (m^2)	11,100	840
Number of plants		
Trees	555	42
Shrubs	2,220	84
Grasses/ sedge	16,650	1,260
Herbs/ scramblers	16,650	1,260
Totals	36,075	2,646
Grand total	38,721	

3.2.3.2 Proposed Species Mix

Only native species that are consistent with the identified PCT can be used in this planting program. A proposed species mix is provided in **Appendix 3**. Most of these species should be utilised as they will eventually help create structure and diversity that will contribute to functional habitat. The spread of each species over the site would be fitted to prevailing site conditions. The patchwork distribution and particular characteristics and requirements of some species would tend to restrict their densities to suit site conditions. In some cases, only a few individuals may be allowable.

All tubestock plants to be supplied for this job will be sourced from locally collected seeds, from similar soil landscape conditions and plant communities within the Sutherland Shire LGA. Additionally, it has been shown that many native species readily recolonise sites following disturbances. Therefore, it can be anticipated that additional local native species although not directly part of the revegetation planting will likely become established at the same time due to their colonising characteristics and/or presence in the soil seed bank, or seed fall from surrounding vegetation.

3.2.3.3 Planting Program

After the initial stage of weed removal and site stabilisation, the required planting (subject to review by the bush regenerator) will take place. The tubestock will be planted and watered. The larger shrubs and small trees will be staked and tied and protected with stiff tree guards. A slow-release fertiliser will be required to be used on this site. Water retaining crystals could also be useful on this site.

Watering. There are differing opinions on watering at the time of planting and post-planting watering. Watering at the time of planting is advantageous to help overcome any transplant shock, to help remove air pockets from the roots and establish good root to soil contact. Follow up watering after the day of planting is not usually necessary if good quality, hardened-up, indigenous plant stock, adapted to local conditions, has been planted correctly (no potting media exposed) into a well-prepared, weed free site at the appropriate time (particularly if there is a reasonable expectation of rainfall). Direct seeding operations rely upon the build-up of moisture within the soil that results from weed control activities to support the germination and establishment of seedlings. Therefore, direct seeding should be timed to coincide with predictable, follow-up rainfall.

Watering will be undertaken initially and the site checked every week to two weeks depending on local rainfall patterns. No need to visit the site for watering will be required if there is regular rainfall over the first 2-3 months after planting. The planting of seedlings should also be timed for these conditions. During unseasonal or dry weather, the plants should be watered 2- 3 times a week. During periods of heavy rain, no watering will be required. The weather conditions will determine the amount and frequency of watering which will be decided upon by the qualified bush regenerator as time proceeds through the project to achieve establishment and 90% plant survival performance criteria.

3.2.3.4 Post-planting Monitoring

The main monitoring aspect of the present revegetation project will be weed control and removal as well as establishment of natives in zones 1 and 2. Weed control is essential for the success of any regeneration project.

The finely divided, dense roots of many weeds, especially grasses, more than effectively compete with tree and shrub roots for nutrients, and more importantly, water. Weed control will be carried out in perpetuity. Any dead or dying native plants detected during the monitoring program will be replaced by the same species. During periods of prolonged drought, the plants may require to be watered artificially and inspections may have to be more frequent.

3.3 Post Development Management

3.3.1 Weed Control

The Subject Land contains overall low weed density (with the exception of the banks of drainage line (zone 2) discussed in **Section 2.9**) which require primary control (mechanical removal) and ongoing suppression using mechanical and chemical means.

The performance criteria for the removal of the weeds are for the suppression to at least 5% priority weeds and 10% of environmental weeds (as a total percentage of vegetation). The inspections and monitoring detailed in this plan aim to maintain these proportions throughout the life of the plan.

