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Vegetation Management Plan

State Significant Development 9274

4574 – Samuel Gilbert Public School
Ridgecrop Drive, Castle Hill NSW 2154

Prepared for Hutchison Builders, on behalf of the NSW Department of Education

28 October 2021

Environmental Planning
Ecological Assessments
Bushfire Hazard Management
Project Management

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Authorship

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1 Introduction

1.1 Background

This *Vegetation Management Plan* (VMP) has been prepared by Alphitonia Pty Ltd for Hutchison Builders, on behalf of the NSW Department of Education (DoE), to address conditions of consent D43 and D44 of the development approval for State Significant Development 9274, the redevelopment of Samuel Gilbert Public School (the project). From Schedule 2 of the development approval, these conditions of consent are:

> *Vegetation Management Plan*
>
> *D43. Prior to the commencement of operation, a final Vegetation Management Plan must be prepared for the site and be submitted to the Certifying Authority.*
>
> *D44. The Vegetation Management Plan must be developed to guide the management of retained native vegetation and adjoining Asset Protection Zones.*

This VMP outlines the management of the significant ecology retained at the site and maintenance of the Asset Protection Zones (APZ) to satisfy the above conditions of consent. The areas within the subject site pertaining to this VMP are identified in the site plan at Appendix A as *Significant Vegetation Zones,* and the Asset Protection Zones: *Outer Protection Area* (OPA) and *Inner Protection Area* (IPA).

1.2 Site description

Samuel Gilbert Public School is located at Ridgecrop Drive, Castle Hill, in The Hills Local Government Area, and is comprised of Lot 1, DP 719671 (the subject site). See Figure 1-1, Figure 1-2 and Figure 1-3 for the location of the subject site and surrounds.

The suburb of Castle Hill is situated northwest of Sydney CBD. The site is situated on a low ridge with a southern-western aspect. It is bound by Gilbert Road and Ridgecrop Drive to the east, Ridgecrop Drive to the south, Excalibur Avenue and Castle Glen Reserve to the north, and residential lots associated with Squire Place to the west.

The site consists of the existing buildings, playing fields, recreation areas and car parking of Samuel Gilbert Public School. The eastern portion of the subject site is comprised of the buildings and recreation areas of the school. The western portion of the site contains a patch of bushland and is designated ‘bushfire prone vegetation’. Refer to Figure 1-2 and Figure 1-3.

Sections 1.3 and 1.4 following provide brief synopses of the relevant aspects of the BDAR and Bushfire Assessment prepared for the project as they pertain to considerations of ecology and bushfire in regard for the preparation of this VMP.

1.3 Ecology

As part of the Samuel Gilbert Public School Redevelopment SSD 9274, a Biodiversity Development Assessment Report (BDAR) was prepared for the site by Travers Bushfire and Ecology, dated 19 August 2019.

The BDAR determined Sydney Turpentine Ironbark Forest (STIF) was present at the site. Importantly, STIF is listed as an endangered ecological community (EEC) under the Biodiversity Conservation Act 2016 (BC Act) and as the critically endangered ecological community (CEEC) Turpentine-Ironbark Forest (TIF) under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

There were two patches of STIF located at the subject site, one in the south-eastern corner and one at the eastern boundary of the site. These patches are shown in the site plan at Appendix A of this VMP and identified as *Significant Vegetation Zones*.

Additionally, the BDAR recorded no threatened floral species on the subject site, but did find the following threatened faunal species had the potential to use the subject site:

- Square-tailed kite (*Lophoictinia isura*),
- Glossy Black-Cockatoo (*Calyptorhynchus lathami*),
- Grey-headed Flying- fox (*Pteropus poliocephalus*),
- Eastern Bentwing-bat (*Miniopterus orianae oceanensis*),
- Greater Broad-nosed Bat (*Scoteanax rueppellii*), and
- Eastern Falsistrelle (*Falsistrellus tasmaniensis*).

The BDAR concluded that with the implementation of recommended mitigation measures to avoid / minimise / offset identified potential ecological impacts of the project, the proposal would not cause any serious and irreversible impacts (SAII) on threatened biodiversity, nor would it have a significant impact on matters of national environmental significance.

