

A decorative background element on the left side of the page, consisting of a series of concentric, irregular contour lines in a light grey color, resembling a topographic map. The lines are more densely packed in some areas and more spread out in others, creating a sense of depth and terrain.

Ivanhoe Estate: Biodiversity Management Plan

Frasers Property Australia Pty Ltd

DOCUMENT TRACKING

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Template 2.8.1

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Abbreviations

Abbreviation	Description
BC Act	<i>Biodiversity Conservation Act 2016</i>
BMP	Biodiversity Management Plan
DPIE	Department of Planning, Industry and Environment
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ELA	Eco Logical Australia Pty Ltd
EESG	Environment, Energy and Science Group

Abbreviation	Description
FFA	Flora and Fauna Assessment
NRAR	Natural Resources Access Regulator
OEH	Office of Environment and Heritage
PCT	Plant Community Type
SSD	Stage Significant Development
TEC	Threatened Ecological Community
VMP	Vegetation Management Plan
WMP	Weed Management Plan

1. Introduction

Eco Logical Australia Pty Ltd (ELA) was engaged by Frasers Property Australia Pty Ltd to prepare a Biodiversity Management Plan (BMP) for the proposed redevelopment of the Ivanhoe Estate, Macquarie Park (Figure 1). The proposed redevelopment will include the following works:

- site preparation works, including removal of trees, demolition, bulk earthworks and excavation
- construction of new roads, bridge over Shrimptons Creek and new road connection to Lyonpark Road
- construction of two residential apartment buildings (Building A1 and Building C1) with basement car parking:
 - Building A1 with 269 apartments, 233 car parking spaces and a child centre
 - Building C1 with 471 apartments and 346 car parking spaces
- landscaping and public domain works
- amalgamation and subdivision

The proposed works were given consent by the Minister of Planning and Public Spaces under section 4.38 of the State *Environmental Planning and Assessment Act 1979* (EP&A Act). This BMP addresses the consent conditions issued in State Significant Development (SSD) application SSD 8903. This document covers items (i) and (ii). Items (iii) to (vi) are covered in the Ivanhoe Estate Vegetation Management Plan (ELA, 2021)

Biodiversity Management Plan

B47. *Prior to the commencement of the relevant works, the Applicant must prepare a Biodiversity Management Plan (BMP) for the site. The BMP must be consistent with the recommendations contained in the Biodiversity Assessment Report prepared by Eco Logical, dated October 2019, and be prepared by an appropriately qualified person, in consultation with Council, the EESG and the Natural Resources Access Regulator (NRAR). The BMP must include:*

- i pre-clearance surveys and clearance supervision of hollow bearing trees***
- ii the replacement of all removed hollows with artificial nest boxes or the removed hollows at a ratio of 1:4 (removed/replaced), with installation occurring within the retained vegetation adjacent to Shrimptons Creek***
- iii a Vegetation Management Plan for the long-term management of all vegetation on the site, including Shrimptons Creek and the Epping Road ecological corridor***
- iv the use of local provenance species appropriate for the threatened ecological communities and plant community types present on the site***
- v appropriate monitoring and maintenance periods of the vegetation to ensure its long-term viability following the completion of the rehabilitation works for ten (10) years***
- vi a Weed Management Plan***

