ecology & heritage partners

Final Report

Bushfire Risk Assessment for a waste-to-energy facility: 510 Summerhill Road, Wollert, Victoria

Prepared for

Cleanaway Operations Pty Ltd

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Ecology and Heritage Partners Pty Ltd

MELBOURNE: 292 Mt Alexander Road, Ascot Vale VIC 3032 **GEELONG:** 230 Latrobe Terrace, Geelong West VIC 3218
BRISBANE: Level 22, 127 Creek Street, Brisbane QLD 4000 **ADELAIDE:** 78 Edmund Avenue, Unley SA 5061
CANBERRA: 19-23 Moore Street, Turner ACT 2612 **SYDNEY:** Level 5, 616 Harris Street, Ultimo NSW 2007
www.ehpartners.com.au | 1300 839 325

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Project manager	Matthew Boyd (Ecologist)
Report reviewer	Cat Stephenson (Senior Bushfire Consultant/Botanist)
Other EHP staff	Richard Moore (Field Ecologist); David Heaton (Zoologist/Bushfire Consultant); Cat Stephenson (Senior Bushfire Consultant/Botanist)
Mapping	Dr Monique Elsley (GIS Coordinator)
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Ecology and Heritage Partners acknowledge the Traditional Owners of the country we live and work on, and we pay our respect to Elders past, present and emerging.

EXECUTIVE SUMMARY

Cleanaway Operations Pty Ltd (Cleanaway) is developing a waste-to-energy (WtE) facility at 510 Summerhill Road, Wollert, known as the Melbourne Energy and Resource Centre (MERC) (the Proposal). The MERC has been designed to thermally treat a design capacity of 380,000 tonnes per annum (tpa) of waste feedstock, consisting of residual Municipal Solid Waste (MSW) and residual commercial waste, which is waste that would otherwise be sent to landfill.

Ecology and Heritage were engaged by Cleanaway to prepare a Bushfire Risk Assessment for the Proposed WtE, which has been prepared for the consideration by the Minister for Planning who is the responsible authority for the development proposal. The purpose of this report is to undertake a Bushfire Risk Assessment of the local and broader landscape and address the legislative implications associated with proposal against *Clause 13.02-1S Bushfire*, *Clause 44.06 Bushfire Management Overlay (BMO)* and *Clause 53.02 Bushfire Planning* of the Whittlesea Planning Scheme, and *Australian Standard (AS) 3959:2018 Construction of buildings in bushfire prone areas (Standards Australia 2018)*.

The wider landscape for several kilometres is characterised by agricultural land, rural residential properties, current residential developments and existing residential areas. The townships of Craigieburn (six kilometres), Roxburgh Park (seven kilometres), Somerton (seven kilometres), Epping (eight kilometres) and Wollert (seven kilometres) are also located in close proximity to the Project area. Non-contiguous woodland vegetation is found in a small patch on the southern side of Summerhill Road. Mount Sugarloaf and Mount Charlie Nature Conservation Reserves are the nearest large forested areas, approximately 30 kilometres to the west and north-west of the Project area respectively.

Classified vegetation within 150 meters of the Proposed development comprises Grassland in the form of paddocks, which are located within the property boundary, in addition to the adjoining northern, eastern and western properties. Areas excluded from classification include the house and ornamental gardens in the centre of the Project area and Summerhill Road to the south. The local topography is highly variable, with hilly slopes across much of the 150-metre assessment zone. With respect to the development areas, the localised topography for each building varies, with some of the intervening classified vegetation being on upslopes or flat land and some of the classified vegetation leading up buildings to the east and south of the development area being on downslopes. The assessment demonstrates that habitable buildings within the development can achieve a Bushfire Attack Level (BAL)-12.5 construction standard and provide the commensurate separation distance space, which range between 19 and 33 metres, within Project area boundaries. Non-habitable buildings (i.e. Truck Shed and Store) will provide a 10-metre separation.

In addition to the BAL construction standard and commensurate separation distance for each building, other bushfire mitigation measures are provided. These include ensuring any grass within the separation distances are maintained at or below 100 millimetres during the Fire Danger Period, providing a static water supply in the form of a large central water supply point and three additional water tanks, and ensuring the internal road network complies with the Country Fire Authorities access requirements.

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1 INTRODUCTION

1.1 Proposal Overview

Cleanaway Operations Pty Ltd (Cleanaway) is an Australian waste management, recycling, and industrial services company. Cleanaway is developing a waste-to-energy (WtE) facility in Victoria known as the Melbourne Energy and Resource Centre (MERC) (the Proposal).

The MERC has been designed to thermally treat a design capacity of 380,000 tonnes per annum (tpa) of waste feedstock, consisting of residual Municipal Solid Waste (MSW) and residual commercial waste, which is waste that would otherwise be sent to landfill. Waste feedstock processed by the MERC will be subject to a Waste Acceptance Protocol to determine eligibility and suitability for processing both prior to arrival and upon arrival on-site. The Proposal will also incorporate maturation and processing of bottom ash to recover recyclable metals, with the intent to utilise the remaining ash as an aggregate in construction.

Residual waste is waste that is left over from recycling and resource recovery operations and waste from source separated collections. Source separation involves separating waste into common material streams or categories for separate collection. Waste processed at the site will be subject to a Waste Acceptance Protocol to ensure only appropriate waste is used as feedstock.

The WtE process would generate approximately 46.3MW gross of electricity, 4.7MW of which would be used to power the facility itself and the associated on-site by-product and residue handling processes, with 41.6MW (328,700 MWh/year) exported to the grid as base load electricity. In addition to supplying electricity to the grid, there is also potential to supply energy in the form of heat and/or process steam to local industrial users.

Some residual materials are produced because of the WtE process, including Incinerator Bottom Ash (IBA), boiler ash and flue gas treatment residue. The boiler ash and flue gas treatment residue are typically combined and together are referred to as Air Pollution Control residue (APCr). Overall, the WtE process typically leads to about 90% reduction in the volume, or 80% reduction in mass (tonnes), of waste that would otherwise go to landfill. If IBA is reused as an alternative construction product to virgin materials, this percentage increases further to approximately 95% reduction in volume and mass of waste that would otherwise go to landfill. The final volume of waste diverted from landfill is dependent on the classification and market for the residues and by-products generated by the WtE facility.

The Proposal includes the construction and operation of an IBA maturation and processing facility on site. The purpose of this facility is to store the IBA to mature (stabilise) it, before mechanically processing IBA from the WtE facility into an aggregate for reuse. As part of this process, both ferrous and non-ferrous metals will be recovered from the IBA for recycling and sale to market.

The Proposal also includes a stabilisation facility for APCr, a necessary treatment step to immobilise leachable components of the APCr prior to removal from site by vehicle and disposal at an appropriately licenced landfill.

The Proposal will use best available techniques and technologies in the engineering design, operation, maintenance and monitoring activities associated with the MERC. Moving grate technology has been chosen as the means to thermally treat incoming waste to recover energy and other resources. Current international best-practice techniques, including automated combustion controls and advanced flue gas treatment

technology will be applied so that air emissions meet stringent emission standards. The moving grate combustion system is a common form of thermal WtE technology in which the waste is fed through the combustion chamber on a travelling grate. This enables efficient and complete combustion of the waste, with primary combustion air introduced from below the grate and secondary combustion air introduced directly into the combustion zone above the grate. Moving grate technology has been used globally for over 100 years, and in that time the technology has been subject to continual improvement responding to regulatory, industry and public demands. There are approximately 500 similar operational examples across Europe alone, the majority of which use the moving grate-type technology being proposed for the MERC.

The Proposal involves the building of all onsite infrastructure required to support the WtE facility, including site utilities, internal roads, weighbridges, parking and hardstand areas, stormwater infrastructure, fencing and landscaping. The Proposal will also include a visitor and education centre to help educate and inform the community on the circular economy, recycling, resource recovery, the benefits of landfill diversion and the WtE process. The intent behind this education is to drive a shift in community thinking and actions around waste management.

The Victorian Waste to Energy Framework (Department of Environment, Land Water and Planning [DELWP] 2021) recognises the role of WtE to divert waste from landfills, helping Victoria transition to a circular economy. Recycling Victoria recognises a role for WtE investment and supports WtE facilities where they meet best-practice environment protection requirements. This includes reducing waste to landfill, supporting waste avoidance, reusing and recycling, and demonstrating social license with affected communities. The Victorian Environment Protection Authority (EPA) Energy from Waste Guideline (Publication 1559, 1 July 2017) also notes that efficient recovery of energy from the thermal processing of waste is considered a resource recovery as opposed to a waste disposal option.

The EPA VIC Guideline: Energy from Waste stipulates that 'Proponents of EfW proposals…will be expected to demonstrate that the siting, design, construction and operation of EfW facilities will incorporate best practice measures for the protection of the land, water and air environments as well as for energy efficiency and greenhouse gas emissions management. Facilities should be able to provide evidence of how they minimise and manage emissions (including pollutants, odour, dust, litter, noise and residual waste) in accordance with relevant statutory requirements.'

The WtE facility has been designed to meet the European Industrial Emissions Directive (IED) (2010) and the associated Best Available Techniques Reference (BREF) Document for Waste Incineration published December 2019, which sets the European Union environmental standards for waste incineration. The facility will also comply with the technical criteria set out in the EPA Victoria Guideline: Energy from Waste publication 1559.1.

The purpose of this specialist assessment is to demonstrate compliance with the various authority requirements, develop community support and social license.

1.2 Bushfire Assessment

Ecology and Heritage were engaged by Cleanaway to prepare a Bushfire Risk Assessment for the Proposed WtE at 510 Summerhill Road, Wollert. It has been prepared for the consideration by the Minister for Planning who is the responsible authority for the development proposal.

The purpose of this report is to undertake a Bushfire Risk Assessment of the local and broader landscape and address the legislative implications associated with proposal against *Clause 13.02-1S Bushfire*, *Clause 44.06 Bushfire Management Overlay (BMO)* and *Clause 53.02 Bushfire Planning* of the Whittlesea Planning Scheme, and *Australian Standard (AS) 3959:2018 Construction of buildings in bushfire prone areas (Standards Australia 2018)*.

1.3 Project Area

510 Summerhill Road, Wollert (i.e. the Project area) is approximately 82 hectares in area and is located 26 kilometers north of Melbourne's CBD. The Project area is bound by Summerhill Road along its southern boundary and is surrounded by undeveloped pastureland to the north, east and west (Attachment 1).

The Project area predominantly comprises open pasture with a few trees and shrubs present, while the surrounding properties have a more extensive coverage of larger native trees and shrubs. A dwelling currently exists in the centre of the property, surrounded by ornamental gardens, shrubs and trees. This dwelling will be demolished as part of the Proposal. A few small, isolated patches of the invasive weed Gorse *Ulex europaeus* exist throughout the site. The Project area is generally flat and consists of mixed grassland containing both native and invasive species.

The Project area is zoned Farming Zone (FZ) with a small portion of Rural Conservation Zone – Schedule 1 (RCZ1) in the north-east of the Project area. The Project area is also partially covered by the Environmental Significance Overlay – Schedule 4 (ESO4) and is wholly covered by the Designated Bushfire Prone Area (BPA) (Department of Energy, Environment and Climate Action (DEECA) 2023a).

According to NatureKit (DEECA 2023b), the Project area is located within the Victorian Volcanic Plains bioregion, Melbourne Water Catchment Management Authority and City of Whittlesea.

The Project area was assessed on 7th September 2022.

2 RESPONSE TO CLAUSE 13.02-1S

Clause 13.02-1S has the objective to '*strengthen the resilience of settlements and communities to bushfire through risk-based planning that prioritises the protection of human life*' (p1). This clause applies to land in the Bushfire Prone Area (BPA), Bushfire Management Overlay (BMO) and/or proposed to be used or developed in a way that may create or increase bushfire hazard. The Project area falls within the BPA category.

Clause 13.02-1S contains five key strategies to meet the objective, which are:

- Protection of human life.
- Bushfire hazard identification and assessment.
- Settlement planning.
- Areas of biodiversity conservation value.
- Uses and development in a Bushfire Prone Area.

A detailed assessment against each of the strategies is provided below.

The bushfire hazard is assessed at five different levels (Attachments 1 to 5), with a Bushfire Management Plan provided in Attachment 6.

