ACT MATERIALS RECOVERY FACILITY

ADDENDUM TO APPENDIX Q BUSHFIRE RISK ASSESSMENT REPORT

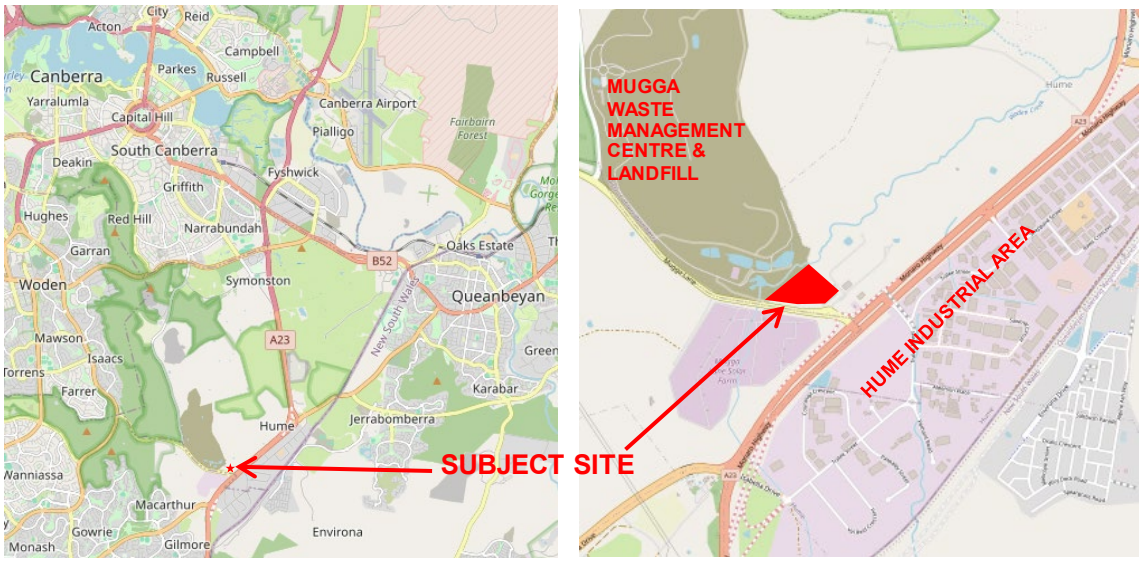
Prepared for Veolia Environmental Services (Australia) Pty Ltd | 11 August 2025

Introduction

This report is prepared as an Addendum to *Appendix Q Bushfire Risk Assessment Report* prepared by GHD for ACT NoWaste in 2023 and submitted with a draft EIS for a new Materials Recovery Facility (MRF) on Block 12 Section 25 Hume, refer Figure 1.

Since that time ACT NoWaste has passed the responsibility to finalise the EIS to Veolia. GHD are not in a position to complete the EIS and as such, Veolia has engaged Element Environment to undertake this work.

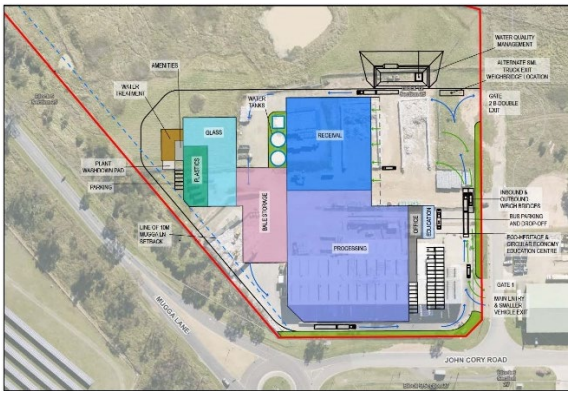
Figure 1: Site Location



Veolia has made changes to the proposed site layout and design of the MRF to achieve operational efficiencies (refer Figure 2 & 3).

Figure 2: Veolia Revised Site Plan

Figure 3: GHD Concept Plan



Additional Investigations

The GHD *Appendix Q Bushfire Risk Assessment Report* considered the bushfire risk and the potential impact of development upon the wider infrastructure network to assess the appropriateness of the proposal in the bush fire hazard context, particularly with regard to the risk

of and from recovered materials fires. This bushfire risk assessment also assessed the strategic implications for bush fire mitigation and management.

New Bushfire Risk Assessment

Due to the change in site layout proposed for the new MRF, Black Ash Bushfire Consulting were engaged to review the original GHD report.