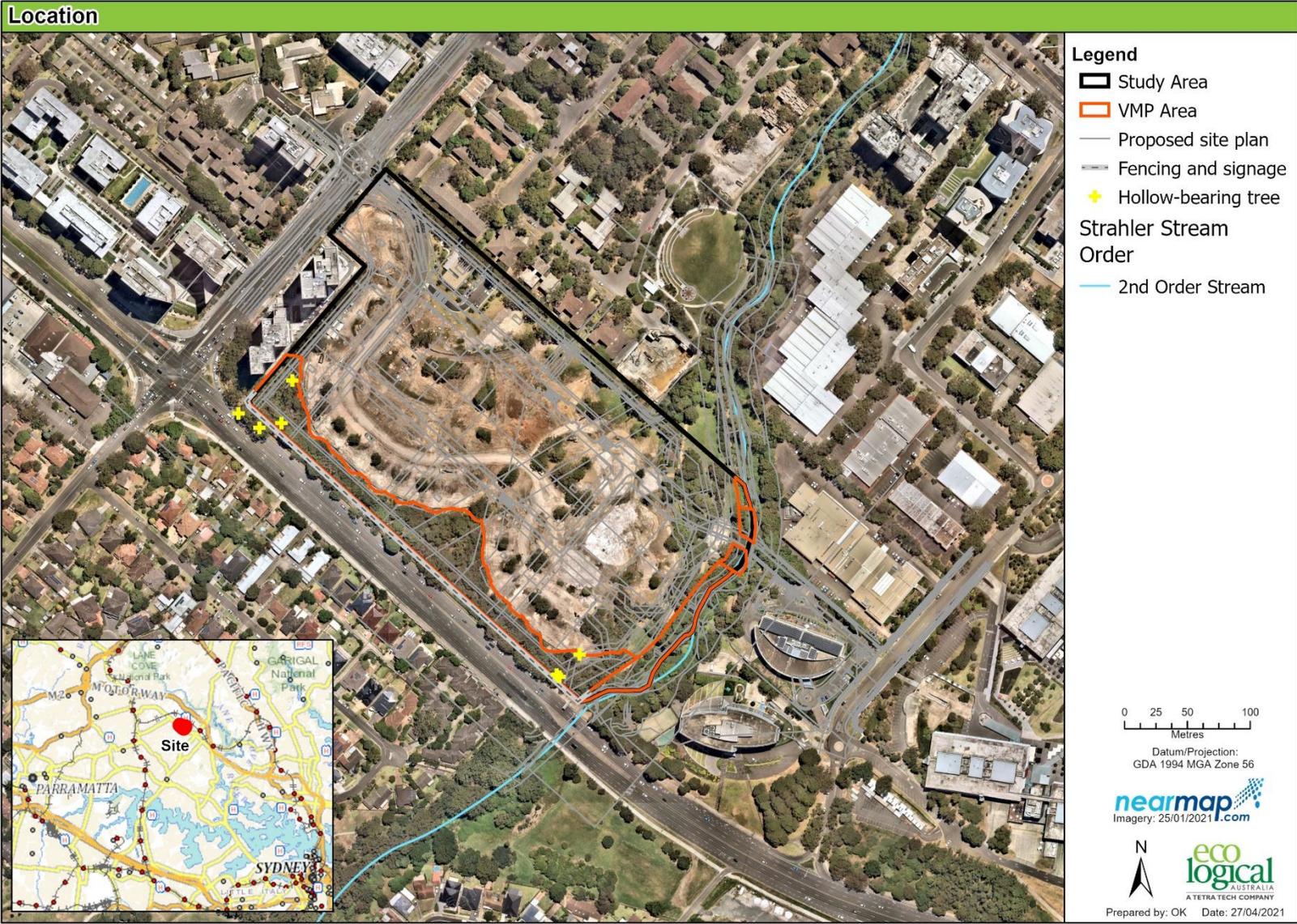


Figure 1: Study area including the location of known habitat trees

2. Implementation and Operation

2.1 Biodiversity Management Program

Safeguards to mitigate potential biodiversity impacts are detailed in Table 1, together with who is responsible for their implementation and at what stage of the works.

Persons responsible for the implementation:

- Project manager – PM
- Site Supervisor – SS
- Site ecologist – SE
- All site personnel – All

Table 1: Biodiversity Management Plan

Environmental Action	Timeframe	Monitoring	Responsible Person
Objective: General			
All project staff and contractors will be inducted on the biodiversity sensitivities of the work site(s) and relevant safeguards prior to commencement.	Prior to works	Induction Records	PM
Vegetation proposed for retention within the Vegetation Management Plan area will be protected and delineated with 'no-go zones' where applicable (Figure 1). Physical barriers (fencing) should be erected around these areas as to prevent any unintentional damage to the vegetation within these zones. These areas include the vegetation located along Shrimptons Creek and the Epping Road ecological corridor. Other trees to be retained are to be protected during all works in accordance with AS4970-2009 Protection of Trees on Development Sites. At a minimum a 1.8m high chain-wire fence is to be erected at least three metres from the base of each tree and is to be in place prior to works commencing. All areas within the root protection zone are to be mulched with composted leaf mulch to a depth of not less than 100 mm. A sign is to be erected indicating the trees are protected. The installation of services within the root protection zone is not to be undertaken without prior consent from the Department of Planning, Industry and Environment (DPIE).	Prior to works	Weekly checklist, after rainfall or changed in site conditions	PM, SS