2.1 Protection of Human Life Strategy

These strategies require that the priority be given to the protection of human life.

2.1.1 *Prioritising the protection of human life over all other policy considerations*

Several mitigation measures have been employed to prioritise the protection of human life. These include:

- Adequate opportunities for occupant emergency vehicle access and occupant egress (i.e. appropriate road width, curve, angle etc.).
- Ensuring emergency vehicle access to water supply via a central water supply point and three static water supply tanks in accordance with Country Fire Authority (CFA) requirements (i.e. hydrants will be positioned within 120 metres of the rear of each building) (Attachment 6).

It is considered that any future development can appropriately prioritise the protection of human life by ensuring all of the habitable buildings (i.e. buildings which will be utilised by people for the operation component of the WtE facility) will not be exposed to a radiant heat flux of more than 12.5 kilowatts/square metre, which is commensurate to a Bushfire Attack Level (BAL)-12.5 construction standard (Attachment 6). Proposing that the habitable buildings be constructed to BAL-12.5 is considered acceptable with respect to the protection of human life given the low bushfire risk posed by the surrounding landscape, which is discussed in detail in Section 2.2.4. Buildings which are not deemed habitable, such as out-buildings, truck sheds or storage rooms, will implement a 10-metre separation distance surrounding the building (Attachment 6).

2.1.2 *Directing population growth and development to low risk locations and ensuring the availability of, and safe access to, areas where human life can be better protected from the effects of bushfire*

The development proposal is for a WtE facility which will contain less quantum of population than a residential development. Additionally, the development is in a highly modified and low bushfire risk setting, which is largely characterised by land historically used for agricultural purposes. The wider landscape largely contains areas currently transitioning to urban development, unmanaged grasslands greater than 100 millimetres, low threat grassed areas (i.e. managed/landscaped lawns), existing urban areas and rural residential properties (Attachments 1 to 4). These areas are intersected by many non-vegetated areas, e.g. highways, suburban streets, water bodies and quarries to the north and south of the Project area.

Given the landscape context, occupants will be able to easily move to areas where life can be better protected from the effects of fire by moving into built-up areas to the west (3.3 kilometres to the Craigieburn township) or southeast (7.0 kilometres to the Somerton or Epping townships). Furthermore, access to the Hume Freeway to the west and the Craigieburn Bypass to the south will provide effective routes to allow for people to disperse into the low threat areas of Epping (south) and Craigieburn (west) if a fire is not hindering the route.

2.1.3 *Reducing the vulnerability of communities to bushfire through the consideration of bushfire risk in decision making at all stages of the planning process*

This development addresses the risk by ensuring the following:

- All proposed habitable buildings within the Project area can be constructed to BAL-12.5 with their commensurate separation distances;
- Access from the existing road network (i.e. from Summerhill Road);
- An internal road network that ensures adequate occupant egress;
- Emergency vehicle access opportunities to and from the Project area; and,
- Ensuring that a water station and tanks are provided.

The CFA provide four principles to respond to *Clause 13.02-1S*, including that settlement planning decisions should:

- '*Direct development to locations of lower bushfire risk;*
- *Carefully consider development in locations where there is significant bushfire risk that cannot be avoided;*
- *Avoid development in locations of extreme bushfire risk; and*
- *Avoid development in areas where planned bushfire protection measures may be incompatible with other environmental objectives*' (CFA 2015, p.4).

The Site is in a location for planned future urban development. It is located within in the urban growth boundary and most of the Site (excluding the small part of the land in the Rural Conservation Zone) is

identified in Melbourne's Northern Growth Corridor Plan for future development. The Proposal is considered to apply all four principles by building in largely cleared paddocks, surrounded by other paddocks and grassland, that do not pose an extreme bushfire risk. There are also no incompatible environmental/biodiversity implications.

2.2 Bushfire Hazard and Identification Assessment Strategies

These strategies require the bushfire hazard to be identified and an appropriate risk assessment to be undertaken.

2.2.1 *Applying the best available science to identify vegetation, topography and climatic conditions that create a bushfire hazard*

This report identifies the bushfire hazard and applies the standard site assessment methodology used in AS 3959:2018 (Standards Australia 2018), which is applied to developments in the BPA and BMO and is based on the best available science. The bushfire modelling inputs that form the basis for this methodology factor in vegetation type (e.g. forest, woodland, grassland), potential fuel-loads in a long-unburnt vegetation community, weather conditions on higher bushfire risk days (e.g. wind speed, fuel moisture content, days since last rainfall) and the effect of slope gradient on the way fire travels through unmanaged vegetation.

Using GIS software, the site assessment process and desktop assessment has determined the most appropriate vegetation type and commensurate slope category for each section/aspect of unmanaged vegetation (Attachment 5), which has produced the requisite separation distance for BAL-12.5 construction across the development (Attachment 6).

2.2.2 *Considering the best available information about bushfire hazard including the map of designated bushfire prone areas prepared under the Building Act 1993 or regulations made under the Act*

The BPA applies to the entire Project area and wider area due to the presence of pastures across the landscape. The BPA covers an extensive area north and east of Melbourne across largely agricultural and horticultural landscapes, with the closest area not covered by the BPA being approximately two kilometres to the west of the Project area due to that area being highly urbanised.

2.2.3 *Applying the Bushfire Management Overlay to areas where the extent of vegetation can create an extreme bushfire hazard*

The BMO has not been applied to the Project area or within one kilometre of it, which highlights that the Project area or the surrounding properties are not considered to contain an extreme fire hazard.

2.2.4 *Considering and assessing the bushfire hazard on the basis of:*

- *Landscape conditions – meaning the conditions in the landscape within 20 kilometres from a site;*
- *Local conditions – meaning the conditions in the area within approximately 1 kilometre from a site;*

- *Neighbourhood conditions – meaning conditions in the area within 400 metres of the site, and*
- *The site for the development*

Landscape, local and neighbourhood conditions

The bushfire hazard assessment identifies the landscape as being a Landscape Type One in which there is little treed vegetation beyond 100 metres of the Project area, and extreme bushfire behaviour is not possible. The wider landscape (Attachment 1) is characterised by agricultural land, rural residential properties, current residential developments and existing residential areas. The townships of Craigieburn (six kilometres), Roxburgh Park (seven kilometres), Somerton (seven kilometres), Epping (eight kilometres) and Wollert (seven kilometres) are also located in close proximity to the Project area. Non-contiguous woodland vegetation is found in a small patch on the southern side of Summerhill Road. Mount Sugarloaf and Mount Charlie Nature Conservation Reserves are the nearest large forested areas, approximately 30 kilometres to the west and north-west of the Project area respectively (Attachment 1).

At the local scale (Attachment 2) and the neighbourhood scale (Attachment 3) the landscape context highlights the dominance of cropped grassland and lands modified for agricultural purposes. Much of the land to the east of the Site is undergoing or is earmarked for residential development which will result in the removal of vegetation. Some woodland vegetation can be found at the local scale along Merri Creek which runs north-south approximately one kilometre west of the Project area. However, given the limited fuel available and the riparian nature of the vegetation in the creek and lateral reserve, the likelihood of a fire reaching the severity required to impact a development is largely reduced.

There is little potential for embers to impact the site from a forest fire within the Mount Sugarloaf and Mount Charlie Nature Conservation Reserves to the west and northwest. This is because the vegetation between the site and the bushfire hazard at the landscape, local and neighbourhood scales to the north and west (i.e. the directions of approach most associated with severe bushfire behaviour) is highly fragmented and is intersected by roads, major highways, residential properties, residential developments and grazed agricultural land, which all reduce the overall possibility of a landscape scale fire impacting the Project area. Furthermore, residents can easily egress towards the low threat or non-vegetated areas found within the urban areas of the Craigieburn approximately six kilometres to the south-west or Somerton approximately seven kilometres to the south (Attachments 2 to 4).

Site conditions

The bushfire hazard site assessment is an application requirement under AS 3959:2018 (Standards Australia 2018) and describes the bushfire hazard within 100 metres of the assessment area through vegetation and slope classification in accordance with the site methodology.

Classified vegetation within the 150-metre assessment zone comprises Grassland in the form of paddocks, which are located within the property boundary, in addition to the adjoining northern, eastern and western properties (Attachment 5). Areas excluded from classification include the existing dwelling and ornamental gardens in the centre of the Project area and Summerhill Road to the south.

The local topography is highly variable, with hilly slopes across much of the 150-metre assessment zone. With respect to the development areas, the localised topography for each building varies, with some of the intervening classified vegetation being on upslopes or flat land and some of the classified vegetation leading up buildings to the east and south of the development area being on downslopes (Attachment 5).

The assessment demonstrates that habitable buildings within the development can achieve a BAL-12.5 construction standard and provide the commensurate separation distance space within Project area boundaries (Table 1; Attachment 6).

Table 1. Habitable building construction standard and commensurate separation distances for habitable buildings within the Project area using Table 2.4 in AS 3959:2018 (Standards Australia 2018).

Building	Main Waste Processing Buildings	IBA Hall	Administration	Visitor Centre	Gate House
Vegetation Classification	Grassland	Grassland	Grassland	Grassland	Grassland
Slope	Upslope/Flat land	Downslope >0 to 5 degrees	Downslope >0 to 5 degrees	Upslope/Flat land	Downslope >0 to 5 degrees
BAL Construction Standard	BAL-12.5	BAL-12.5	BAL-12.5	BAL-12.5	BAL-12.5
Separation Distance	19 metres	22 metres	22 metres	19 metres	22 metres

Non-habitable buildings (i.e. Truck Shed and Storage) include a 10-metre separation (Attachment 6).

All vegetation within each building's separation distance will be managed in a low threat state for as long as the WtE facility is operational in accordance with the following measures:

- Grass must be short cropped and maintained at a maximum height of 100 millimetres during the declared fire danger period;
- All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period;
- Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building;
- Plants greater than 10 centimetres in height must not be placed within 3 metres of a window or glass feature of the building;
- Shrubs must not be located under the canopy of trees;
- Individual and clumps of shrubs must not exceed 5 square metres in area and must be separated by at least 5 metres;
- Trees must not overhang or touch any elements of the building;
- The canopy of trees must be separated by at least 5 metres; and,

- There must be a clearance of at least 2 metres between the lowest tree branches and ground level.

2.2.5 *Consulting with emergency management agencies and the relevant fire authority early in the process to receive recommendations and implement appropriate bushfire protection measures*

Cleanaway is currently liaising with the City of Whittlesea during the preliminary stages of the development. During the detailed design phase of the development, Cleanaway plans to liaise with both Council and CFA regarding vegetation management, water and access requirements and how best to implement mitigation measures into the design. This dialogue will continue to ensure that emergency management agencies are aware of the development's progress and can discuss relevant design aspects and provide guidance where necessary.

2.2.6 *Ensuring that strategic planning documents, planning scheme amendments, planning permit applications and development plan approvals properly assess the bushfire risk and include appropriate bushfire protection measures*

Clause 13.02-1S, Clause 44.06, and Clause 53.02 of the Whittlesea Planning Scheme, together with the DEECA's advisory and practice notes (DELWP 2017a, 2017b, 2018), CFA guidance note (CFA 2015) and the building regulations (i.e. AS 3959:2018) have been referred to when assessing the bushfire risk. The standards and requirements provided in these documents have been addressed through several bushfire mitigation measures.

2.2.7 *Not approving development where a landowner or proponent has not satisfactorily demonstrated that the relevant policies have been addressed, performance measures satisfied or bushfire protection measures can be adequately implemented*

Several bushfire mitigation measures will be implemented as part of the Proposed development, which include implementing all the access and water supply requirements stipulated under the planning scheme. These include constructing all buildings at a minimum BAL-12.5 construction standard and a higher commensurate separation distance between habitable buildings and the classified vegetation (Attachment 6). Furthermore, all vegetation adjacent to habitable buildings and outbuildings (i.e. sheds) within the development will be maintained in a low threat state (i.e. lawn maintained to less than 100 millimetres in height, ornamental gardens, communal reserve), access will ensure adequate occupant egress and emergency vehicle access opportunities and a compliant water station and water tanks will need to be supplied.