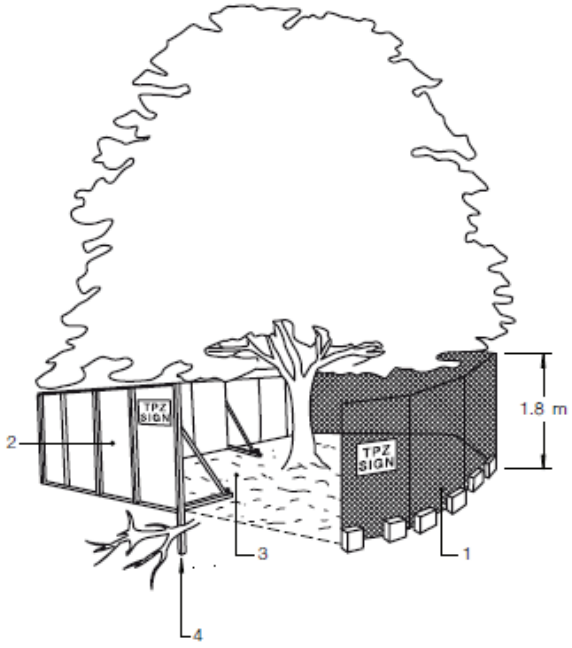
3.4 Fauna Management

This section addresses the fauna management requirements detailed in DA consent condition 48.

3.4.1 Tree Protection Requirements

If site stabilisation works (or material stockpiling etc.) are required in the vicinity of any trees on the Subject Land, the following tree protection measures are to be implemented (as per Australian Standard (AS) 4970 – 2009 (+A1):

The primary protection measure is the erection of boundary fencing and signage around the calculated Tree Protection Zone (TPZ). See **Figure 3.2** below.



LEGEND:
1 Chain wire mesh panels with shade cloth (if required) attached, held in place with concrete feet.
2 Alternative plywood or wooden paling fence panels. This fencing material also prevents building materials or soil entering the TPZ.
3 Mulch installation across surface of TPZ (at the discretion of the project arborist). No excavation, construction activity, grade changes, surface treatment or storage of materials of any kind is permitted within the TPZ.
4 Bracing is permissible within the TPZ. Installation of supports should avoid damaging roots.

Figure 3.2: Example of TPZ fencing and signage design from Section 4.4 of AS4970 – 2009 (+A1)

Typically, this fencing and signage will prevent any intrusion within the TPZ during works and would be removed following the completion of works. However, works such as the installation of underground services or scaffolding to support construction for a nearby structure may be required to intrude within a TPZ, if no alternatives are practicable.

Intrusion within a TPZ is considered to be minor (less than 10% of the TPZ and outside of the SRZ) or major (greater than 10% or within the SRZ). Minor encroachment typically does not require further assessment; however, under the standard an arborist is required to be consulted prior to any TPZ encroachment, to certify that no significant impact on the tree is likely. A major encroachment will require additional works such as root mapping to determine the location of all portions of the tree within the proposed works area. Any such works must be approved by an arborist and it must be demonstrated that the tree will remain viable following these works.

Any intrusion within a TPZ must be compensated for through the extension of the TPZ on another face, commensurate with the area impacted. For example, if a minor encroachment (10%) is required on one face, then the TPZ is to be extended by 10% on the opposite face. AS4970 – 2009 (+A1) also lists tree protection measures for such works. These include:

- Branch protection for trunks and limbs within the swing range of machinery;
- Ground mulching and placement of ground pads to protect the upper root zone;
- Hand digging of trenches within the TPZ to minimise damage to any roots present; and
- Acceptable pruning of trees within areas required for the erection of scaffolding.

All works within a TPZ are to be supervised and certified by an arborist. The measures described above are not exhaustive and all protection requirements described in AS4970 – 2009 (+A1) must be considered prior to the carrying out of any such works.

4 SITE AND VEGETATION MANAGEMENT

4.1 SEDIMENT AND EROSION CONTROL

As discussed in **Section 2.9** above, the clearing works have resulted in the destabilisation of large areas of soil which have migrated downslope and into the central drainage line. Significant sediment control devices were observed during the site visit; however, due to heavy rainfall events prior to the site visit, these were observed to have failed in several locations, see **Photograph 4.1**.

Photograph 4.1: Failed sediment control device on the Subject Land

Significant additional sediment controls will need to be installed and maintained to manage sediment outflows from the disturbed area. These controls should be governed by the geotechnical report and managed under a dedicated sediment control plan.

4.2 VEGETATION MONITORING AND REPORTING REQUIREMENTS

To chart vegetation recovery over time and determine if the current management regime is achieving the stated aims of this plan regular monitoring is required. Monitoring is to consist of comprehensive floristic surveys of all strata of flora present (overstory, shrub and ground).

Monitoring of vegetation is to be conducted through 5x5m ($25m^2$) quadrats established at the commencement of the on-site works. There are to be six quadrats in total, located as shown in **Figure 3.1**. Quadrats shall be identified using permanent, durable markers (star pickets).