The Black Ash Bushfire Assessment (attached to this Addendum) noted that the GHD report considered the whole site and all buildings as a 'sensitive use' due to the inclusion of an educational facility within the site. However, Black Ash considered that the primary purpose of the development is commercial/ industrial in nature, and this classification remains unchanged despite the potential for school groups or other educational visitors to access the site. The mere availability of the site for visits by school groups does not in itself, designate the development as 'sensitive use' (i.e. that it should be treated as a school) under the ACT Bushfire Management Standards (BMS).

This distinction is crucial when assessing regulatory requirements, land use compatibility, and potential environmental or operational constraints.

Black Ash also noted that the land to the east along Recycling Road is managed land and is not a bushfire risk. This meets the requirements of an APZ. Land to the south within the John Cory Road and road reserve is managed land consisting of a paved surface and managed road reserve and managed land within adjoining properties (see Photo 1). Mugga Lane to the west of the site provides a two way paved surface with managed roadside verge. A narrow band of vegetation is between Mugga Lane and the site that provides trees for screening that do not pose a bushfire threat to the site.

The narrow band of vegetation situated between Mugga Lane and the site serves primarily as a visual buffer, providing tree cover that enhances screening without contributing to bushfire risk. Due to its fragmented nature, the vegetation within this strip does not form a continuous or dense fuel load capable of sustaining or spreading a bushfire. Additionally, the absence of significant undergrowth, ladder fuels, or highly combustible species further minimizes its potential to escalate bushfire hazards.

Given these factors, there is no necessity for additional fuel management within this area. The existing vegetation is already in a state that does not require intervention to mitigate bushfire risk. Any further management would provide negligible risk reduction benefits while potentially impacting the ecological and visual screening values of the site. Therefore, the land within this narrow vegetation strip should remain as it is without compromising site safety or compliance with bushfire protection measures.

Further Bushfire Risk Assessment

ACT Fire & Rescue of the ACT Emergency Services Agency ('Fire & Rescue') provided the following comments on the revised EIS:

- *"The revised Bushfire Assessment Report has considered the proposal as a building of class 5-8 in the Bushfire Management Standards. However, advice from the ESA states that the nature of the facility is consistent with section 8.3.7 – "Hazardous Industry" and consideration of increased protection measures such as asset protection zone (APZ) may be applied. The advice also notes that because the proposal relates to redevelopment of an existing site, there is an opportunity to consider the existing APZ arrangement that is applied to the precinct".*

- *"In accordance with section 8.2.12, Item 1 of the Scoping Document, please provide further consideration to the protection measures necessary to address the potential threat of fire and whether the proposed APZ is appropriate for the development type".*

Veolia's construction contractor Manteena Commercial Pty Ltd appointed Bushfire Protection Planning & Assessment Services Pty Ltd (BPPAS) to consider these comments from Fire & Rescue.

BPPAS Consultants prepared a Bushfire Attack Level Assessment and Statement of Compliance report (included below in Appendix Q) which confirmed that even with conservatively assessing the development as a 'sensitive use' the implementation of recommended measures and emergency management procedures would provide a far better outcome for bushfire safety compliance than what was previously in place.

The recommendations of the BPPAS report are summarised as follows:

- The development is to incorporate fire safety construction provisions as per NCC.
- All components of the development to be non-combustible (BAL-12.5).
- Education building to be constructed to BAL-19.
- An APZ maintained to the block boundary (excluding riparian/grassland constraint).
- A 10m defendable space to be maintained around the development.
- A 2m high colourbond fence to be constructed along the southern boundary, where unmanaged vegetation is within 20m of the building.
- Future grassland management to keep grasses below 200mm.
- Landscaped or vegetated areas to be maintained as 'low threat' as per BMS.
- Any tree planting not to result in overhang or obstruct internal driveways.
- No storage of hazardous materials within 10m of building.
- Electrical supply connections to be underground.
- Any exposed water pipes to be metal.
- Water supply tanks to incorporate 65mm outlet.
- Emergency management and fire evacuation procedures to be prepared and submitted to ACT Fire & Rescue before occupation.
- Fixed firefighting hose and reels to be of a length to reach all immediate surrounding areas.
- Signs to be installed to identify emergency vehicle access, locations of hydrant connection points and evacuation procedures.

As such, the proposed mitigation measures, amended as a result of the Black Ash and BPPAS assessments are outlined in Table 1 below.