The mitigation measures outlined for the operational phase of the proposal, and therefore adopted into this VMP, include:

- *Maintenance will be undertaken by a fully qualified bush regeneration crew for a minimum of a nominated time, post completion of primary restoration works.*
- *All bush regeneration or landscape crews are required to have at a minimum TAFE Certificate Level II Bush Regeneration qualifications or equivalent. All staff are to be supervised by a qualified bush regeneration supervisor with a minimum three (3) years full time experience and a minimum TAFE Certificate Level IV Bush Regeneration qualifications and / or a degree in Natural Areas Management (or the equivalent in experience).*

1.4 Bushfire

The subject site contained a dedicated APZ area prior to the SSD 9274 project. This APZ area was approved for the installation of building M in approximately 2010 and can be seen in Appendix B as the "Approved BER Asset Protection Zone".

As part of SSD 9274 a Bushfire Assessment report was prepared for the site by Peterson Bushfire, dated 28 February 2019. The Bushfire Assessment determined that the proposal was affected by bushfire prone vegetation to the west of the new buildings. The vegetation was classified as "Forest" and was found to be situated on Downslope 0-5˚or Flat land. This resulted in the proposal requiring APZs of 60m and 70m to the west of the proposed buildings. Refer to the site plan at Appendix B which contains an extract from the Bushfire Assessment report showing the bushfire hazard analysis and APZ for the subject site.

The installation of the APZs on the subject site involved the modification to 0.63ha of native vegetation for bushfire hazard reduction works comprising the installation of the APZ to IPA and OPA standards, an existing APZ to OPA standards, and an APZ changed from OPA standards to IPA on the subject site. Refer to Appendix B.

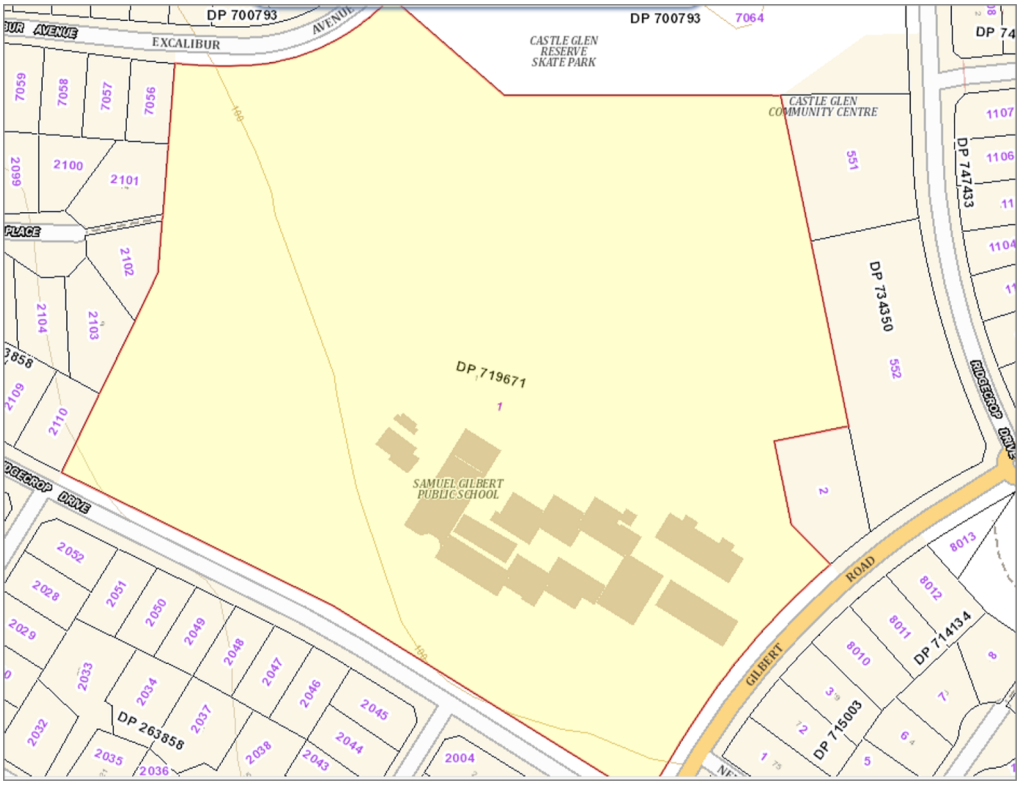
1.5 Aims and objectives

The aim of this VMP is to outline the strategies, including mitigation measures, timing and performance criteria to appropriately manage the vegetation within the identified *Significant Vegetation Zones* and APZ areas of the subject site to satisfy development approval conditions of consent D43 and D44 for SSD 9274. The specific aims and objectives of this report are:

- To describe the appropriate treatment methods for exotic weed species present on the subject site.
- To describe the management tasks required to appropriately maintain the *Significant Vegetation Zones* found at the site.