Monitoring is to consist of comprehensive floristic surveys of all strata of flora present (overstory, shrub and ground). The following data is to be collected during these surveys:

- FPC for each stratum. As a percentage of the total area, percentages will not add up to 100% as strata overlay/underlay each other;
- A complete native species census from within the quadrat;
- Total diversity of exotic weeds within the quadrat;
- FPC of exotic weeds within the quadrat; and
- A representative photograph from the north-east corner of the plot taken during each inspection. This is an important visual reference to chart vegetation recovery over time.

Table 4.1 below shows the benchmark values for the PCTs on the Subject Land from the NSW BioNet Vegetation Classification database.

Table 4.1: Target values for PCTs on the Subject Land

Strata	Species diversity	FPC (zone 1)	FPC (zone 2)	FPC (zone 3)
PCT 3595				
Tree	7	51	51	51
Shrub	27	71	71	71
Understory	23	42	42	42
PCT 3619				
Tree	6	-	-	60
Shrub	23	-	-	55
Understory	24	-	-	32
PCT 1292**				
Tree	6	-	-	60
Shrub	23	-	-	55
Understory	24	-	-	32

***Benchmark data for this PCT is not listed in the BioNet Vegetation Classification database, values for PCT 3619 have been used*

All maintenance and monitoring results should be documented in regular reports to Council. These reports are to contain:

- Date and times of site visits;
- A table totalling person hours for each task undertaken on site;
- Methods of weeding undertaken and chemicals used;
- Methods of assisted natural regeneration techniques used to support the germination of natives in disturbed areas;
- Results of vegetation monitoring quadrats surveys. This to include data describing the vegetation diversity (number of species) and estimated percentage cover of all species present as well as total weed species percentage cover. A representative photo of each quadrat from each monitoring period is also to be provided in each report;
- Details of weed monitoring and controls across the whole site (if they conform to the target densities and what controls were enacted (if required)). As well as recommendations for the following year's works if weed densities are above the target; and
- Any other notable observations, e.g., naturally fallen trees, presence of dumped materials or dieback of native vegetation with no obvious cause.

All maintenance and monitoring requirements are set out in the works and time chart in **Section 5**.

5 WORKS AND TIME CHART

The following time chart designates the various tasks of the project. The tasks are set out in the order with which they would be undertaken. Costs are estimates only based on material and labour costs. **Appendix 4** provides a Gantt chart for these works overtime.

Table 5.1: Works and time chart

Task	Zone (s)	Timing	Action by	Estimated costs are not provided due to the current inflationary changes in pricings
Establishment phase				
Appointment of relevant contractors. Appointment of a suitably qualified Bushland Regenerator to implement the VMP. Confirm engagement to Council, providing evidence of meeting the stated requirements	N/A	Prior to commencement of works	Landowner	
Site stabilisation works. As per the findings of the geotechnical report and governed under a dedicated sediment management plan and/or other relevant plans	N/A	Prior to commencement of vegetation management works	Landowner	
Primary weed control. Eradicate priority weeds from management zones by the end of the first year of this VMP and then for the life of the VMP / in perpetuity. Maintain environmental weed cover to <10% within the first year	All	Follow up weeding are likely to be required once a month until weeds are at negligible levels. Site visits may be more frequent if determined necessary.	Bush regenerator	
Revegetation, Owl Nest Boxes and respreading piled rocks and timber on the cleared area in a natural fashion.	1 and 2	Within the first year for initial planting, then as required	Landowner and bush	

Task	Zone (s)	Timing	Action by	Estimated costs are not provided due to the current inflationary changes in pricings
Complete revegetation relevant zones by suitably qualified bush regeneration contractor with representative species of PCT present			regenerator	
Monitoring quadrat installation and base line surveys. Installation of fixed monitoring locations comprising of one monitoring point each zone. Monitoring points are to comprise of star pickets with high visibility tape or bright yellow cap with identifying number and location recorded using a GPS.	All	Following revegetation works	Bush regenerator/ ecologist	
Year 1				
Weed control and monitoring Maintain priority weed cover to <5% for years 2-5 and in perpetuity	All	Monthly	Bush regenerator	
Planting maintenance All plantings should be watered and maintained by a suitably qualified bush regenerator contractor, with extra watering visits planned during times of predicted low rainfall. Any deceased trees plantings will be replaced at a 1:1 ratio. Shrubs and ground covers are to be maintained at 90% survivability, or replacement planting is to occur	1 and 2	As required Watering weekly for 12 weeks unless adequate rain occurs	Landowner and bush regenerator	
Inspections of vegetation monitoring quadrats and reports to Council	All	At the end of year 1	Bush regenerator/ ecologist	
Year 2				