The CFA specifies four situations where development should not proceed, which include:

- '*Isolated settlements where the size and/or configuration of the settlements will be insufficient to modify fire behaviour and provide protection from a bushfire;*
- *Where bushfire protection measures will not reduce the risk to an acceptable level;*
- *Where evacuation (access) is severely restricted; and*

- *Where the extent and potential impact of required bushfire protection measures may be incompatible with other environmental objectives or issues, e.g. vegetation protection, land subject to erosion or landslip.'* (CFA 2015, pp.5-6)

None of these criteria apply to the Proposed development.

2.3 Settlement Planning Strategies

These strategies plan to strengthen the resilience of settlements and communities and prioritise protection of human life.

2.3.1 *Directing population growth and development to low risk locations, being those locations assessed as having a radiant heat flux of less than 12.5 kilowatts/square metre under AS 3959:2018 Construction of Buildings in Bushfire-prone Areas (Standards Australia 2018)*

Habitable buildings within this development have been located so they can achieve a radiant heat flux of 12.5 kilowatts/square metre (Attachment 5), which aligns with a BAL-12.5 construction standard. Given that the proposed buildings are large and have a low occupation density, occupants will typically be in areas with a radiant heat flux of less than 12.5 kilowatts/square metre.

2.3.2 *Ensuring the availability, and safe access to, areas assessed as a BAL-LOW rating under AS 3959:2018 Construction of Buildings in Bushfire-prone Areas (Standards Australia 2018) where human life can be better protected from the effects of bushfire*

An area is rated as BAL-LOW when there is no classified vegetation within 50 metres of that point when surrounded by grassland, or 100 metres of that point when surrounded by all other vegetation types (Standards Australia 2018). Non-vegetated areas such as buildings, roads, carparks and footpaths, and low threat vegetation such as managed lawns and ornamental gardens are considered part of a landscape rated as BAL-LOW.

The masterplan for this development contains a detailed outlay of the Proposed development, which includes hard surface areas not included in the attachments to this report, including parking and truck decoupling areas. The available space for any vegetation is therefore minimal and all vegetation within the inner areas of the development will be managed in a low threat state as part of the general management of the WtE facility (Attachment 6). Therefore, moving towards the southern part of the Site and away from the grassland and woodland vegetation will provide space in which human life would be better protected from the effects of fires in an area classified as BAL-LOW. Alternatively, occupants will have access to the built-up areas of Wollert (i.e. 6 kilometres) and Craigieburn (i.e. 3.2 kilometres) to the south-east and west, respectively.

2.3.3 *Ensuring the bushfire risk to existing and future residents, property and community infrastructure will not increase as a result of future land use and development*

The development of this precinct is not expected to increase bushfire risk to existing and future residents, property or community infrastructure. The buildings will be separated from unmanaged grassland and woodland vegetation in accordance with the proposed BAL construction standard and

the development will contain entirely low threat vegetation (i.e. managed lawns, and landscaping) and non-vegetated areas (i.e. buildings, roads, carparks, footpaths). These measures will reduce the fire risk within the Project area and therefore provide fire behaviour and management benefits for the surrounding properties.

2.3.4 *Achieving no net increase in risk to existing and future residents, property and community infrastructure, through the implementation of bushfire protection measures and where possible reducing bushfire risk overall*

The development of the Project area will result in a reduction in the overall fuel available in the landscape due to the replacement of grassland with a buildings and other hard surface structures, which will contain associated low threat vegetation (e.g. mown lawn, landscaping) and non-vegetated areas (e.g. buildings, roads, carparks, footpaths). There will be no net increase in risk to infrastructure as a result of the development, as appropriate bushfire mitigation measures will be implemented. These include providing enough separation distance to facilitate BAL-12.5 construction, access/egress points and a static water supply for each habitable building.

2.3.5 *Assessing and addressing the bushfire hazard posed to the settlement and the likely bushfire behaviour it will produce at a landscape, settlement, local, neighbourhood and site scale, including the potential for neighbourhood-scale destruction*

This report addresses the bushfire hazard posed to the Project area at a range of scales in Section 2.2.4.

Historical agriculture and urban development characterises the larger landscape, which results in the replacement of some classified vegetation with areas of low threat vegetation (i.e. manicured/landscape gardens, nature strips and sporting ovals) and excluded area such as roads, buildings and other related infrastructure. As such it is considered that the potential for neighbourhood-scale destruction is low. If a fire were to approach from the north-west, i.e. the most likely direction of fire attack on severe fire weather days, it would be moderated by the low threat vegetation in the surrounding area, present around dwellings and as short grazed grass, and several roads. Woodland within the Merri Creek and the lateral reserve, and grassland within the remaining property north of the Project area, and in the surrounding neighbouring properties (Attachment 6) are considered the primary bushfire threats within the surrounding area. However, given that this area lacks connectivity to any high fuel zones, and is often dissected by roads and buildings, it is considered a negligible risk. The likelihood of a fire igniting via natural causes (i.e. lightning strike, embers) within this area is relatively low, however, there is potential for a fire to be ignited via anthropogenic means (i.e. arson). Furthermore, this development is immediately surrounded by paddocks and a small number of dwellings, which is not analogous to neighbourhood-scale destruction if a fire were to travel through this landscape.

2.3.6 *Assessing alternative low risk locations for settlement growth on a regional, municipal, settlement, local and neighbourhood basis*

No alternative low risk locations have been assessed as part of this proposal as the proponent is managing the development of this Site only. Also given this wider landscape is largely agricultural land, locating the WtE facility anywhere in the wider area would generally contain the equivalent bushfire risk.

2.3.7 *Not approving any strategic planning document, local planning policy, or planning scheme amendment that will result in the introduction or intensification of development in an area that has, or will on completion have, more than a BAL-12.5 rating under AS 3959:2018 Construction of Buildings in Bushfire-prone Areas (Standards Australia 2018)*

The development of the land reduces overall bushfire risk and complies with a BAL-12.5 construction standard.

2.4 Areas of Biodiversity Conservation Value Strategy

This strategy aims to direct growth away from unacceptable biodiversity impacts.

2.4.1 *Ensure settlement growth and development approvals can implement bushfire protection measures without unacceptable biodiversity impacts by discouraging settlement growth and development in bushfire affected areas that are of high biodiversity conservation value*

Development in areas of biodiversity importance has been minimised by locating the development on previously cleared areas. The entire development area (Attachment 5) and associated defendable space area utilises a previously cleared area of low biodiversity quality, which comprises mostly introduced grasses and contains limited habitat for native fauna species.

2.5 Use and Development Control in a Bushfire Prone Area Strategy

These strategies require certain developments in the BPA to consider the bushfire risk and potential impacts.

2.5.1 *In a bushfire prone area designated in accordance with regulations made under the Building Act 1993, bushfire risk should be considered when assessing planning applications for the following uses and development:*

- *Subdivisions of more than 10 lots.*
- *Accommodation*
- *Child care centre*
- *Education centre*
- *Emergency services facility*

- *Hospital*
- *Indoor recreational facility*
- *Major sports and recreation facility*
- *Place of assembly*
- *Any application for development that will result in people congregating in large numbers*

The development is for a WtE facility so therefore this section is not applicable to the development.

2.5.2 *When assessing a planning permit application for the above uses and development:*

- *Consider the risk of bushfire to people, property and community infrastructure*
- *Require the implementation of appropriate bushfire protection measures to address the identified bushfire risk*
- *Ensure new development can implement bushfire protection measures without unacceptable biodiversity impacts*

This section does not apply to the development as the development is classified as a WtE facility. Nonetheless, habitable buildings within the development will achieve a BAL-12.5 construction standard (Attachment 6).

3 CONCLUSION

This report has assessed the bushfire hazard within the Project area and in the wider landscape in accordance with *Clause 13.02-1S*, *Clause 44.*06 and *Clause 53.02* of the Whittlesea Planning Scheme and the bushfire site assessment methodology provided in AS 3959:2018 (Standards Australia 2018).

The wider landscape (Attachment 1) is characterised by agricultural land, rural residential properties, areas undergoing transition to urban uses, current residential developments and existing residential areas while the townships of Craigieburn (six kilometres), Roxburgh Park (seven kilometres), Somerton (seven kilometres), Epping (eight kilometres) and Wollert (seven kilometres) are also located in close proximity to the Project area. Non-contiguous woodland vegetation is found in a small patch on the south side of Summerhill Road. Mount Sugarloaf and Mount Charlie Nature Conservation Reserves are the nearest large forested areas, approximately 30 kilometres to the west and north-west of the Project area respectively (Attachment 1). At the local scale (Attachment 2) and the neighbourhood scale (Attachment 3) the landscape context highlights the dominance of cropped grassland and lands modified for agricultural purposes. Much of the land to the east is undergoing or is earmarked for residential development which will result in the removal of vegetation. Some woodland vegetation can be found within Merri Creek which runs north-south approximately one-kilometre west of the Project area. However, given the limited fuel available and the riparian nature of the vegetation in the creek and lateral reserve, the likelihood of a fire reaching the severity required to impact a development is largely reduced. Residents can easily egress towards the centre of the development where there is low threat or non-vegetated areas found within the urban areas of the Craigieburn approximately six kilometres to the south-west or Somerton approximately seven kilometres to the south (Attachments 2 to 4).

Several mitigation measures have been adopted to reduce the bush and grassfire risk to an acceptable level. These include the provision of access/egress points for the Project area from the established road network, ensuring the internal Project area road network meets CFA access requirements and the installation of a static water supply and water tanks. All habitable buildings (i.e. visitor centre, IBA sorting process, administration, waste treatment facility and gate house; Attachment 5) will achieve a BAL-12.5 construction standard and commensurate separation distances. All non-habitable buildings (i.e. truck shed and storage; Attachment 5) will provide a 10-metre separation distance buffer (Attachment 6). All separation distances will be contained within the property boundary and be managed in a low threat state for the life of the WtE facility.

The WtE facility will decrease the bushfire risk to the surrounding areas, as the construction of buildings, roads, carparks, footpaths and managed vegetation will reduce the fuel available to burn.

4 SITE PHOTOS

Plate 1. Woodland vegetation to the south of Summerhill Road, south of the Project area (Ecology and Heritage Partners Pty Ltd 07/09/2022).

Plate 2. Typical grassland vegetation across the north, east and west of the Project area (Ecology and Heritage Partners Pty Ltd 07/09/2022).

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Legend

- Project Area
- 20km Landscape Assessment Zone study area
- Freeway and Major Roads
- Collector Road
- Minor Road
- Minor Watercourse
- Major Watercourse
- Permanent Waterbody
- Land Subject to Inundation
- Wetland/Swamp