- To detail the bushfire hazard reduction maintenance works required to meet the standards of an Inner Protection Area (IPA) and Outer Protection Area (OPA) as described by NSW Rural Fire Service.
- To detail the mitigation measures required for the maintenance in perpetuity of the APZ to IPA and OPA standards in order to minimise any adverse impact to significant ecology found at the subject site.

Figure 1-1 Map view of subject site showing Lot and DP



Source: LPI Six Maps 2021

Figure 1-2 Aerial view of subject site showing school facilities

Source: LPI Six Maps 2021

Figure 1-3 Aerial view of subject site and surrounds

Source: LPI Six Maps 2021

2 Vegetation Management Strategy

2.1 General

The subject site contains the critically endangered ecological community (CEEC) Sydney Turpentine Ironbark Forest (STIF) and has the potential for threatened faunal species to utilise the subject site. It is therefore critical that all proposed VMP works on the subject site be undertaken in a manner that will preserve as much of the native flora and fauna found at the subject site. This is to be done by appropriate construction techniques and the implementation of various mitigation measures during the VMP works. Any disturbance, modification or removal of native vegetation from the subject site must be kept to a minimum.

2.2 Suitably qualified personnel

Vegetation management contractors are to have a minimum TAFE Certificate Level II Bush Regeneration qualification or equivalent as well as Chemical Application (AQF3) certification to ensure the impact on the significant ecology of the site is minimised. In addition, the supervisor is to have a minimum three (3) years full time experience and a minimum TAFE Certificate Level IV Bush Regeneration qualifications and / or a degree in Natural Areas Management (or the equivalent in experience).

2.3 Timing

This VMP is recommended to be implemented for a 5-year period, commencing post completion of primary restoration works and following occupation of the school redevelopment. At the end of the 5-year period a review of this VMP should be undertaken to determine its effectiveness. Appropriate guidance should then be provided for continual preservation of the STIF patches (significant vegetation zones) situated at the subject site, as well as and for the required maintenance in perpetuity of the approved APZs.

Refer to Section 4 and Table 6-1 for details on the timing of vegetation management and bushfire fuel reduction tasks.

2.4 Management of Significant Vegetation Zones

All exotic weed species in the identified significant vegetation zones are to be targeted as part of a long-term bush regeneration program (see Section 3). Table 3-1 contains a list of exotic weed species found on the subject site and their control methods.

To avoid the further spread of weed seeds, propagules and pathogens, the following mitigation measures are recommended:

- Plant, equipment and stockpiles should be placed in lay down areas avoiding areas of native vegetation.
- Vegetative parts of exotic weed species that have the potential to regenerate are not to be left on site. All exotic biomass cleared within the significant vegetation zones should be removed from the subject site and disposed of at an approved facility.
- All equipment and plant brought into the subject site is to be washed/cleaned so that it is free of soil, mud debris or vegetation which may inadvertently introduce weeds and/or other pathogens into the subject site.
- Measures should be taken to prevent tracking of soils/sediments from the work sites to other roadways as a result of work vehicle/machinery movement.
- Only appropriately qualified personnel are to undertake works in the significant vegetation zones.

Additionally, to reduce the bushfire threat on the subject site, it is recommended that fine fuels be removed from the significant vegetation zones on a bi-annual basis (twice per year), at a minimum.