Environmental Action	Timeframe	Monitoring	Responsible Person
DPIE will be notified immediately of any complaints relating to environmental management of biodiversity issues.	As required	Complaint register	PM, SS, SE
Objective: Reduce harm to biodiversity			
<p>A pre-clearance survey is to be conducted by a suitably qualified and experienced ecologist in order to identify habitat features and any residing fauna within the impact area prior to any tree felling activities. Habitat features include hollows, stags, nests and fissures within the bark of a tree. Survey efforts during the previous Flora and Fauna Assessment (FFA) (ELA 2018) identified several hollow-bearing trees in the VMP area, but none in the development footprint. Further investigation is to be undertaken to confirm whether any habitat trees exist within the development footprint and whether any fauna may be using them prior to the trees being felled.</p> <p>A pre-clearance survey should be conducted one week prior to any tree felling activities. The pre-clearance survey will collect the following information:</p> <ul style="list-style-type: none"> • Determine the number of habitat features present • Record location, size and type of habitat feature • Check for fauna present in the zone of disturbance and scare or remove them before beginning operations • Mark all habitat features which require an ecologist on site to supervise their removal 	Prior to the commencement of work	Weekly checklist	SE
Prior to the removal of native vegetation within the development site, collectable floristic material such as native seed stock and woody fruit of all native species should be collected for use in landscaping and revegetation works within the development site. This should be undertaken by a suitably qualified and experienced ecologist or bush regenerator. Refer to Appendix G for more information.	Prior to the commencement of work	Weekly checklist	SE
<p>When removing habitat trees the following methodology is to be implemented to minimise any impacts to fauna. In order to minimise impacts to fauna:</p> <ul style="list-style-type: none"> • Vegetation clearing will not be undertaken until a pre-clearance survey has been conducted by a suitably qualified and experienced ecologist. The results of the pre-clearing survey must be communicated to the SS by a qualified ecologist prior to vegetation clearing occurring. The pre-clearing survey will include the inspection and demarcation of all habitat features within the vegetation to be removed 	Prior to the commencement of work	Weekly checklist	PM, SS, SE

Environmental Action	Timeframe	Monitoring	Responsible Person
<ul style="list-style-type: none"> • Ideally, habitat trees should be felled outside of spring as this aligns with the breeding season for many species. This will reduce the likelihood of impacting fauna that may be bearing young • The clearing of vegetation will also be undertaken in a two stage approach. Both stages will be supervised by a suitably qualified and experienced ecologist. The two stages are as follows: <ul style="list-style-type: none"> ○ Stage 1 of the clearing process will involve the removal of all non-habitat vegetation. The aim of this is to encourage any residing fauna to voluntarily vacate their habitat. All of the habitat trees should be left standing for at least 24 hours following the removal of all the non-habitat vegetation ○ Stage 2 of the clearing process will involve the removal of any habitat trees • Habitat trees should be climbed and felled using qualified and experienced climbing arborists. Under the instruction of the supervising ecologist, the arborist will be directed to each hollow and asked to inspect it for any fauna. Depending on the find, the ecologist will then make an informed decision on what process should be followed. This decision could result in any of the following: <ul style="list-style-type: none"> ○ Leave the tree standing if fauna are raising young or a microbat maternity roost is discovered. Tree to be removed when young are no longer using the tree. ○ Seal the hollow up using calico bags/towels and carefully cut the hollow out of the tree and lower it to the ground ○ Collect the animal and take it into veterinary care or release it outside of the disturbance area <p>The following general principles should be employed during any vegetation clearing works:</p> <ul style="list-style-type: none"> • A suitably qualified and experienced ecologist must always be present during any vegetation clearing works • Vegetation adjacent to the Vegetation Management Plan area should only be removed with chainsaw and not heavy machinery. • Areas of vegetation that are to be retained should be delineated (with fencing) prior to any vegetation clearing occurring. This will reduce the risk of any unintentional damage to vegetation that is to be retained. • Logs without habitat features should be mulched and stockpiled away from the Epping Road ecological corridor to assist in the implementation of the VMP • A suitably qualified and experienced ecologist should be consulted upon the re-use of hollow logs that have come from felled habitat features. If deemed salvageable, a suitably qualified and experienced ecologist should supervise the placement of these features across the VMP area. 			