Task	Zone (s)	Timing	Action by	Estimated costs are not provided due to the current inflationary changes in pricings
Weed control and monitoring Maintain priority weed cover to <5% for years 2-5 and in perpetuity	All	Quarterly	Bush regenerator	
Planting maintenance	1 and 2	As required	Landowner and bush regenerator	
Inspections of vegetation monitoring quadrats and reports to Council	All	At the end of year 2	Bush regenerator/ ecologist	
Years 3-5				
Weed control and monitoring Maintain priority weed cover to <5% for years 2-5 and in perpetuity	All	Biannually	Bush regenerator	
Planting maintenance	1 and 2	As required	Landowner and bush regenerator	
Inspections of vegetation monitoring quadrats and reports to Council	All	Annually	Bush regenerator/ ecologist	

Note these costs are at the time of writing. Historically costs for this work increases at 10% per year. As such this should be taken into consideration for budgeting

**This estimate does not include items outside of Anderson Environmental's control, such as contractor rates. It also does not consider works done by the current landowner*

6 KEY PERFORMANCE CRITERIA

Table 6.1: Key performance criteria

Task	Within 6 months	Year 1	Year 2	Year 3	Year 4	Year 5
Site stabilisation	Enact sediment control and soil stabilisation works	Exposed soil secured with minimal sediment runoff and suitable for replanting works				
Installation of monitoring plots	Star pickets positioned and identified clearly	Star pickets positioned in ground and identified clearly				
Baseline monitoring	Photo monitoring and 5x5m floristic plot for each monitoring location	N/A				
Weed Control	No priority weeds within zones	No priority weeds within zones	No priority weeds within zones	No priority weeds within zones	No priority weeds within zones	No priority weeds within zones
	No more than 10% environmental weed coverage in zones	No more than 10% environmental Weed coverage in zones 1 and 2 No more than 5% coverage pf environmental weeds in zone 3 and 4	No more than 10% environmental Weed coverage in zones 1 and 2 No more than 5% coverage of environmental weeds in zone 3 and 4	No more than 10% environmental Weed coverage in zones 1 and 2 No more than 5% coverage of environmental weeds in zone 3	No more than 5% environmental Weed coverage in zones 1-4	No more than 5% environmental Weed coverage in zones 1-4
Revegetation works (zones 1 and 2)	Planting undertaken within 6 months of commencement	90% of plantings are healthy and intact	90% of plantings are healthy and intact	90% of plantings are healthy and intact	90% of plantings are healthy and intact	90% of plantings are healthy and intact
		10% native vegetation coverage	25% native vegetation coverage	50% native vegetation coverage	75% native vegetation coverage	100% native vegetation coverage
		Achievement of 50% of PCT benchmark* for native cover and Species richness, for all strata	Achievement of 60% of PCT benchmark* for native cover and Species richness, for all strata	Achievement of 65% of PCT benchmark* for native cover and Species richness, for all strata	Achievement of 70% of PCT benchmark* for native cover and Species richness, for all strata	Achievement of 75% of PCT benchmark* for native cover and Species richness, for all strata
Reporting	Annual reports to Council	Annual report to Council	Annual report to Council	Annual report to Council	Annual report to Council	Annual Report to Council

See **Table 4.1*

7 REFERENCES

Anderson Environmental Pty Ltd. (2017). *Flora and Fauna Assessment for Stage 1 of a Proposed Development at Lot 188 DP: 755952 Old Southern Road South Nowra Shoalhaven City Council Local Government Area.* Baulkham Hills: Anderson Environmental Pty Ltd.

Anderson Environmental Pty Ltd. (2021). *Clearance Supervision Letter Old Southern Road South Nowra (Lot 188 DP 755952) Shoalhaven City Council Local Government Area.* Baulkham Hills: Anderson Environmental Pty Ltd.

Department of Transport and Main Roads QLD. (2010). *Fauna Sensitive Road Design Manual. Volume 2: Preferred Practices. 9: Case Studies.* Brisbane: Department of Transport and Main Roads.