Table 1: Mitigation measures to be implemented for the proposal

Potential impact	ID	Measures to reduce impact	Timing
Bushfire	BR01	A bushfire prevention and response plan would be prepared as part of the CEMP, providing relevant information for fire and emergency service responders and project personnel. The plan would include the following requirements: ▪ Plant and equipment to be maintained in accordance with manufacturers recommendations and best practice. ▪ Seasonal and daily fire hazard warnings issued by the ACT ESA to be observed. ▪ No hot works on days of Severe, Extreme or Catastrophic Danger Rating.	Construction

Potential impact	ID	Measures to reduce impact	Timing
		▪ Vehicles to be kept on formed roads and paths, and away from long grass where possible. ▪ Appropriate parking areas to be provided for personnel that are away from long grass and other ignition sources. ▪ All vehicles on-site to be equipped with fire extinguishers. ▪ Fire prevention and fire control instructions to be included in site inductions. ▪ Hot works not to be undertaken outside designated workshop areas. ▪ Job Safety Analyses to incorporate fire ignition risk assessment and controls for prevention of grass fire ignition where relevant. ▪ Job Safety Analyses for activities involving hot works to incorporate hot works risk assessment and controls.	
	BR02	An APZ would be provided in accordance with *ACT Bushfire Management Standards* (ESA, 2023) and maintained to the block boundary, with a 10m defendable space around the development.	Detailed design
	BR03	Primary access would be provided to meet the following requirements: ▪ Minimum vertical clearance to a height of 4.2 metres above access at all times. ▪ Road widths (minimum 3.5 metres for one way and 6.5 metres for two way). ▪ Road capacity (25 tonnes minimum). ▪ Minimum inner radius six metres for curves and minimum distance between inner and outer curves is six metres. ▪ Crossfall of roads not exceeding six percent.	Detailed design
	BR04	APZ landscaping would comply with the *ACT Bushfire Management Standards* (ESA, 2023) fuel management standards and be guided by the fuel management principles including future grassland management to keep grasses below 200mm with landscaped or vegetated areas to be maintained as 'low threat' as per BMS. Any tree planting not to result in overhang or obstruct internal driveways. These would be managed by the site operator.	Operation
	BR05	An *Emergency Management and Evacuation Plan* would be prepared for the proposal in compliance with the requirements set out in the *ACT Bushfire Management Standards* (ESA, 2023) and updated prior to construction, operation and occupancy of the MRF. The plan would: ▪ Clearly identify bushfire preparedness actions, bushfire response actions, evacuation plans and procedures (for on-site and off-site evacuation), and on-site refuge locations. ▪ Include locations and sizes of combustible material stockpiles as per AFAC and NSW guidelines for fire safety in waste management facilities (AFAC, 2022) (FRNSW, 2020) and management of ignition sources. ▪ A copy of the *Emergency Management and Evacuation Plan* would be provided to ESA for its information prior to occupation of the MRF.	Construction and operation
	BR06	The provision of shielding (2m high colourbond fencing) to the perimeter of the block where unmanaged vegetation is within 20m of the building to be erected to assist with prevention of fire travel into the facility from grassland hazard in the event of a bushfire.	Detailed design

Potential impact	ID	Measures to reduce impact	Timing
Facility Fire	BR07	Detailed design would ensure that the layout of the MRF would incorporate compartmentation and appropriate features as per AFAC and NSW guidelines for fire safety in waste management facilities (AFAC, 2022) (FRNSW, 2020). This would include: ▪ Limiting each internal (combustible) stockpile to 1,000 cubic metres. ▪ Ensuring a minimum of six metres unobstructed access is maintained on each accessible side of each internal (combustible) stockpile. ▪ Concrete storage bunkers limited to a height of 5m. This provides separation with 1m freeboard above 4m maximum pile height.	Operation
Construction	BR08	▪ The development is to incorporate fire safety construction provisions as per NCC. ▪ All components of the development to be non-combustible (BAL-12.5). ▪ Education building to be constructed to BAL-19. ▪ No storage of hazardous materials within 10m of building. ▪ Electrical supply connections to be underground. ▪ Any exposed water pipes to be metal. ▪ Water supply tanks to incorporate 65mm outlet. ▪ Emergency management and fire evacuation procedures to be prepared and submitted to ACT Fire & Rescue before occupation. ▪ Fixed firefighting hose and reels to be of a length to reach all immediate surrounding areas. ▪ Signs to be installed to identify emergency vehicle access, locations of hydrant connection points and evacuation procedures.	Detailed design

Conclusions

Based on the mitigation measures identified, a revised assessment of the residual bushfire risks associated with the proposal has been considered and these are identified as low.