Environmental Action	Timeframe	Monitoring	Responsible Person
<p>If native fauna is identified within the project site, the Fauna Rescue and Release Procedure found in Appendix E must be adhered to.</p> <p>A short report detailing the pre-clearance and clearance works is to be provided to DPIE following the conclusion of the clearing activities.</p>	Prior to the commencement of work	Weekly checklist	PM, SE
<p>All hollows identified during pre-clearance survey, that are to be removed, will be replaced with nest boxes at a ratio of 1:4 nest boxes for every tree hollow. The nest boxes installed should represent the size of those that will be removed (i.e. if a small hollow is being removed, four small nest boxes will require installation). These nest boxes will be installed in the vegetation to be retained along Shrimptons Creek. The nest boxes should be installed by a qualified and experienced climbing arborist, under the supervision of an ecologist. Installed nest boxes should be monitored annually (during spring) for a minimum of three years. These monitoring events should be accompanied by a report detailing the usage and condition of each nest box. Hollows that can salvaged should be placed in the VMP area under supervision of a suitably qualified and experienced ecologist.</p>	Prior to the commencement of work	Weekly checklist	SS, SE
<p>Sediment control works and dust suppression measures are to be done in accordance with the Sediment, Erosion and Dust Control plans prepared by for the proposed development. Soil and erosion control measures such as sediment fencing, clean water diversion must be in place prior to commencement of construction works.</p>	Prior to the commencement of work	Weekly checklist	SS, SE
Objective: Reduce the spread of Priority Weeds			
<p>The control of weeds is required throughout all onsite activities. Weed control measures should be in line with those outlined in the VMP. These measures include:</p> <ul style="list-style-type: none"> Not using herbicides within the creek corridor, in the aim to limit pollution within the local drainage lines Weed removal should be confined to hand removal only Larger exotic trees (if any) are to be cut, treated and left in situ to prevent localised erosion 	All works	Weekly checklist	All
Objective: Reduce potential noise impacts to native fauna			
<p>Works should only occur during the following times: Monday to Friday 7:00 am to 5:00 pm, Saturday 8:00 am to 1:00 pm. Works will not operate after sunset to minimise indirect impacts to threatened fauna species in proximity.</p>	During construction	Weekly checklist	SS

Environmental Action	Timeframe	Monitoring	Responsible Person
Maximise the distance between noisy plant items and nearby residential receivers and potential fauna habitat.	During construction	Weekly checklist	All
Orient equipment such as offensive noise carriers away from residential receivers and potential fauna habitat.	During construction	Weekly checklist	All
Plant used intermittently is to be throttled or shut down when not required.	During construction	Weekly checklist	All

2.2 Structure and Responsibility

The organisation chart outlined in Figure 2 identifies the reporting lines for the key contractor and sub-contractor personnel responsible for environmental management, as well as the DPIE interface. Details of personnel responsibilities are outlined in Table 2. Contact details for these personnel are included in Appendix C.