ADVERTISED PLAN

Attachment 1

Bushfire Hazard Landscape Assessment

510 Summerhill Road, Wollert

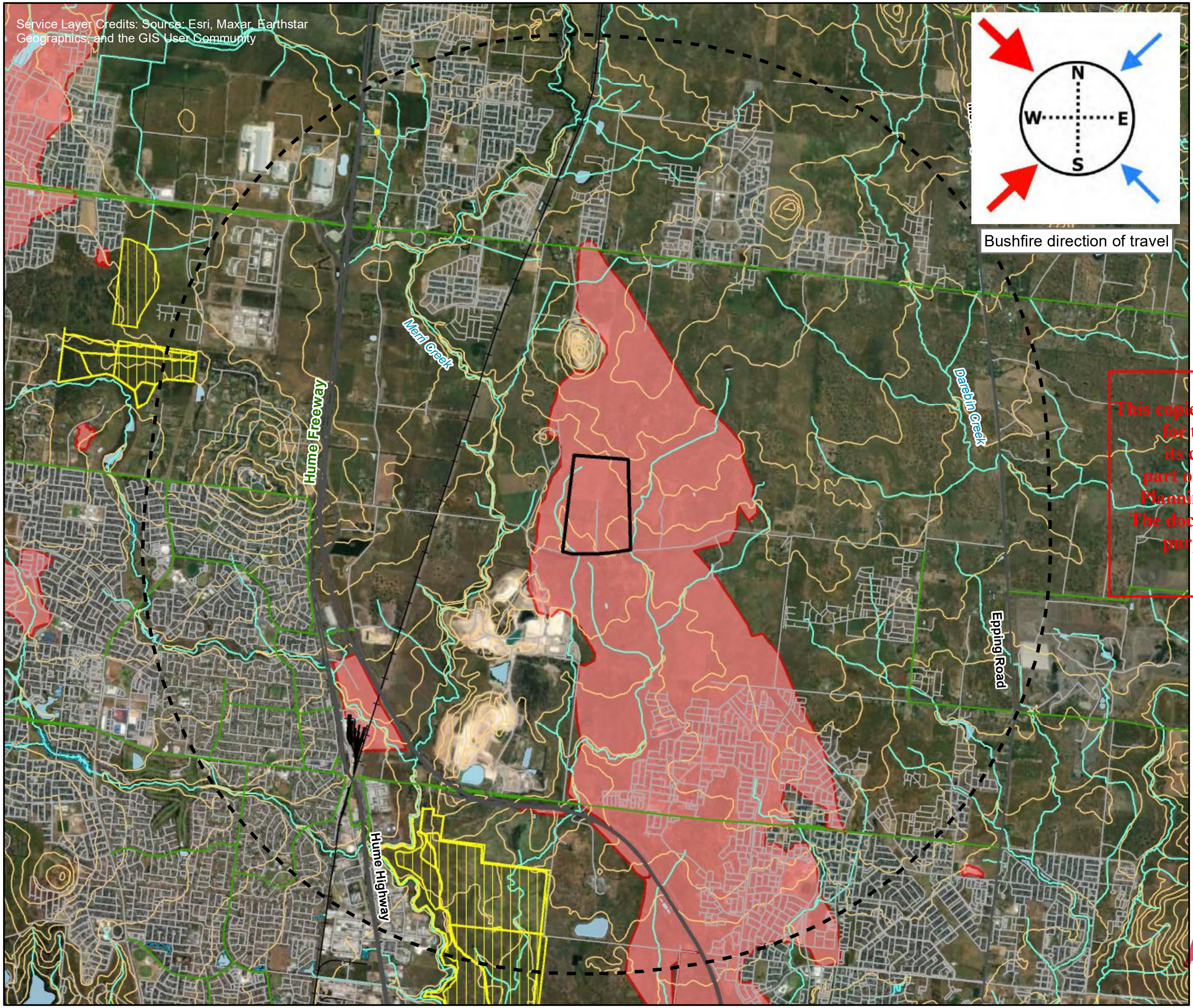
N

0 3 6

Kilometres

Map Scale: 1:220,000 @ A4
Coordinate System: GDA2020 MGA Zone 55

ecology & heritage partners



Legend

- Project Area
- 5km Assessment Zone study area
- Freeway and Major Roads
- Collector Road
- Minor Road
- Minor Watercourse
- Permanent Waterbody
- Land Subject to Inundation
- Wetland/Swamp
- Contour (10m)

Fire History

- Bushfires since 2000
- DELWP Planned Burn Area (2020/21 - 2022/23)

Attachment 2

Fire History and Neighbourhood Safer Place Assessment

510 Summerhill Road, Wollert

0 800 1,600
Metres

Map Scale: 1:60,000 @ A4
Coordinate System: GDA2020 MGA Zone 55

ecology & heritage partners

16414_2_FH_NSP_Assessment_G20 22/03/2023 melsley

Legend

- Project Area
- 1km Local Assessment Zone study area
- Minor Road
- Minor Watercourse
- Permanent Waterbody
- Contour (10m)

Attachment 3

Bushfire Hazard Local Assessment

510 Summerhill Road, Wollert

0 200 400
Metres

Map Scale: 1:17,000 @ A4
Coordinate System: GDA2020 MGA Zone 55

ecology & heritage partners

16414_3_Loc_Assessment_G20 22/03/2023 melsley

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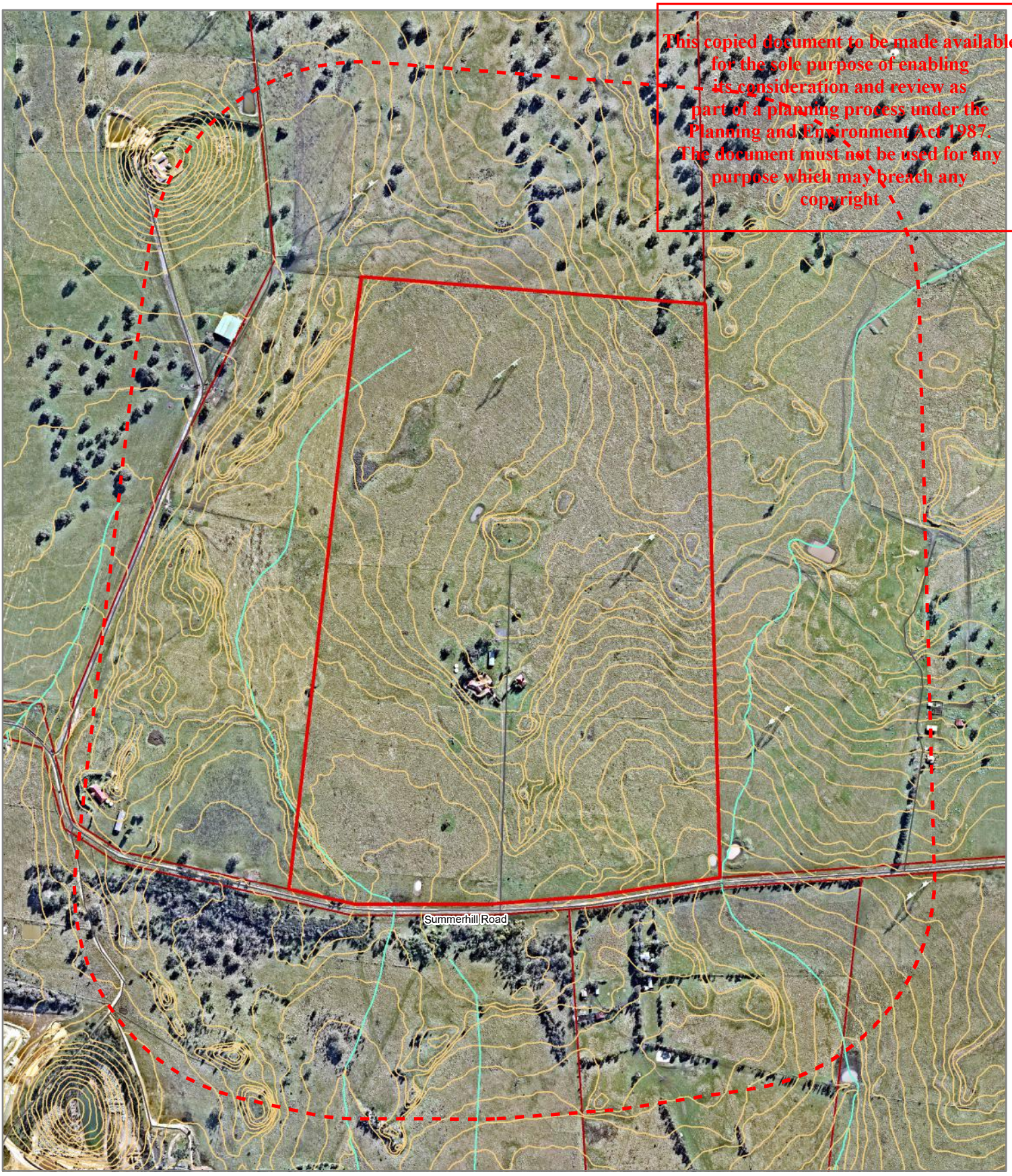


Attachment 4
Bushfire Hazard Neighbourhood Assessment
510 Summerhill Road, Wollert

Legend

- Project Area
- 400m Neighbourhood Assessment Zone study area
- Property Boundaries
- Minor Road
- Minor Watercourse
- Contour (1-5m)

ADVERTISED PLAN

N

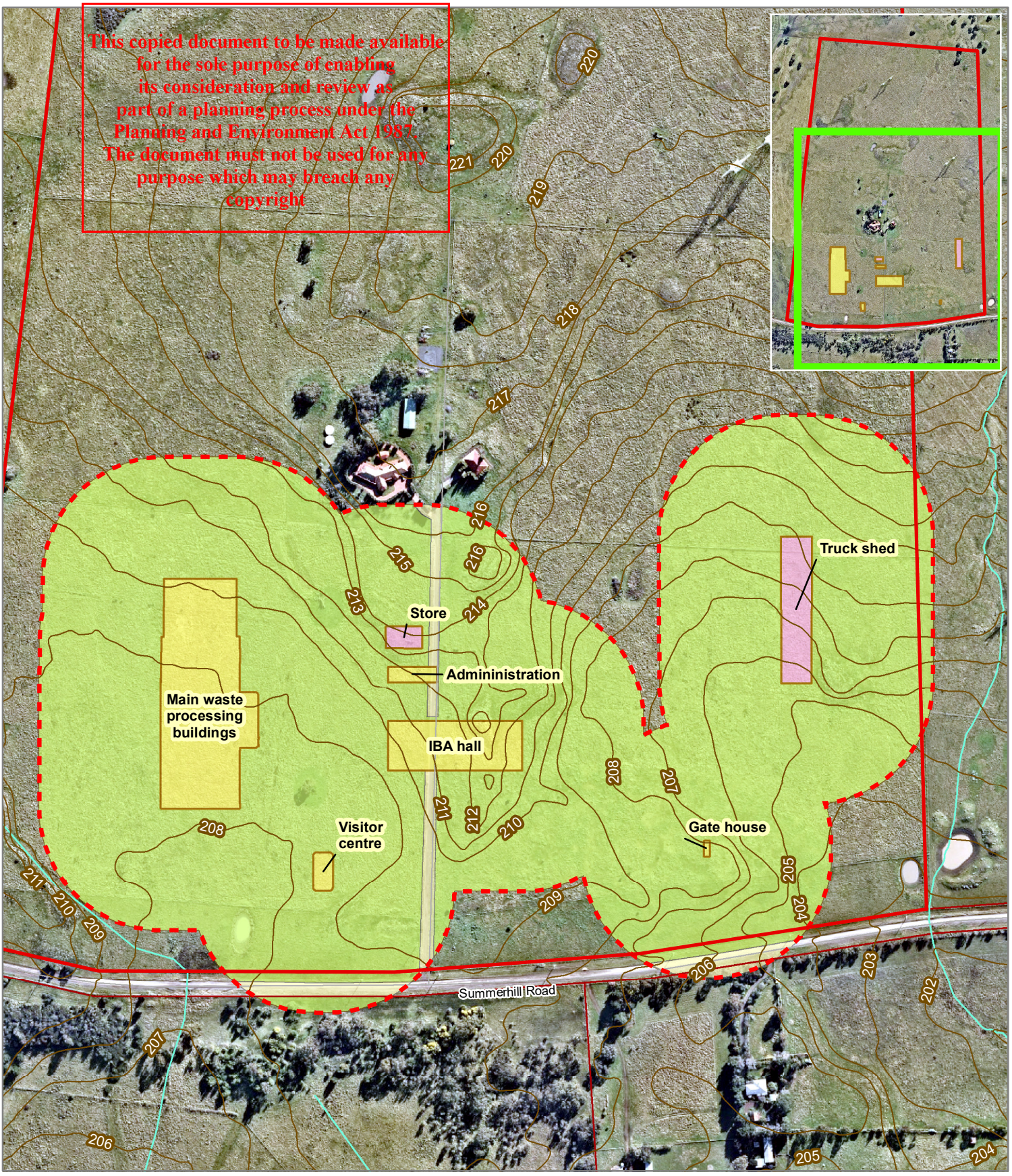
0 150 300
Metres

Map Scale: 1:9,500 @ A4
Coordinate System:
GDA2020 MGA Zone 55

ecology & heritage partners

16414_4_NH_AssessmentP_G20 22/03/2023 melsley

Aerial source: Nearmap 2022



Attachment 5

Bushfire Hazard Site Assessment - Overview

510 Summerhill Road, Wollert

Site Size: 82.03 ha

ecology & heritage partners

Legend

- Project Area
- 100m Site Assessment Area
- Habitable building envelope
- Non-habitable building envelope