NSW Department of Environment and Conservation. (2005). *Recovering Bushland on the Cumberland Plain Best Practice Guidelines for the Management and Restoration of Bushland.* Sydney: NSW Department of Environment and Conservation.

NSW Department of Environment, Climate Change and Water. (2011). *Cumberland Plain Recovery Plan.* Sydney: NSW Department of Environment, Climate Change and Water.

NSW Department of Planning and Environment. (2022, November 3). *eSPADE V2*. Retrieved from NSW Department of Planning and Environment: https://www.environment.nsw.gov.au/eSpade2WebApp

NSW Department of Primary Industries. (2022, June 24). *NSW Weedwise*. Retrieved from NSW Department of Primary Industries: https://weeds.dpi.nsw.gov.au/

NSW Rural Fire Service. (2019). *Planning for Bushfire Protection. A Guide for Councils, Planners, Fire Authorities and Developers.* Granville: NSW Rural Fire Service.

8 APPENDIX 1: DISCLAIMER AND LIMITATION OF LIABILITY

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9 APPENDIX 2: WEED SPECIES PRESENT AND CONTROL METHODS

Table A2.1: Weed species present and control methods

Scientific name	Common name	Biosecurity duty*	Control methods**
Ageratina adenophora	Crofton Weed	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray
Anagallis arvensis	Scarlet Pimpernel	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray
Asparagus aethiopicus	Sprenger's Asparagus	**Prohibition on certain dealings** Must not be imported into the state, sold, bartered, exchanged or offered for sale	Hand weeding of small populations. Remove all roots **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray
Avena sativa	Oats	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray
Bidens pilosa	Farmer's Friends	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray
Cenchrus clandestinum	Kikuyu Grass	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray
Centaurium sp.	Centuary	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray
Cirsium vulgare	Spear Thistle	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray
Conyza bonariensis	Fleabane	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray
Cyperus eragrostis	Umbrella Sedge	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water

Scientific name	Common name	Biosecurity duty*	Control methods**
			Comments: Spot spray
Hypochaeris radicata	Flatweed	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray
Lantana camara	Lantana	**Prohibition on certain dealings** Must not be imported into the state, sold, bartered, exchanged or offered for sale.	Mechanical. Hand pulling of small infestations. **Glyphosate 360 g/L (Various products)** Rate: 1.0 L per 100 L of water Comments: Actively growing with full foliage. Avoid summer stress.
Medicago polymorpha	Burr Medic	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray
Medicago sp.	Medic	General	Mechanical. Hand pulling of small infestations. **Glyphosate 360 g/L (Various products)** Rate: 1.0 L per 100 L of water Comments: Actively growing with full foliage. Avoid summer stress.
Modiola caroliniana	Red Mallow	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray
Paspalum dilatatum	Common Paspalum	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray
Plantago lanceolata	Lamb's Tongues	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray
Phytolacca octandra	Inkweed	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray
Rumex sagittatus	Turkey Rhubarb	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray
Senecio madagascariensis	Fireweed	**Prohibition on certain dealings** Must not be imported into the state, sold, bartered,	Mechanical: Hand weeding of small infestations **Metsulfuron-methyl 600 g/kg** Rate: 10 g in 100 L of water Comments: Spot spray application

Scientific name	Common name	Biosecurity duty*	Control methods**
		exchanged or offered for sale	
Solanum nigrum	Blackberry Nightshade	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray
Sonchus oleraceus	Common Sow Thistle	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray
Trifolium repens	Clover	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray
Verbena sp.	Purpletop	General	Hand weeding of small populations **Glyphosate 360 g/L (Various products)** Rate: One part product to 50 parts water Comments: Spot spray

**As per the Biosecurity Act 2015 for the Greater Sydney management region*
***As per recommendations for species (where available) from NSW Weedwise database* (NSW Department of Primary Industries, 2022)

Note: Status of weeds on any site is ever changing and as such more weeds may regenerate through time. All chemicals should be used strictly according to individual directions. Bioactive herbicides should be used near any watercourse or gully line. All herbicides should be used with proper personal protective equipment. Herbicides should have herbidye, penetrants and wetters for best effective kill. Due to the risk to non-target species professionals experienced in bush regeneration should be the only persons undertaking this work.