2.5 Appropriate maintenance of the Asset Protection Zones

The impacts from maintenance of the APZ are to be mitigated through an appropriate construction process. The following actions should occur during maintenance of the APZ:

- The vegetation in the APZ area, shown in Appendix B, is to meet the standard of an Outer Protection Area (OPA) and Inner Protection Area (IPA) as outlined in A4.1.2 of the NSW RFS document *Planning for Bushfire Protection* (NSW RFS, 2019).
- There will be no further removal of trees or ground layer within these areas.
- The shrub layer will be maintained by selectively removing high fuel load species to ensure shrub coverage does not exceed 20%.
- The largest Eucalyptus trees are to be retained in the APZ area in favour of other native tree species.
- A qualified bushfire ecologist is to supervise the clearing works to ensure the preservation of habitat on the subject site.
- The groundcover layer is to be slashed by hand held brush-cutters. The groundcover layer is to be no lower than 100mm to reduce harming the ecology of the subject site and to preserve soil stability. 80% of groundcover vegetation is to be retained.
- Newly landscaped areas of the subject site will have fine fuel removal undertaken only. Native plants will be allowed to establish for a minimum of three years after the date of this report.
- The following clearing methodology is to be adopted for vegetation removal from the subject site:

Table 2-1 Clearing methodology for vegetation removal

Vegetation removal	Details
First priority	○ All exotic weed species ○ All vegetation that is too close to buildings as described in Planning for Bushfire Protection 2019 ○ Trees and shrubs identified as being in poor health and/or structural condition ○ Other dead vegetation material on the ground considered to provide fuel load for a bushfire
Second priority (if necessary)	○ “Exotic” tree species (defined as species not being native to Australia) ○ Juvenile (under 7m in height) Australian native trees ○ Pruning / lopping of limbs from mature (over 7m in height) Australian native trees
Last priority (if necessary)	○ Removal of whole, mature (over 7m in height) Australian native trees

2.6 Community safety

The areas of the subject site actively used by the school community will need to be made fit for purpose. No trip hazards or uneven surfaces are to be created in undertaking bushfire fuel reduction works / vegetation management works.

3 Exotic Weed Species Management

3.1 General

There were a number of exotic weed species recorded during site investigations. Table 3-1 lists the species recorded, and their control methods, by Travers Bushfire & Ecology in the BDAR prepared for the site. There may be additional exotic weed species present on site to those recorded in Table 3-1. Additional specific control measures for exotic weed species are provided in the NSW Weed Control Handbook - A guide to weed control in non-crop, aquatic and bushland situations (DPI, 2018).

All exotic weed species found on the subject site are to be targeted during the maintenance of the project. Contractors are to be suitably qualified and have the minimum qualifications as set out in section 2.2 of this VMP.

Weed removal is to be undertaken in accordance with best practice methods and should follow the guidelines produced by CRC for Australian Weed Management. Control methods are detailed below and the control methods for each individual species are detailed in Table 3-1. It should be noted that additional exotic weed species may be present on the subject site so bush regeneration contractors will need to be able to identify a wide range of exotic weed species. Control methods are detailed in Section 3.2.

3.2 Control methods

3.2.1 Hand removal of weeds

This method can be applied to most broad-leaf annuals and perennials with underground corms and rhizomes. Removal of root material is desirable to prevent future regrowth.

3.2.2 Crown removal

This method is used for the control of plants that have below ground tubers that do not regenerate. The below ground growing crown of the plant is to be cut away from the roots and tubers of the plant. All above ground parts of the plant and the growing crown are to be removed from the site. All remaining below ground parts of the plant are to remain to help stabilise the soil.

3.2.3 Spraying

Broad-leaf and grassy weed species may be controlled by spraying using appropriate equipment designed to prevent spray drift, such as spray packs with a weed wand. It is important to shield native species when herbicides are being used within their vicinity to prevent fatalities caused by spray drift. Herbicide to be used is Glyphosate and is to be used at a concentration of 1%.

3.2.4 Cut and paint method

This method is implemented for woody weeds not able to be controlled by spraying. Plants are cut off at the base, which is followed by the immediate application of 100% Glyphosate herbicide.

3.2.5 Scrape and paint

This method is used for the control of vines and creepers. The outer layer of the vine branches are scraped off with a knife and 100% Glyphosate herbicide is immediately applied to the scrape.

3.2.6 Maintenance

The exotic weed species on the subject site will be maintained to a maximum cover of 5% or less for a period of six months. The bush regeneration contractor that undertakes the maintenance works will prepare a maintenance report detailing species treated, herbicide used, and areas that need to be addressed for possible future works.