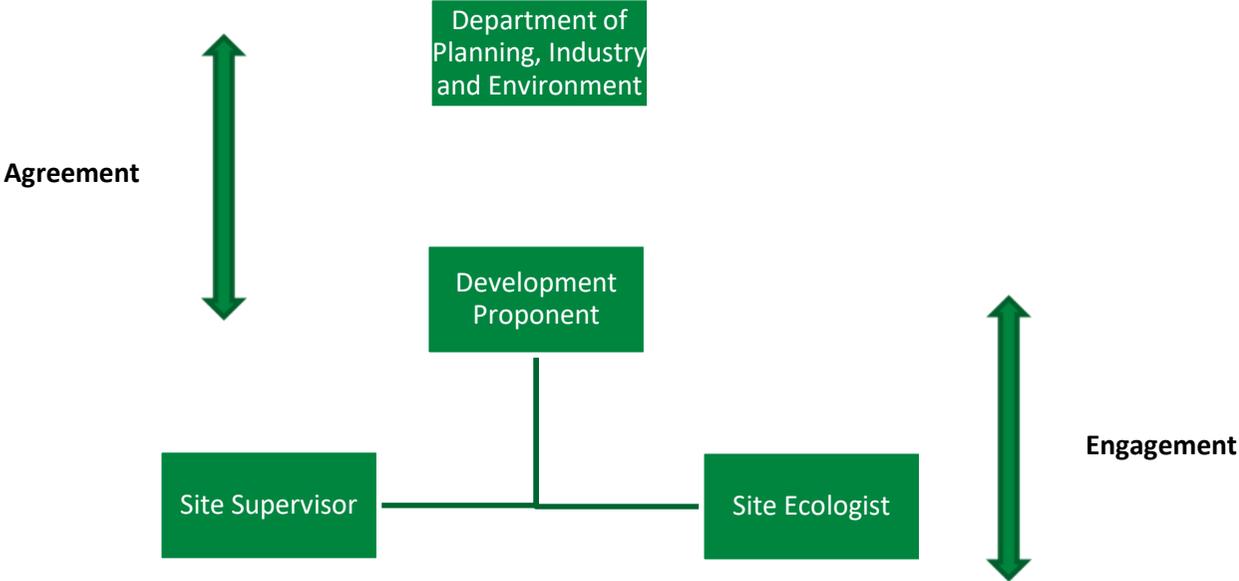


Figure 2: Project organisation chart

Table 2: Responsibilities of personnel

Role	Name, Position and Company	Responsibility
Project Manager	TBC Company:	<ul style="list-style-type: none"> Reviews SSD Conditions of Consent and BMP. Notifies DPIE of changes to the project scope of works and updates the BMP, if required. Requires the contractor to adhere to the approved works. Accountable for contractor's and subcontractor's environmental performance. Reports any non-compliance to DPIE and NRAR.
Site Supervisor	TBC Construction Contractor	<ul style="list-style-type: none"> Issues stop work orders, if required. Records any community complaints (Appendix B) and notifies Project Manager. Responsible for site management, BMP compliance, including subcontractors. Facilitates environmental induction and toolbox talks for site personnel. Undertakes minimum of weekly environmental inspections (or after environmental conditions change). Ensures proponent, DPIE and community are notified of commencement of works. Initiates corrective actions. Reports BMP non-conformances to the Project Manager. Reports incidents. Notifies the Project Manager if the BMP needs revising.
Staff	Construction Contractor & Ecologist Contractor	<ul style="list-style-type: none"> Comply with the BMP. Monitor and maintain controls. Report breaches of the BMP and potential / actual incidents to Site Supervisor Report incidents. Stop work and reports to Site Supervisor in the event of unexpected finds (e.g. native fauna). Record any community complaints and notify the Site Supervisor (Appendix B).

Appendix C – Phone and Emergency Contact List

Organisation	Name	Position	Contact Number
Project Contacts			
[Contact details to be confirmed prior to construction]	[Contact details to be confirmed prior to construction]	Project Manager	[Contact details to be confirmed prior to construction]
[Contact details to be confirmed prior to construction]	[Contact details to be confirmed prior to construction]	Site Supervisor	[Contact details to be confirmed prior to construction]
[Contact details to be confirmed prior to construction]	[Contact details to be confirmed prior to construction]	Site Ecologist	[Contact details to be confirmed prior to construction]
Department of Planning, Industry and Environment	Contact details to be confirmed prior to construction]	Environment, Energy and Science	1300 361 967
Emergency Contacts			
Emergency Services	-	-	000
Macquarie Hospital	-	-	02 9887 5500
Environment Protection Authority	-	-	131 555
SafeWork NSW	-	-	131 050
Fire and Rescue NSW	-	-	02 9265 2999
State Emergency Services (SES)			132 500
WIRES	-	-	1300 094 737
Origin Energy			132 461
Energy Australia			133 466
Transgrid System Operations			1800 027 253 / 9284 300
Police Assistance Line (PAL)			131 444
Gas – Agility			131 909
Poisons Information			131 126
Telstra			132 200
RMS			132 213

Appendix D – Site Biodiversity Inspection Checklist

Constructor Details Site Supervisor - Environmental Checklist

Project Title: Ivanhoe Estate Redevelopment – Stage 1

Site Inspected: Ivanhoe Estate, Macquarie Park, NSW

Time & Date:

Weather:

Biodiversity

- All collectable floristic material such as native vegetation seed stock, woody debris and bush rock has been collected for use in landscaping or relocation to nearby bushland areas. This should be undertaken by a suitably qualified and experienced ecologist or bush regenerator.
- No plant, equipment or stockpiles are positioned under the drip line of retained trees.
- The Site Ecologist was present during tree removal and displaced fauna has been relocated.
- Tree removal has been undertaken by lowering whole trees to the ground using the 'slow-drop' technique or by using climbing arborists

Priority Weeds

- Equipment and vehicles have been washed down prior to and after use, to manage the introduction and spread of weed propagules and pathogens in accordance with Appendix F.

Noise

- The distance between noisy plant items and nearby residential receivers and potential fauna habitat has been maximised.
- Equipment such as offensive noise carriers have been oriented away from residential receivers and potential fauna habitat.
- Plants used intermittently have been throttled or shut down when not required.