BUSHFIRE ATTACK LEVEL (BAL) ASSESSMENT & STATEMENT OF COMPLIANCE

8th August 2025

Subject Property Block & Section: Block 12 Section 25 Jerrabomberra

Address of Subject Property: Hume Materials Recovery Facility
No.1 John Cory Road, Hume ACT 2620

Area & Zoning: ≈ 5 ha, IZ1: General Industry

The entire area of the subject property is also identified as a Bushfire Prone Area (BPA).

Standard / Policy Referred to:

- ACT Bushfire Management Standards 2023 (BMS)
- Australian Standard 3959 Construction of building in bushfire prone areas 2018 (AS3959)
- National Construction Code of Australia (NCC)

Proposed Development: Replace and upgrade existing Material Recovery Facility (MRF).

The new facility will incorporate multiple new structures and assets, including;

- Main processing building (≈ 11,000 sqm)
- Education building (≈ 220 sqm)
- Pump / FIP room
- Water storage tanks for firefighting and other operational purposes
- Above ground fuel tank
- Battery Energy Storage System (BESS)
- Weigh station(s)
- Dangerous good containers and enclosed bin storage area
- Handstand and heavy vehicle manoeuvring apron
- Hot drop area for trucks to dump burning rubbish
- Carparking area for visitors and staff (40 spaces)

Building Classification: The proposed development includes multiple building classifications in accordance with the NCC, including;

- Class 7b & 8 for the MRF, and considered '*Other* ' development in accordance with the BMS,
- Class 9b for the education building, and considered '*Sensitive Use Development – SUD*' in accordance with the BMS, &
- Class 10a for all other roofed structures.

Hazardous Industry:	By virtue of temporary storage of large amounts of various recovered materials & refuse within the subject property, the proposed development is considered to be hazardous.
Project Manager:	Manteena Commercial Pty Ltd ABN 56 614 438 989
Proponent:	Veolia Group (Waste)
Plans / advice Reviewed:	Attached Appendices 1 – 15.

For the purpose of this assessment and associated recommendations for bushfire safety, the following is specifically noted and/or assumed or as advised by the Project Manager.

1. The current design and construction of the MRF predates contemporary bushfire safety requirements as maybe considered applicable in accordance with the NCC or BMS at the date of this report.
2. Any identified BMS or additional NCC Fire Safety provision for bushfire safety effectively provides a better outcome for the site.
3. Where applicable to the structures required operational purpose, all exterior wall surfaces, roofed / covered areas and associated built systems / attachments to the proposed development will be entirely non-combustible or otherwise Group 1 Fire Rated.
4. Design tolerances and gaps / openings (including vents, weepholes, air in-takes and exhausts) to the proposed development will be covered, guarded or enclosed (where applicable and to facilitate intended operations of the structures) in accordance with minimum AS3959 Sections 3 & 5 (BAL-12.5).
5. The maximum height of the proposed development (processing component) will not exceed 14m.
6. The area of the subject property within ≈30m of the processing plant / component (or to the boundary if a lesser distance) will be managed and maintained as an Asset Protection Zone (APZ).
7. The APZ will more or less be hardstand and vehicle access / parking areas to the proposed development.
8. All landscaping, hardstand, pathways and associated infrastructure within direct vicinity of the proposed development will be entirely non-combustible and maintained as a fuel free zone, i.e. no future landscaping vegetation or other combustible structures / materials stored or installed directly adjacent.
9. The proposed development (processing plant / component) will be setback within the subject property;

   >9.5m from the southern boundary to Block 5 Section 27 Jerrabomberra,

   >14m from the southeastern boundary / frontage to John Cory Road,

   >30m from the northeastern boundary / frontage to Recycling Road, &

   >80m from the northwest boundary to Block 29 Section 23 & Block 2114 Jerrabomberra.

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10. The proposed development (educational building) will be setback within the subject property;

    >14m from the northeastern boundary / frontage to Recycling Road,

    >50m from Block 6 Section 26 Jerrabomberra (end of Recycling Road),

    >70m from the southeastern boundary / frontage to John Cory Road, &

    >100m from any other boundary.

11. Based on current BPA mapping for the subject property and surrounds, all components of the proposed development are located on land identified as Bushfire Prone.