Table 3-1 Exotic species recorded on the site and their control methods

Species Name	Common name	Control Method
Shrubs		
Nandina domestica	Japanese Sacred Bamboo	Cut & paint and hand removal
Olea europaea	Olive	Cut & paint
Senna pendula	Senna	Cut & paint
Sida rhombifolia	Paddy's Lucerne	Cut & paint and hand removal
Herbs - Dicots		
Bidens pilosa	Cobbler's Peg	Hand removal or spray
Plantago lanceolata	English Plantain	Hand removal or spray
Senecio madagascariensis	Fireweed	Hand removal or spray
Taraxacum officinale	Dandelion	Hand removal or spray
Herbs - Monocots		
Aristea ecklonii	Blue Stars	Hand removal or spray
Asparagus aethiopicus	Asparagus Fern	Crown removal or spray
Erharta erecta	Panic Veldgrass	Hand removal or spray
Pennisetum clandestinum/ cenchrus clandestinus	Kikuyu	Hand removal or spray
Vines / Climbers		
Passifloraceae	Common Passionfruit	Scrape and paint
Araujia sericifera	Moth Vine	Scrape and paint

*Species taken from the BDAR prepared for the project by Travers Bushfire and Ecology (2019).

4 Maintenance and Reporting

4.1 Exotic weed removal

The bush regeneration program is recommended to run for a period of 5 years.

The first year is an establishment year and will require more regular visits. Treatments of the exotic weed species at the subject site are recommended to occur for three 8-hour days per quarter and finish within the year.

The second and third years are recommended to be maintenance years and would require a reduced number of visits (to that of the first year). Treatments of the exotic weed species on the subject site are recommended to occur for three 8-hour days per bi-annual visit.

The fourth and fifth years are considered regeneration years, and maintenance visits are only anticipated to be required if monitoring of the site detects exotic species present.

4.2 Bushfire fuel reduction works

Bushfire fuel reduction works are required on the site in perpetuity to comply with the DoE's statutory obligations for bushfire protection.

Following installation, a follow up treatment of the entire APZ area is to occur within one year of the initial clearing works to ensure all regenerating propagules of tree and shrub species are removed.

The APZ is to be maintained in perpetuity and will require bushfire fuel reduction works to be undertaken on a bi-annual basis, with one visit preferably in October at the start of the bushfire season.

4.3 Reporting

The vegetation management contractors are to provide the following reports/documents for the project:

- A sign-off letter is to be provided at the end of each visit to the subject site advising DoE that the bushfire fuel levels at the subject site, as defined in Appendix B, meet the standards of an IPA and OPA.
- A weed map of the subject site, showing significant exotic weed species infestations and the methods that have been used to control them, is to be provided at the end of each year of the VMP period.
- A maintenance report is to be provided to DoE at the end of each year of the VMP period detailing:
    - Species treated,
    - Herbicide used, and
    - Areas that need to be addressed for future works.

5 Performance Criteria

5.1 General

The performance criteria described below may be amended through negotiations onsite with DoE representatives. This approach will enable an adaptive management procedure to take place that will allow for flexibility if anomalies are found on the subject site once the vegetation management works have begun.

5.2 Exotic weed removal

The significant vegetation zones, as defined in Appendix A, are to be kept to 5% cover of exotic weed species or better for the entire VMP period.

5.3 Bushfire fuel reduction works

The vegetation on the subject site shown as OPA and IPA in Appendix A, is to meet the standards of an Outer Protection Area and Inner Protection Area as outlined in A4.1.2 of the NSW RFS document Planning for Bushfire Protection 2019.

The vegetation on the subject site shown OPA and IPA in Appendix A, is to have the groundcover layer slashed by hand held brush-cutters. The groundcover layer is to be no lower than 100mm to reduce harming the ecology of the subject site and to preserve soil stability and 80% of the groundcover is to be retained. Shrub coverage is to be kept to <20% in the APZs.

No live vegetation is to be touched in the identified significant vegetation zones (see Appendix A). Bushfire fuel reduction works in these areas of the subject site are to consist of the removal of fine fuels only.

6 Vegetation Management Tasks

6.1 Vegetation management tasks, timing, performance criteria and responsibility

Table 6-1 shows the management actions required to undertake the bushfire fuel reduction activities, along with the timing for implementation, performance criteria, and who is responsible for completion of tasks. Table 6-1 is to be read in conjunction with the site plan at Appendix A.