Classified vegetation

- Grassland
- Excluded

Other features

- Property boundaries
- Minor Watercourse
- Contour (1-5m)
- Minor Road

ADVERTISED PLAN

N

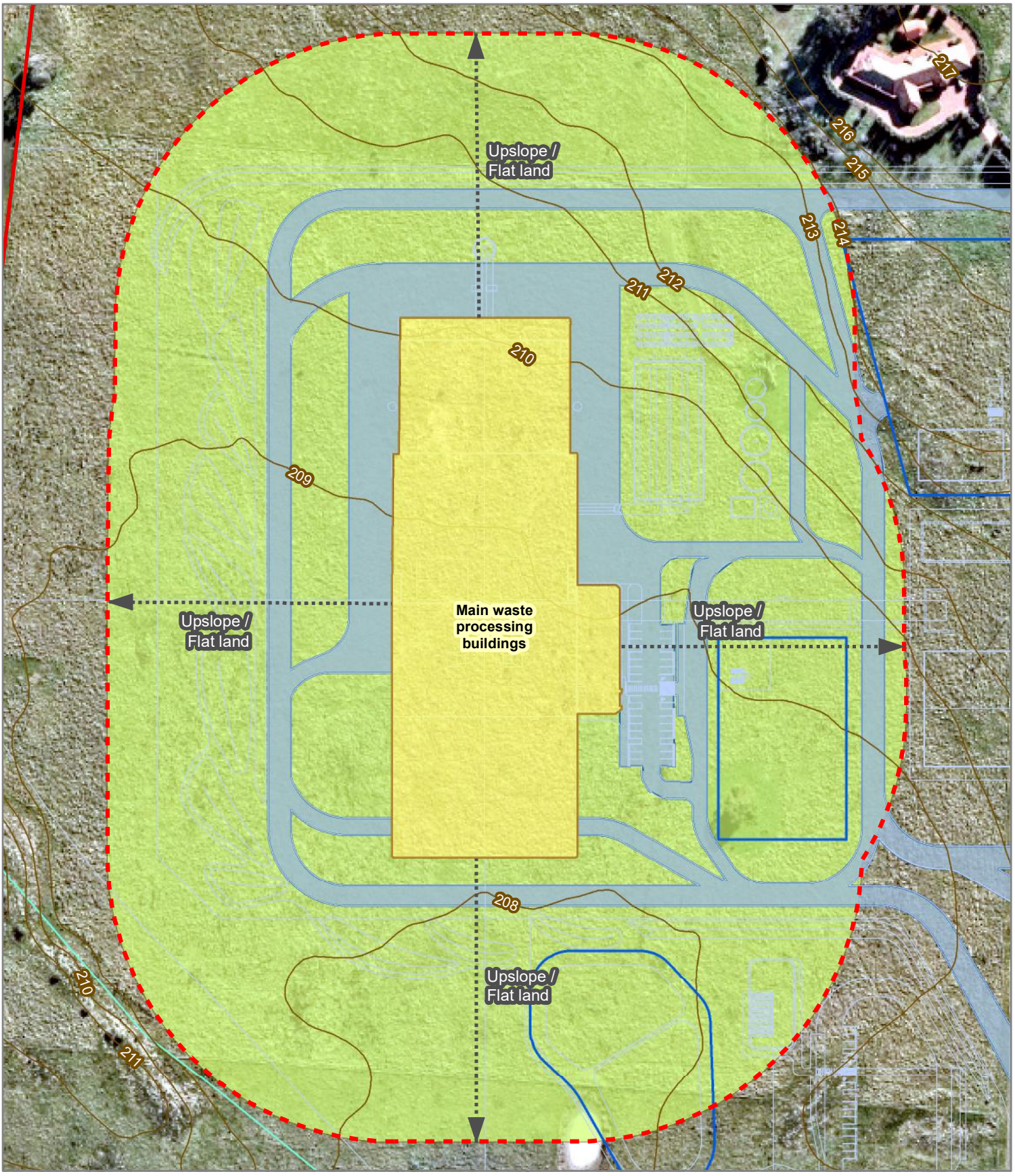
0 70 140

Metres

Map Scale: 1:4,200 @ A4
Coordinate System:
GDA2020 MGA Zone 55

16414_5_Site_AssessmentPOV_G20 22/03/2023 melsley

Aerial source: Nearmap 2022



Attachment 5a
Bushfire Hazard Site Assessment -
510 Summerhill Road, Wollert
Site Size: 82.03 ha

Legend

- Project Area
- 100m Site Assessment Area
- Habitable building envelope
- Internal roads
- Other buildings and areas incl. basins
- General development features

Classified vegetation

- Grassland

Other features

- Property boundaries
- Minor Watercourse
- Contour (1-5m)

ecology & heritage partners

ADVERTISED PLAN

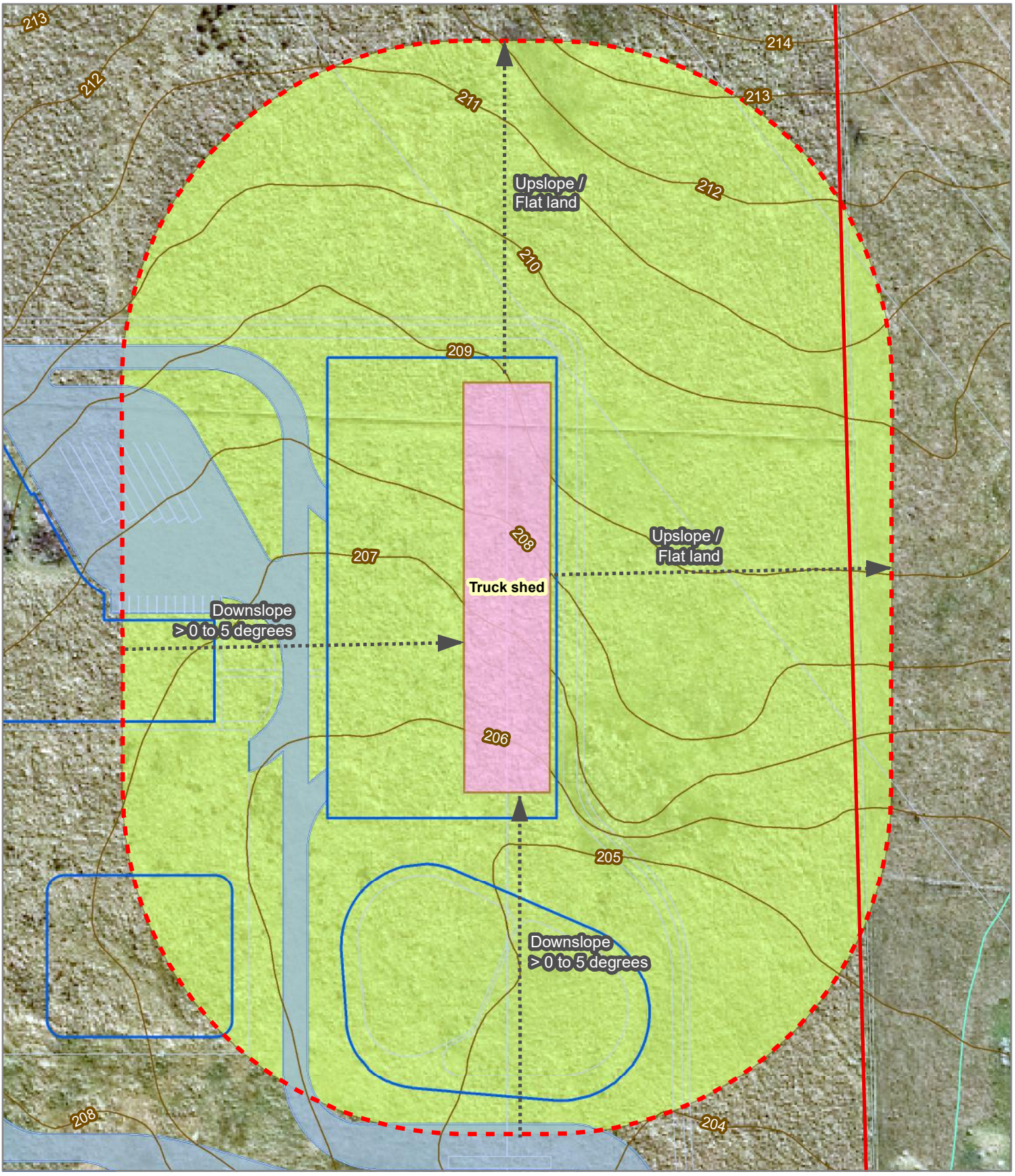
N

0 25 50
Metres

Map Scale: 1:1,800 @ A4
Coordinate System:
GDA2020 MGA Zone 55

16414_5_Site_AssessmentPMB_G20 22/03/2023 melsley

Aerial source: Nearmap 2022



Attachment 5b
Bushfire Hazard Site Assessment -
510 Summerhill Road, Wollert
Site Size: 82.03 ha

Legend

- Project Area
- 100m Site Assessment Area
- Non-habitable building envelope
- Internal roads
- Other buildings and areas incl. basins
- General development features

Classified vegetation

- Grassland

Other features

- Property boundaries
- Minor Watercourse
- Contour (1-5m)

ecology & heritage partners

ADVERTISED PLAN

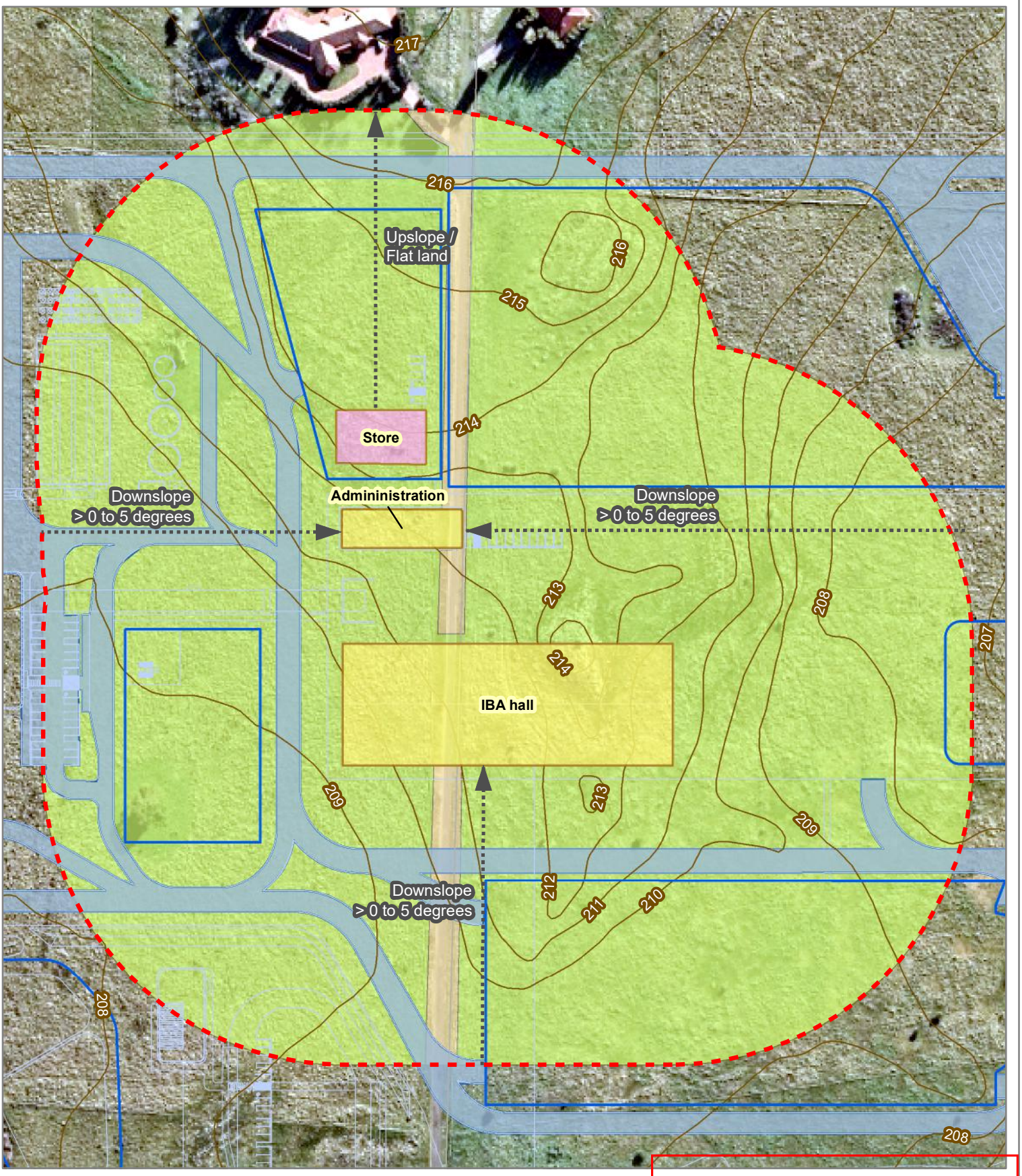
N

0 10 20 Metres

Map Scale: 1:1,500 @ A4
Coordinate System:
GDA2020 MGA Zone 55

16414_5_Site_AssessmentPMB_G20 22/03/2023 melsley

Aerial source: Nearmap 2022



Attachment 5c

Bushfire Hazard Site Assessment -
510 Summerhill Road, Wollert
Site Size: 82.03 ha