Inspected by:

Signature:

Actions:

By Who:

Date Completed:

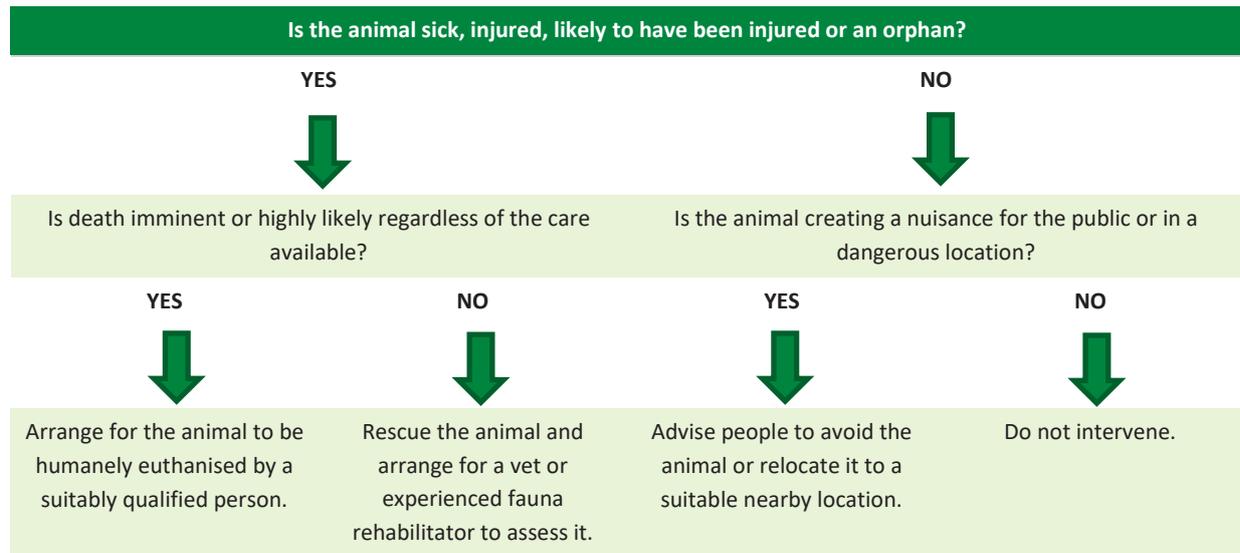
Appendix E – Fauna Rescue and Release Procedure

The following Fauna Rescue and Release Procedure has been prepared in accordance with the NSW Office of Environment and Heritage (OEH) *Code of Practice for Injured, Sick and Orphaned Protected Fauna 2011*.

NATIVE FAUNA ENCOUNTER

If native fauna is encountered during pre-clearance or clearance surveys, the decision tree outlined in Table 3 should be adhered to.

Table 3: Decision tree on how to respond to a native fauna encounter



RESCUING OF NATIVE FAUNA

If rescuing of the animal is chosen to be the most suitable option, the following must be adhered to:

- Assessment of all risk to fauna from environmental hazards and from capture.
- Confirmation that the correct rescue equipment for the type and size of fauna is at hand.
- Confirmation that a sufficient number of trained personnel for that species and size are present.

TRANSPORTATION OF RESCUED NATIVE FAUNA

When transporting the rescued native fauna to a veterinary surgery or rehabilitation facility such as WIRES, the following must be adhered to:

- Ensure transport methods and container sizes are appropriate for the species, size, strength and temperament of fauna. This may include incorporating padding walls and ensuring no ingestible surfaces are present. Containers must also be designed and positioned so breathing is not restricted.
- Transportation containers are kept at an appropriate temperature for the species (note a range of 25 – 27°C is appropriate for most species and ages; 31°C is appropriate for unfurred joeys and 21°C is appropriate for echidnas, platypuses and frogs).
- Transportation containers are well ventilated.
- Ensure containers holding snakes and bats include a visible warning label outlining the danger.

- Ensure transportation containers are not left in the back of uncovered utility vehicles or car boots.
- During transportation, adult fauna should not be fed or watered during trips lasting less than a few hours. Dependent young may require feeding during shorter trips.
- Attain approval by a veterinarian before use of medication to facilitate transport.
- Ensure fauna transport is the sole purpose of the trip.

RELOCATION OF NATIVE FAUNA

If the encountered native fauna does not require rescuing however, is required to be located outside of the construction site, the following must be adhered to:

- A suitable environment must be identified prior to relocation, this is one that:
 - Contains appropriate habitat and adequate good resources.
 - Is occupied by members of the same species.
 - Does not place the animal at a high risk of injury.
 - Is not outside of an area which the fauna would not normally cross (i.e. brush-tail possums rarely move more than 50 m however; wombats have a radius of approximately 50 km).