10 APPENDIX 3: RECOMMENDED PLANTING LIST

Table A3.1: Recommended planting list (PCT 3595)

Strata	Scientific name	Common name
Upper stratum	*Allocasuarina littoralis*	Black Sheoak
	Angophora costata	Sydney Red Gum
	Banksia serrata	Old Man Banksia
	Ceratopetalum gummiferum	Christmas Bush
	Corymbia gummifera	Red Bloodwood
	Eucalyptus piperita	Sydney Peppermint
	Eucalyptus sieberi	Silvertop Ash
	Eucalyptus umbra	Broad-leaved White Mahogany
Middle stratum	*Acacia linifolia*	Flax Wattle
	Acacia suaveolens	Sweet Scented Wattle
	Acacia terminalis	Sunshine Wattle
	Acacia ulicifolia	Prickly Moses
	Banksia ericifolia	Heath-leaved Banksia
	Banksia spinulosa	Hairpin Banksia
	Bauera rubioides	River Rose
	Boronia ledifolia	Sydney Boronia
	Bossiaea heterophylla	Variable Bossiaea
	Dillwynia retorta	Eggs and Bacon
	Dodonaea triquetra	Broad-leaved Hop Bush
	Elaeocarpus reticulatus	Blueberry Ash
	Epacris longiflora	Fuchsia Heath
	Epacris pulchella	Coral Heath
	Grevillea buxifolia	Grey Spider Flower
	Hakea dactyloides	Finger Hakea
	Hakea sericea	Silky Hakea
	Lambertia formosa	Mountain Devil
	Leptospermum polygalifolium	Tantoon
	Leptospermum trinervium	Paperbark Teatree
	Lomatia silaifolia	Crinkle Bush
	Persoonia levis	Broad-leaved Geebung
	Persoonia pinifolia	Pine-leaved Geebung
	Petrophile pulchella	Conesticks
	Phyllanthus hirtellus	-
	Pimelea linifolia	Slender Rice Flower
	Platysace linearifolia	Carrot Tops
	Pultenaea daphnoides	Large-leaf Bush-pea
	Pultenaea stipularis	Handsome Bush-pea
	Woollsia pungens	Snow Heath
Ground stratum	*Actinotus helianthi*	Flannel Flower
	Actinotus minor	Lesser Flannel Flower
	Anisopogon avenaceus	Oat Speargrass
	Austrostipa pubescens	Spear Grass
	Blechnum cartilagineum	Gristle Fern
	Blechnum nudum	Fishbone Waterfern
	Cheilanthes sieberi	Poison Rock Fern
	Dampiera stricta	Blue Dampiera
	Dianella caerulea	Blueberry Lily
	Dianella revoluta	Blueberry Lily
	Dichondra repens	Kidney Weed
	Entolasia marginata	Bordered Panic
	Entolasia stricta	Wiry Panic
	Gonocarpus teucrioides	-
	Hardenbergia violacea	False Sarsaparilla

Strata	Scientific name	Common name
	Hibbertia dentata	Trailing Guinea Flower
	Imperata cylindrica	Blady Grass
	Lepidosperma laterale	Variable Swordsedge
	Lomandra filiformis	-
	Lomandra longifolia	Spiny-head Matt-rush
	Lomandra obliqua	Fish Bones
	Macrozamia communis	Burrawang
	Microlaena stipoides	Weeping Meadow Grass
	Opercularia aspera	Coarse Stinkweed
	Patersonia glabrata	Purple Flag
	Pomax umbellata	Pomax
	Pteridium esculentum	Bracken Fern
	Scaevola ramosissima	Snake Flower
	Smilax glyciphylla	Sweet Sarsaparilla

11 APPENDIX 4: GANTT CHART

Table A4.1: Gantt chart

	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Zone 1-2												
Year 1												
Site Stabilisation works												
Establishing monitoring quadrats												
Weed control												
Tubestock planting												
Tubestock watering												
Year 2												
Weed control												
Years 3-5												
Weed control												
Zone 3												
Year 1												
Establishing monitoring quadrats												
Weed control												
Year 2-5												
Weed control												
N/A												
Year 1												
Appointment of contractors												
Monitoring												

	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Reports to council												
Year 2												
Monitoring												
Reports to council												
Years 3-5												
Monitoring												
Reports to council												

12 APPENDIX 5: SITE PLAN

Figure A5.1: Site plan