Legend

- Project Area
- 100m Site Assessment Area
- Habitable building envelope
- Non-habitable building envelope
- Internal roads
- Other buildings and areas incl. basins
- General development features

Classified vegetation

- Grassland
- Excluded

Other features

- Property boundaries
- Contour (1-5m)
- Minor Road

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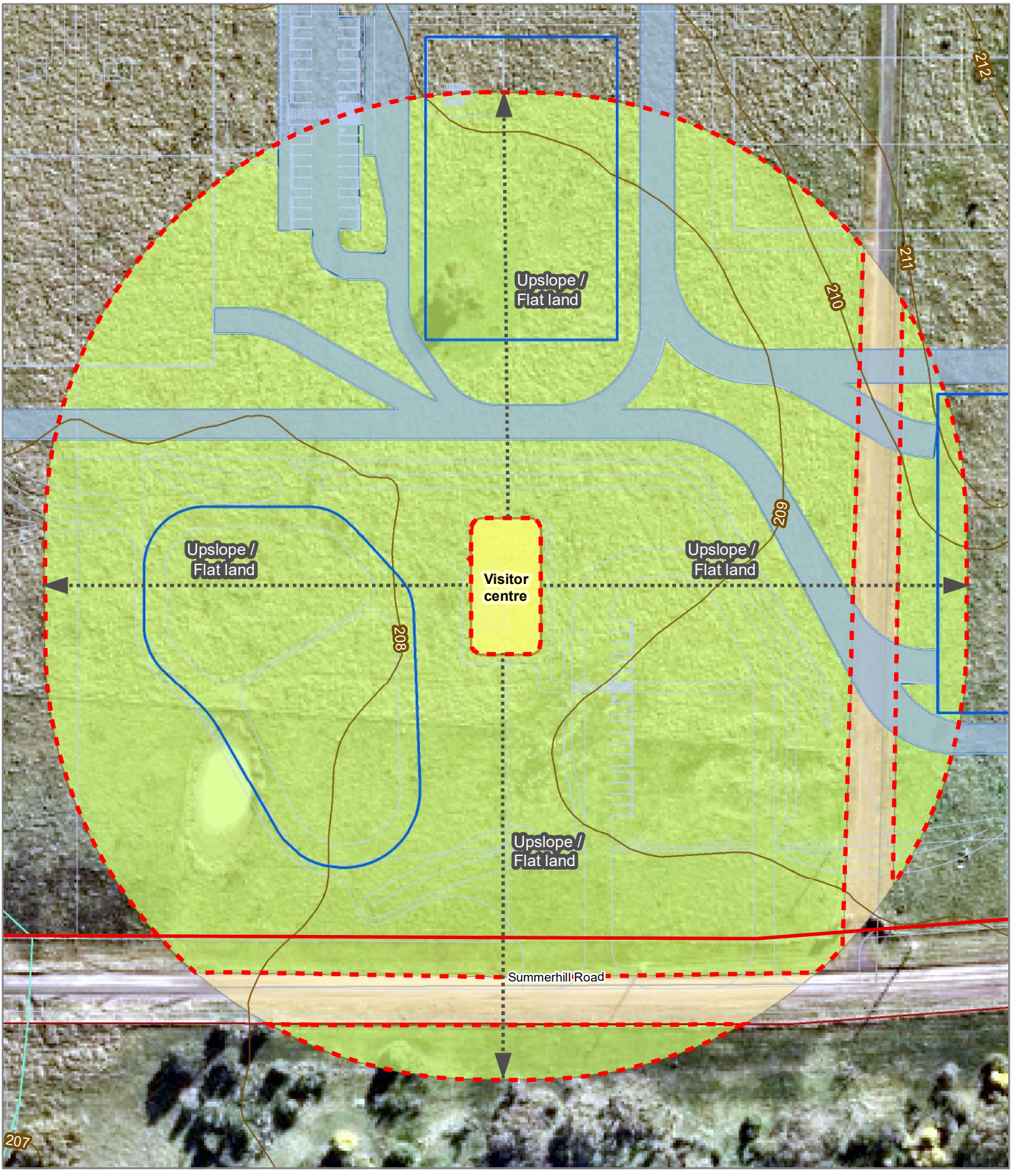
ADVERTISED PLAN

0 20 40 Metres

Map Scale 1:1,200 @ A4
Coordinate System: GDA2020 MGA Zone 55

16414_5_Site_AssessmentPMB_G20 22/03/2023 melsley

Aerial source: Nearmap 2022



Attachment 5d
Bushfire Hazard Site Assessment -
510 Summerhill Road, Wollert
Site Size: 82.03 ha

Legend

- Project Area
- 100m Site Assessment Area
- Habitable building envelope
- Internal roads
- Other buildings and areas incl. basins
- General development features

Classified vegetation

- Grassland
- Excluded

Other features

- Property boundaries
- Minor Watercourse
- Contour (1-5m)
- Minor Road

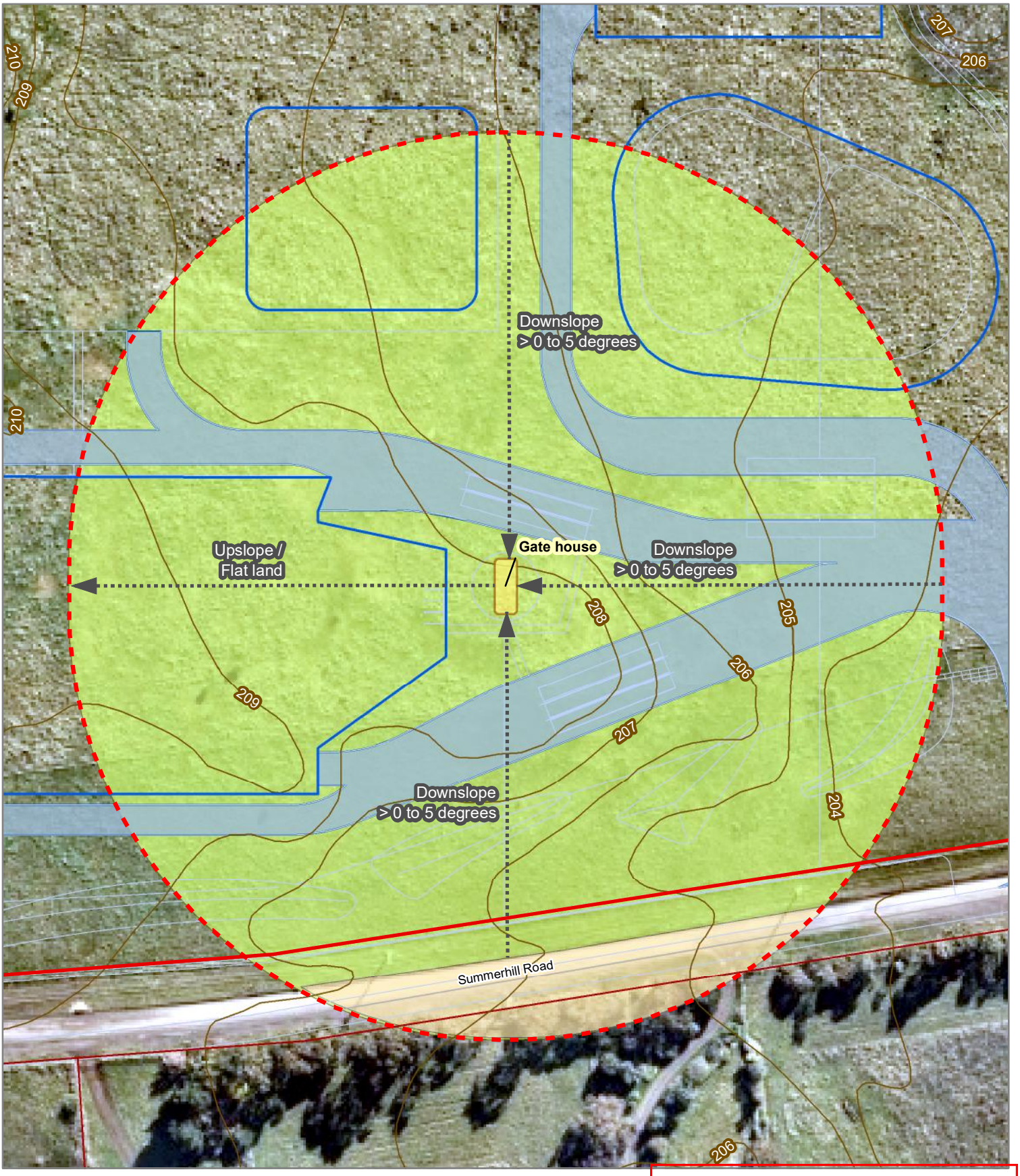
N

0 15 30
Metres

Map Scale: 1:1,200 @ A4
Coordinate System: GDA2020 MGA Zone 55

16414_5_Site_AssessmentPMB_G20 22/03/2023 melsley

Aerial source: Nearmap 2022



Attachment 5e
Bushfire Hazard Site Assessment -
510 Summerhill Road, Wollert
Site Size: 82.03 ha

Legend

- Project Area
- 100m Site Assessment
- Habitable building envelope
- Internal roads
- Other buildings and areas incl. basins
- General development features