Table 6-1 Vegetation Management, Timing, Performance Criteria and Responsibility

Task	Description	Timing	Performance Criteria	Responsibility
Significant Vegetation Zone				
Exotic weed species removal	Contractors to remove exotic weed species from identified areas of subject site (see Appendix A). Mitigation measures are to be implemented as per section 2.4 of this VMP.	As per section 4.1 of this VMP	< 5% weed cover	Bush regeneration contractor
Removal of weed material from the site	Exotic weed species that have the potential to regenerate are to be disposed of at an approved waste facility	At the end of each site visit	N/A	Bush regeneration contractor
Fine fuel removal	Fine fuel is to be removed from identified significant vegetation zones (see Appendix A). Mitigation measures are to be implemented as per section 2.4 of this VMP.	Bi-annually and in perpetuity	N/A	Bush regeneration contractor
Asset Protection Zones (IPA and IPA)				
Tree and shrub management	Tree and shrub removal to meet IPA and OPA standard	At the end of each site visit	IPA and OPA standard with < 20% shrub coverage	APZ contractor
Slashing	Slashing of groundcover layer to OPA standard with hand held brush-cutters to a height no less than 100mm	At the end of each site visit	IPA and OPA standard, groundcover layer no lower than 100mm, 80% groundcover vegetation to be retained	APZ contractor
APZ maintenance	Perform regular bushfire fuel reduction works to achieve APZ standards across the subject site	Bi-annually and in perpetuity, with one visit preferably at start of fire season (Oct)	IPA and OPA standard	APZ contractor
Reporting				
Sign-off letter	A sign-off letter is to be prepared by the vegetation management contractors and provided to DoE advising bushfire fuel levels meet OPA and IPA standards.	At the end of each site visit	N/A	APZ Contractor
Maintenance report	Weed map and report detailing species treated, herbicide used, and possible future works.	At end of each year in maintenance period	N/A	Bush regeneration contractor

7 References

CRC for Australian Weed Management. Best practice management guide for environmental weeds. CRC for Australian Weed Management.

Department of Primary Industries. (2018). New South Wales Weed Control Handbook 7th Ed. A guide to weed control in non-crop, aquatic and bushland situations, NSW, Department of Primary Industries..

NSW Rural Fire Service. (2019). Planning for bush fire protection: A guide for councils, planners, fire authorities and developers. New South Wales Rural Fire Service.

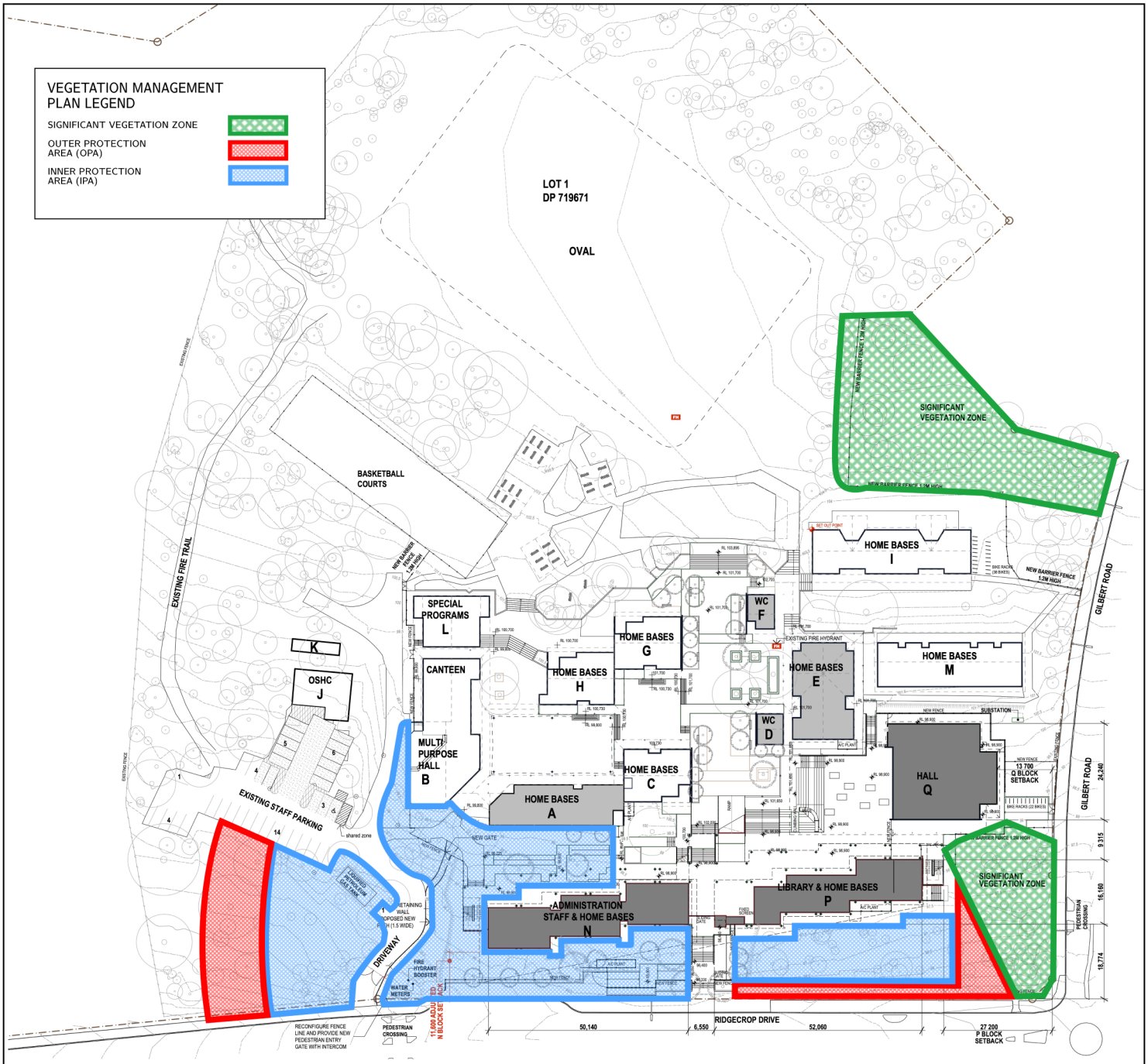
Peterson Bushfire. (2019). Bushfire Assessment- Samuel Gilbert Public School Redevelopment, Lot 1 // DP 719671 (Ridgecrop Drive) Castle Hill, NSW 2154.