Appendix F – Introduction and Spread of Weed and Pathogens Procedure

Construction works on development sites have the potential to introduce and promote the spread of weed species. This procedure is intended to prevent or minimise the spread of priority weed species. During construction, the Project Manager and Site Supervisor should adhere to best practice methods for weed management, which include:

- Mowing or slashing areas infested with weeds before they seed. This may reduce the propagation of new plants.
- Program works from least to most weed infested areas.
- Clean machinery, vehicles and footwear before moving to a new location.
- Securely cover loads of weed-contaminated material to prevent weed plant material falling or blowing off vehicles.
- Dispose of weed-contaminated soil at an appropriate waste management facility.
- Remove weeds immediately onto suitable trucks and dispose of without stockpiling.

WEED MANAGEMENT PLAN

Weed Management Plan has been developed for the proposed re-development. This plan includes the following information:

- Identification and description of weed infested areas within the site.
- Recommendations for managing weeds.
- Weed control methods.
- Measures to prevent the spread of weeds.
- A monitoring program to measure the success of weed management.
- Communication strategies to improve contractor awareness of weeds and weed management.

Pathogens are agents such as bacterium, virus or fungus that cause disease in flora and fauna, which are spread on footwear, vehicles or machinery. The four most common pathogens found in NSW include:

- **Phytophthora (*Phytophthora cinnamomi*):** A soil-borne fungus that attacks the roots of native plant species, causing them to rot and eventually die.
- **Chytrid fungus (*Batrachochytrium dendrobatidis*):** A waterborne fungus that affects native frog species.
- **Myrtle rust (*Uredo rangelli*):** An introduced fungus that attacks young leaves, shoot tips and stems of Myrtaceous plants (such as Bottle Brush, Tea Tree, Lilly Pilly and Turpentine), eventually killing the plant.

Construction works on development sites have the potential to promote the spread of pathogens. This procedure is intended to prevent or minimise the spread of pathogens if they have been identified within the development site. If the occurrence of pathogens is known within the locality, a test for presence through soil or water tests should first be undertaken. If pathogens are present, during

construction, the Project Manager and Site Supervisor should adhere to best practice methods for pathogens (Table 4)

Table 4: Best practice hygiene methods

Pathogen	Best Practice Hygiene Protocols
Phytophthora	<ul style="list-style-type: none"> • Minimise work during excessively wet or muddy conditions. • Programming of works should always move from uninfected areas to infected areas. • Set up exclusion zones with fencing and signage to restrict access into contaminated areas. • All personnel (including visitors) to be inducted on Phytophthora management measures for the site. Provide vehicle wash down facility. • Restrict vehicles to designated tracks, trails and parking areas. • Provide parking and turn-around points on hard, well-drained surfaces. • Provide boot wash down facility. • Restrict personnel to designated tracks and trails. • Use a certified supply of plants and soil that is disease-free. • Retain all potentially affected materials within the contaminated area. • Ensure stockpiles of mulch, topsoil and fill material are separated to avoid potential contamination and spread.
Chytrid Fungus	<ul style="list-style-type: none"> • Minimise work during excessively wet or muddy conditions. • Programming of works should always move from uninfected areas to infected areas. • Set up exclusion zones with fencing and signage to restrict access into contaminated areas. • All personnel (including visitors) to be inducted on chytrid management measures for the site. • Provide vehicle wash down facility. • Restrict vehicles to designated tracks, trails and parking areas. • Provide parking and turn-around points on hard, well-drained surfaces. • Provide boot wash down facility. • Disinfect with cleaning products containing benzalkonium chloride or 70% methylated spirits in 30% water. • Disinfect hands or change gloves between the handling of individual frogs and between each site. • Only handle frogs when necessary. Use the 'one bag-one frog' approach. • To avoid cross contamination, generally avoid transferring water between two or more separate waterbodies.
Myrtle Rust	<ul style="list-style-type: none"> • To determine if Myrtle Rust is known within the locality of the development site, the following should be undertaken: <ul style="list-style-type: none"> ○ Use of The DPI Myrtle Rust Management Zone map (http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0008/374633/myrtle-rust-nsw-mgt-zones.pdf) ○ Consultation with DPIE for additional rust records and risk assessments. ○ Photograph potentially infected plants and send to: biosecurity@industry.nsw.gov.au for confirmation. • Programming of works should always move from uninfected areas to infected areas. • Set up exclusion zones with fencing and signage to restrict access into contaminated areas. • All personnel (including visitors) to be inducted on Myrtle rust management measures for the site. • Provide vehicle wash down facility. • All vehicles and machinery to be washed with Truckwash® (or equivalent). • Restrict vehicles to designated tracks, trails and parking areas. • For medium-long term projects, install a concrete wash down bay which will capture the water in a trench or bunded area. • Water used for wash downs must not be used for dust control.