Classified vegetation

- Grassland
- Excluded

Other features

- Property boundaries
- Contour (1-5m)
- Minor Road

N

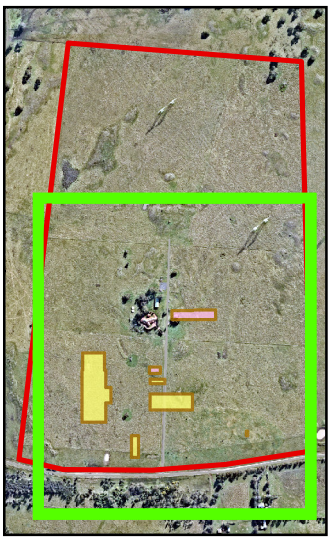
0 10 20 40 60 80 Metres

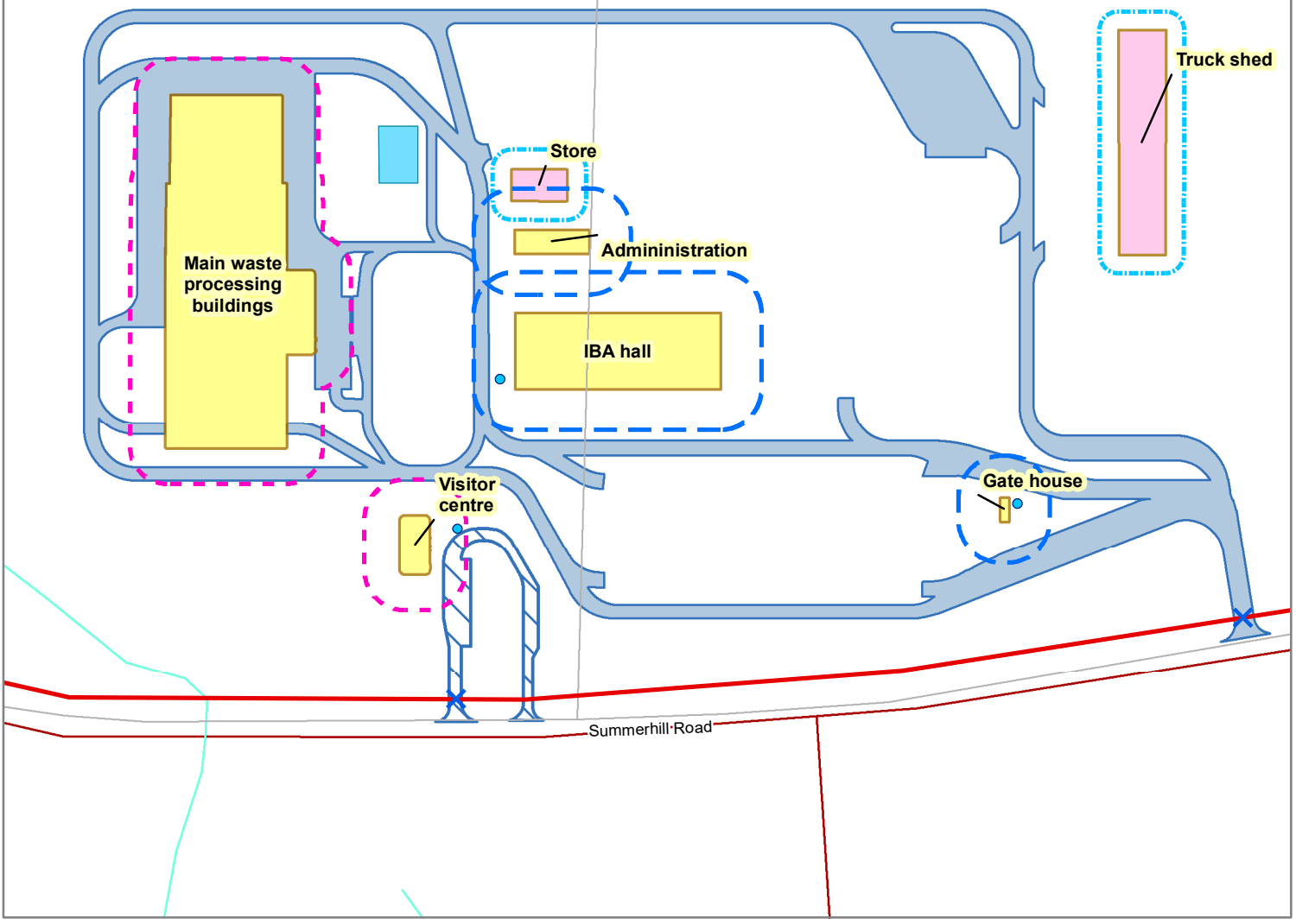
Map Scale: 1:1,200 @ A4
Coordinate System:
GDA2020 MGA Zone 55

16414_5_Site_AssessmentPMB_G20 22/03/2023 melsley

ecology & heritage partners

Aerial source: Nearmap 2022





Attachment 6
Bushfire Management Plan - Overview
510 Summerhill Road, Wollert

ecology & heritage partners

Legend

- Project Area
- Habitable building envelope
- Non-habitable building envelope
- Emergency water supply
- 10,000 litre water tank for emergency use (nominal location)
- Internal roads
- Visitor centre carpark
- Access

Separation distance

- BAL-12.5 (19m)
- BAL-12.5 (22m)
- 10m

Other features

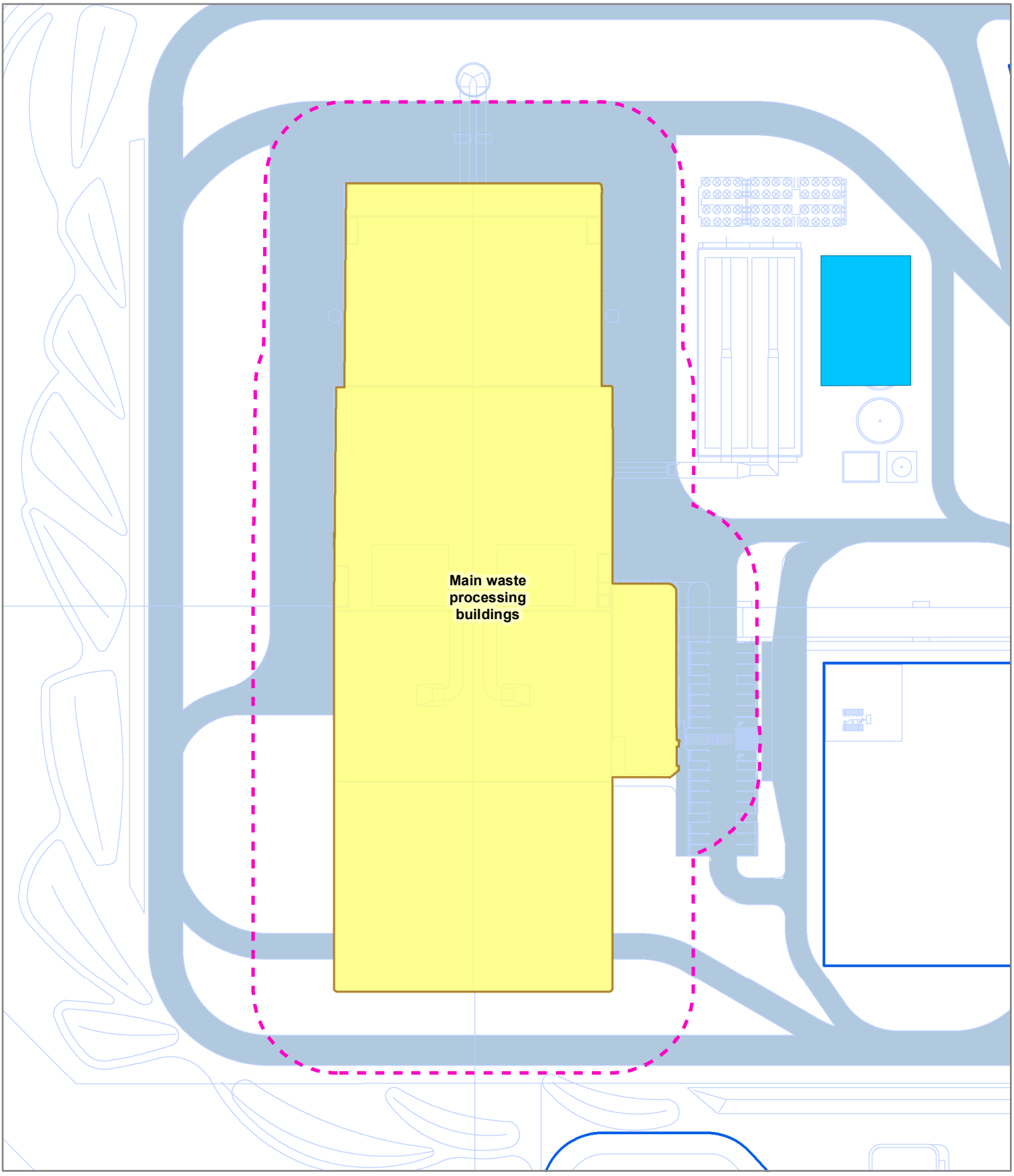
- Property boundaries
- Minor Watercourse
- Minor Road

N

0 50 100
Metres

Map Scale: 1:3,500 @ A4
Coordinate System:
GDA2020 MGA Zone 55

Aerial source: Nearmap 2022



Attachment 6a
Bushfire Management Plan - *510 Summerhill Road, Wollert*

Legend

- Project Area
- Habitable building envelope
- Internal roads
- Other buildings and areas incl. basins
- General development features
- Emergency water supply

Separation distance

- BAL-12.5 (19m)

Other features

- Property boundaries

N

0 20 40
Metres

Map Scale: 1:1,200 @ A4
Coordinate System:
GDA2020 MGA Zone 55

ecology & heritage partners

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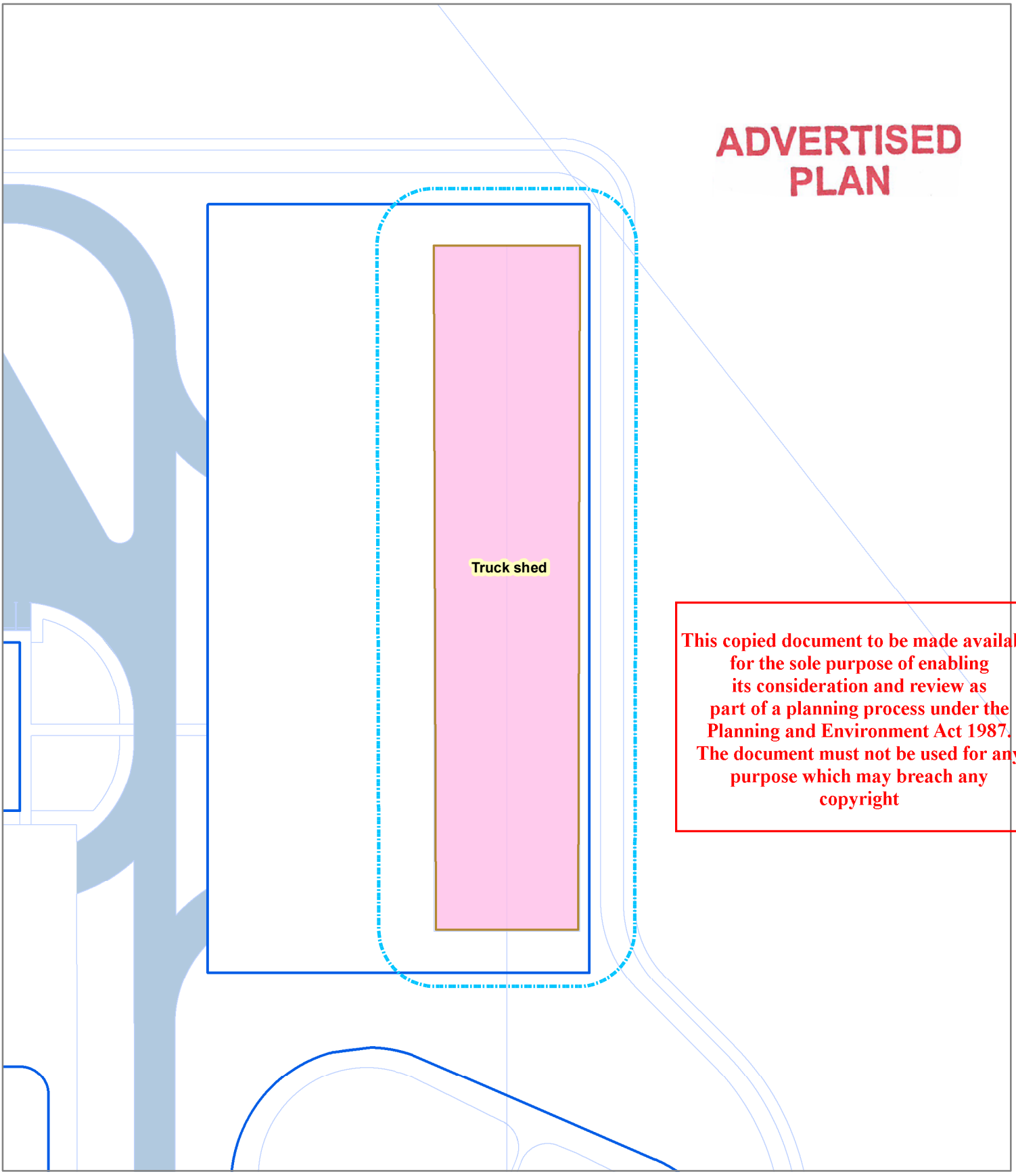

Attachment 6b
Bushfire Management Plan - *510 Summerhill Road, Wollert*

Legend

- Project
- Non-habitable building envelope
- Internal roads
- Other buildings and areas incl. basins
- General development features