Spatial Information eXchange. (2021). Samuel Gilbert Public School, Lot 1 // DP 719671, viewed 11 October 2021, < https://maps.six.nsw.gov.au/>.

Travers Bushfire & Ecology. (2019). Biodiversity Development Assessment Report SSDA, Lots 1 & 2 DP 719671 and Lots 551 & 552 DP734350 Ridgecrop Drive Castle Hill, August 2019 (REF: 18FT02).

APPENDIX A Vegetation Management Plan – Site Plan

Source: VMP overlay to extract from the approved plans for the Samuel Gilbert Public School Redevelopment SSD 9274, Drawing No. SD1001 Revision P24 originally prepared by Fulton Trotter Architects



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VEGETATION MANAGEMENT PLAN
Samuel Gilbert Public School

SCALE
0 50 100m

Approved Application Plan Set No. SSD-9274
Drawing No. SD1001 Revision: P24

Source: Base Plan has been extracted from Proposed Site Plan prepared by Fulton Trotter Architects

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Alphitonia Document Revision: A

Date: 14/10/2021

APPENDIX B Site plan showing Asset Protection Zones

Source: extract from the Bushfire Assessment report prepared for the Samuel Gilbert Public School Redevelopment SSD 9274 by Peterson Bushfire and dated 28 February 2019

Legend

- Hydrant
- Subject Land
- Proposed Building
- Fence
- Fire Trail
- Contour - 1m
- Sydney Turpentine Ironbark Forest
- Change from OPA to IPA

Vegetation Formations

- Forest
- Garden Bed

Approved BER Asset Protection Zone

- OPA - Outer Protection Area
- IPA - Inner Protection Area

Asset Protection Zone - Exisiting BPED

- Asset Protection Zone - 18m
- Asset Protection Zone - 23m

Asset Protection Zone - 60m

- Inner Protection Area - 40m
- Outer Protection Area - 20m

Asset Protection Zone - 70m

- Inner Protection Area - 50m
- Outer Protection Area - 20m

N

DKGIS

Date: 1/08/2019

0 12.5 25 50

Metres

Figure 4: Bushfire Hazard Analysis and Asset Protection Zone

Coordinate System: GDA 1994 MGA Zone 56

Imagery: © Nearmap

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