12. The potential bushfire hazard to the subject property lies within;

    - Block 5 Section 25 Jerrabomberra, being roadside remnant woodland / scrub (screening) between the southern boundary and Mugga Lane,
    - Block 1694 Tuggeranong, opposite side of Mugga Lane, being roadside remnant woodland / scrub (screening) to a solar farm,
    - the subject property itself and adjoining lands including Block 6 Section 26, Block 29 Section 23 & Block 2114 Jerrabomberra,
    - Block 5 Section 26 Jerrabomberra to the northeast (opposite side Recycling Road), &
    - Blocks 5 & 7 Section 27 Jerrabomberra to the southeast (opposite side John Cory Road).

13. Effective slopes to the proposed development site are more or less flat.

14. A 2m high solid steel (Colourbond) fencing will be partly installed along the southern boundary of the subject property to shield the processing plant component from an unplanned bushfire event approaching from Mugga Lane.

15. The length of the 2m high solid steel (Colourbond) fencing (≈50m) to ensure building lines of the processing plant component are shielded from the potential remnant woodland hazard within 20m and would not be exposed to >12.5kW/m^2 radiant heat.

16. Whilst hazardous vegetation is identified within neighbouring Block 5 Section 26 Jerrabomberra (opposite side Recycling Road), the maximum head width of unplanned fire event would not reasonably exceed 30m by virtue of anticipated roadway redesign and neighbouring commercial land use / development.

17. All other adjoining and adjacent lands to the subject property are considered low threat or excluded vegetation by virtue of existing commercial building, infrastructure and public roadway sections.

18. A riparian boundary constraint of retained or re-introduced native grassland and sedge vegetation is identified along most the of the northwest boundary and around the dam within the subject property. The constraint extends within the subject property for ≈30m from the northwest boundary and 10m from the edge of the dam.

19. There are no other known constraints to create and maintain Asset Protection Zone (APZ) areas within the subject property, with the majority of the undeveloped area of the subject property being slashed or containing a waterbody (dam).

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20. The subject property will be accessed from Recycling Road (via John Cory & Mugga Lane) which facilitate access / egress in either direction on carriageway sections (>7m width) with capacity for heavy industrial vehicles.
21. By virtue of either existing or proposed new carriageways and hardstand / carparking within the subject property, firefighting vehicles would reasonably be provided with safe, all-weather access to the proposed development site and any identified hazardous vegetation.
22. By virtue of the proposed carriageway and hardstand / carparking area within the subject property, the proposed development (processing plant and education building) is afforded full vehicle access around the entire building.
23. All proposed & existing vehicle access sections / areas servicing the proposed development would not reasonably exceed 5° gradient, have capacity to carry a fully loaded firefighting appliance for anticipated circumstances during a bushfire event and reasonably facilitate >6m width by carriageway or trafficable verge surface.
24. There will be no additional structures or landscaped vegetation (existing or reintroduced) overhanging (<4m) identified carriageway or trafficable verge areas.
25. Electrical power supply to the subject property is currently provided by underground cabling and connection to a substation located within the subject property near the eastern corner (intersection of Recycling & John Cory Road).
26. The proposed development will be connected the existing reticulated water supply services to the Hume / Mugga Lane industrial precinct.
27. The proposed development will incorporate additional firefighting water storage and pumping / booster facilities with engineered capacity to deliver a minimum flow rate and pressures in accordance with AS2419.
28. The nearest firefighting station to the subject property is located at Chisholm, ≈3km from the proposed development site via Isabella Drive and the Monaro Highway.
29. The proposed development will incorporate external signage at various locations on and around new structures to notify of hazardous storage / clearance requirements adjacent to any structure.
30. The proposed development will incorporate all required signage to properly identify site access and AS3745 emergency management arrangements applicable to the classification / occupancy of any building structure.

BAL Assessment Procedure:

Appendix 1 of the BMS, &

Detailed (Method 2 / Appendix B) of AS3959.

All BAL and Radiant Heat Flux (RHF) calculations conservatively undertaken on the basis of demonstrating SUD or <10kW/m^2 radiant heat flux exposure @ flame temperature up to 1,200 Kelvin where possible.

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Design Fire Run: For the purpose of detailed BAL assessment, 3 Design Fire Run transects are considered from the south across neighbouring Block 1694 Tuggeranong (Solar Farm vegetation screening) and Block 5 Section 27 Jerrabomberra (Mugga Lane vegetation screening).

All other directions are assessed on the basis of prescribed BMS parameters.

Classified Vegetation Type: Hazardous vegetation to the proposed development site is identified as a GRASSLAND category to the west, north and east.