Separation distance

- 10m

Other features

- Property boundaries

N

0 15 30
Metres

Map Scale: 1:900 @ A4
Coordinate System:
GDA2020 MGA Zone 55

ecology & heritage partners

16414_6_MgmtPlanPMB_G20 22/03/2023 melsley

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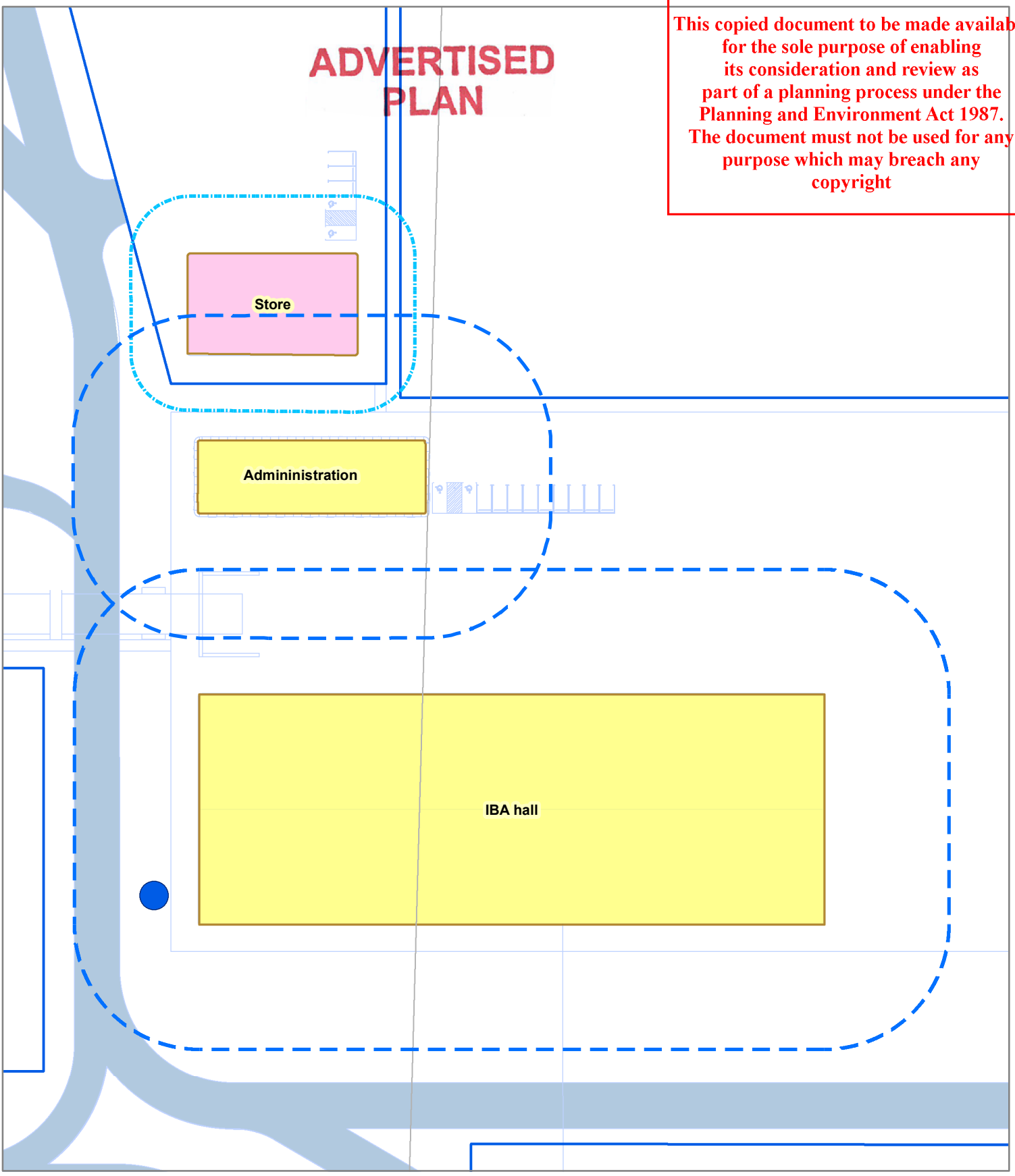

Attachment 6c
Bushfire Management Plan - *510 Summerhill Road, Wollert*

Legend

- Project
- Habitable building envelope
- Non-habitable building envelope
- Internal roads
- Other buildings and areas incl. basins
- General development features
- 10,000 litre water tank for emergency use (nominal location)

Separation distance

- BAL-12.5 (22m)
- 10m

Other features

- Property boundaries
- Minor Road

N

0 15 30
Metres

Map Scale: 1:900 @ A4
Coordinate System:
GDA2020 MGA Zone 55

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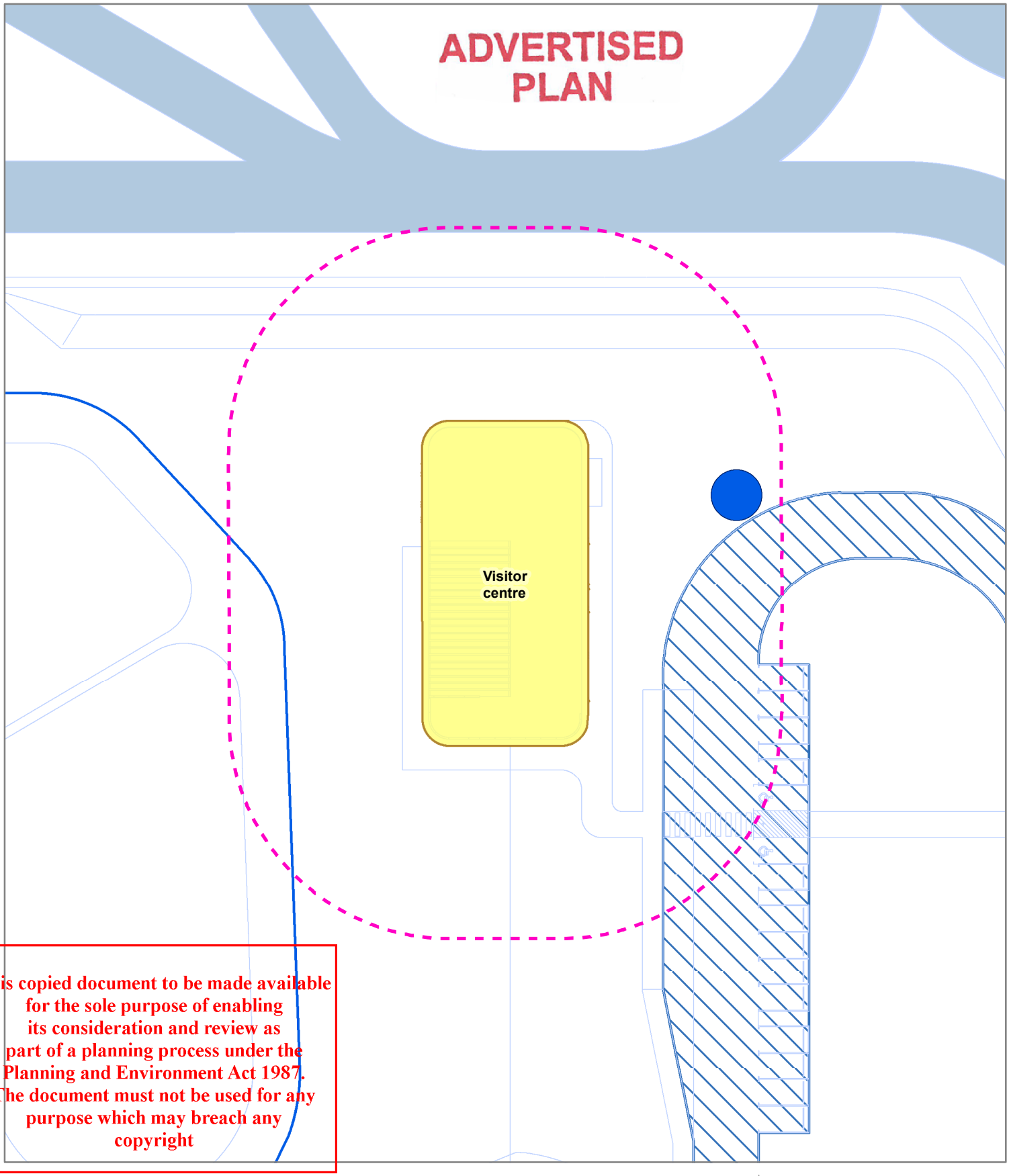
Aerial source: Nearmap 2022



Attachment 6d
Bushfire Management Plan - *510 Summerhill Road, Wollert*

Legend

- Project Area
- Habitable building envelope
- Internal roads
- Visitor centre carpark
- Other buildings and areas incl. basins
- General development features
- 10,000 litre water tank for emergency use (nominal location)

Separation distance

- BAL-12.5 (19m)

Other features

- Property boundaries

N

0 5 10
Metres

Map Scale: 1:500 @ A4
Coordinate System:
GDA2020 MGA Zone 55

ecology & heritage partners

16414_6_MgmtPlanPMB_G20 22/03/2023 melsley

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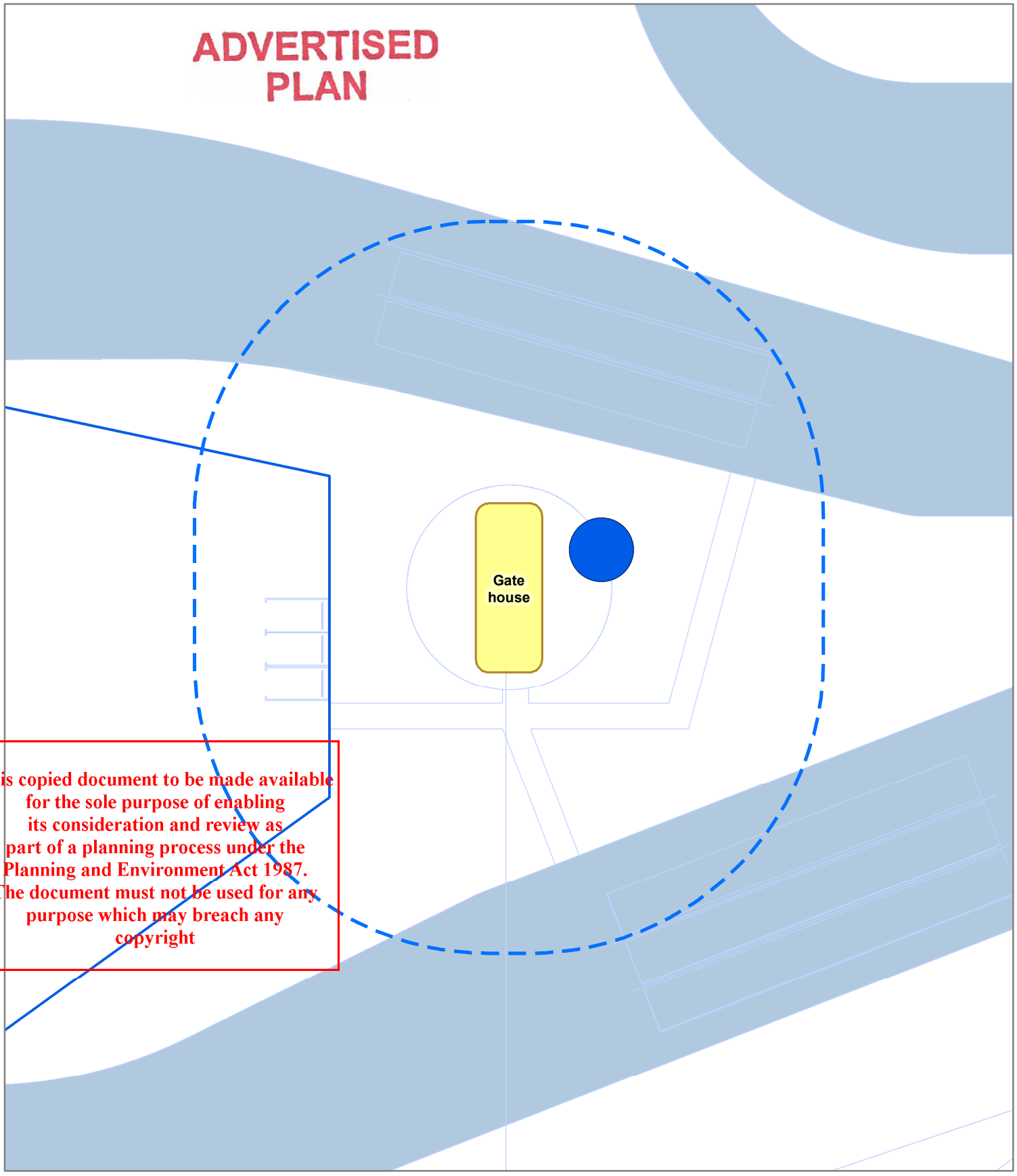

Attachment 6e
Bushfire Management Plan - *510 Summerhill Road, Wollert*

Legend

- Project Area
- Habitable building envelope
- Internal roads
- Other buildings and areas incl. basins
- General development features
- 10,000 litre water tank for emergency use (nominal location)

Separation distance

- BAL-12.5 (22m)

Other features

- Property boundaries

N

0 5 10
Metres

Map Scale: 1:400 @ A4
Coordinate System:
GDA2020 MGA Zone 55

ecology & heritage partners

16414_6_MgmtPlanPMB_G20 22/03/2023 melsley

Aerial source: Nearmap 2022