Pathogen	Best Practice Hygiene Protocols
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- Personnel working in an infected site should shower and launder clothes (especially hats) before moving to another bushland site.
- Provide boot wash down facility.
- Footwear and equipment to be cleaned of soil/mud then sprayed with 70% methylated spirits in 30% water.
- Use a certified supply of plants and soil that is disease-free (Nursery & Garden Industry 2011) provides best practice Myrtle rust management that is to be expected from suppliers).
- Plant material should be buried on site if possible.
- Do not dispose of waste at another bushland site.
- Buried material sites must be mapped to prevent re-exposure, especially if located near utility easements.
- If material cannot be buried advice should be sought from DPIE.

Appendix G – Re-Use of Floristic Material and Native Habitat Features Strategy

COLLECTION OF FLORISTIC MATERIAL

As outlined in the Development Consent conditions (SSD 8903) for the project, ‘the use of local provenance species’ should be used for revegetation efforts. Specifically, the species should be appropriate for the Threatened Ecological Community (TEC) and Plant Community Types (PCTs) identified across the development site. The previous FFA (ELA 2018) identified two PCTs on site. These are:

- **PCT 1281:** Turpentine - Grey Ironbark open forest on shale in the lower Blue Mountains, Sydney Basin Bioregion (formally known as ME041)
- **PCT 1841:** Smooth-barked Apple - Turpentine - Blackbutt tall open forest on enriched sandstone slopes and gullies of the Sydney region (formally known as ME58)

PCT 1281 forms part of the TEC *Sydney Turpentine-Ironbark Forest in the Sydney Basin Bioregion*. This vegetation community is listed as critically endangered under the State BC Act and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

Given the above information:

- Seed should first be collected from all areas that are to be cleared as part of the project. By selecting a seed source that is from plants growing in similar environmental conditions nearby, the plants should be naturally adapted to local conditions and more likely to survive and prosper in proposed re-use areas
- Carry out all seed collection in accordance with the (Florabank Model Code of Practice (Mortlock, 1998). Experienced and licensed seed collectors should carry out the seed collection.

RELOCATION OF WOODY DEBRIS AND BUSH ROCK

Many native fauna species utilise wood debris and bush rock for shelter, basking to hide from predators, find food and avoid extreme weather. When woody debris and bush rock are required to be removed from a development site, consideration should be given to finding suitable locations for re-use of these important habitat features.

Term	Definition
Woody Debris	Trees and wood, whether living or dead, at least 100 mm in diameter and 500 mm long, including hollows.
Bush Rock	Loose rock occurring on rock or soil surfaces.

Prior to relocation of woody debris and bush rock, consultation should be undertaken with a suitably qualified and experienced ecologist or bush regenerator to determine a suitable location for re-use to ensure it does not have a negative impact on the receiving environment. For example, in areas of high-

quality bushland, there may already be enough suitable hollows, fallen logs or bush rock and adding more may cause unnecessary disturbance or create a fire hazard.

Once a suitable relocation area has identified, the Project Manager and Site Supervisor should ensure the following best practice methods are undertaken during relocation:

- Removal, stockpiling, transportation and relocation of woody debris and/or bush rock is carried out in a manner that minimises disturbance to native vegetation (including the canopy, shrubs, dead trees, fallen timber and groundcover species) or bush rock
- The spread of any weeds or pathogens that may be in the soil is avoided when relocating woody debris and bush rock from stockpiles
- The Site Ecologist is consulted with to provide advice on positioning woody debris and bush rock in designated relocation areas
- Topsoil disturbance is kept to a minimum and is not heaped up against woody debris or bush rock because of the potential to provide habitat for rabbits
- Woody debris is placed evenly across the site
- Where woody debris is to be mulched the Project Manager and/or Site Supervisor should ensure that weeds are separated from native vegetation.

USE OF NEST BOXES

Nest boxes can be used to provide supplementary breeding habitat and shelter for hollow-dependant fauna where hollows have been removed. If hollow-bearing trees are proposed for removal, as per the conditions of consent, nest boxes are required to be installed as a replacement at a 1:4 ratio.

If the installation of nest boxes is required, the following must be considered in consultation with the Site Ecologist:

- The target species
- The tree hollow preferences of native hollow-dependant fauna known or likely to occur in the locality
- The sizes, types and quantities of potential tree hollows to be removed
- The sizes, types and quantities of tree hollows existing in adjacent areas
- The design, materials and quantity of nest boxes required
- Whether the nest boxes are required to fill a short-term gap in the availability of hollows (e.g. during construction) or to compensate for the long term reduced availability of hollows
- Monitoring and maintenance of the nest boxes

Appendix H – References

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