REMNANT woodland / scrub (or low threat / rainforest equivalent) vegetation is identified to the south.

Design Fuel Load: As per calculated default values.

Design Fire Width: <30m for a fire event approaching from the northeast across neighbouring Block 5 Section 26 Jerrabomberra (opposite side Recycling Road).

As per calculated SFR or default / prescribed values (100m) for all other directions.

Elevation of Receiver: 14m for the main processing component and otherwise ss per calculated default values for any other modelling.

Relevant FDI: 100 (Australian Capital Territory), as per Table 2.1 of AS3959

Effective Slope: (Design Fire Run) As denoted Appendix 11.

- DF1: 0/100 = 0 Deg (Short Fire Run - SFR only)
- DF2: -1.5/75 = -1 Deg upslope (Short Fire Run - SFR only)
- DF3: -2/100 = -1 Deg upslope

Note: Effective slope estimates derived from available NSW Government Spatial Services data[1] providing 1m resolution LiDAR Digital Elevation Model (DEM), spatially interpolated to demonstrate 0.5m contour intervals. LiDAR DEM is described as having vertical & horizontal accuracy of 95% confidence, +/-300 - 800mm on bare open ground.

Site Slope: Calculated as per corresponding DF.

[1] Elvis (fsdf.org.au)

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Site Distance to Vegetation, Effective Slope & BAL:

Processing Component

Distance *(Fire Run)*	**Vegetation** *(Location / Direction)*	**Effective Slope**	**Site Slope**	**BAL** *(RHF)*
>30m (DF1)	REMNANT / LOW THREAT *(Block 5 Section 25 Jerrabomberra & Block 1694 Tuggeranong / SW)*	0°	0°	12.5* (11 kW/m^2)
>9.5m (DF2)	REMNANT / LOW THREAT *(Block 5 Section 25 Jerrabomberra & Block 1694 Tuggeranong / S)*	-1°	-1°	12.5* (12 kW/m^2)
>75m (DF3)	REMNANT / LOW THREAT *(Block 1694 Tuggeranong / S)*	-1°	-1°	12.5 (<10 kW/m^2)
>40m	REMNANT / LOW THREAT *(Block 7 Section 27 Jerrabomberra / SE)*	0°	N/A	12.5 (<10 kW/m^2)
>40m	GRASSLAND *(Block 5 Section 27 Jerrabomberra / E)*	0°	N/A	12.5 (<10 kW/m^2)
>50m	GRASSLAND *(Block 5 Section 26 Jerrabomberra / NE)*	0-5°	N/A	LOW (<10 kW/m^2)
>50m	GRASSLAND *(Subject Property / NW-W)*	0-5°	N/A	LOW (<10 kW/m^2)

** based on calculated Short Fire Run (SFR) modelling with shielding shown Appendix 14*

Educational Component

Distance *(Fire Run)*	**Vegetation** *(Location / Direction)*	**Effective Slope**	**Site Slope**	**BAL** *(RHF)*
>35m	GRASSLAND *(Block 5 Section 26 Jerrabomberra / NE-N)*	0°	0°	12.5** (5.5 kW/m^2)
>50m	GRASSLAND *(Subject Property / NW-W)*	0°	N/A	LOW (<10 kW/m^2)
>100m	REMNANT / LOW THREAT *(Block 5 Section 25 Jerrabomberra / SW-S)*	N/A	N/A	LOW (<10 kW/m^2)
>100m	REMNANT / GRASSLAND *(Blocks 5 & 7 Section 27 Jerrabomberra / SW-S)*	N/A	N/A	LOW (<10 kW/m^2)

** based on calculated reduced fire head width modelling shown Appendix 15*

Determined Highest BAL: BAL-12.5 as per Clause 2.2.6 of AS3959-2018.

Other Identified / Recommended BAL: BAL-19 for the educational building component in accordance with the BMS for SUD.

All other building components / structures should be designed and constructed to BAL-12.5 where applicable.

The above BAL assessment has been prepared by:

Matt Jones
BAppSc Environmental Health
Grad. Dip Design for Bushfire Prone Areas
BPAD-L3-14598 Accredited Practitioner

(I hereby certify that I have undertaken the assessment of the above site and determined the Bushfire Attack Level stated above in accordance with the requirements of AS3959-2018)

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General Comments & Recommendations for Bushfire Safety Compliance:

The proposed development will be a complex of various building classifications / uses located on land formally mapped and identified as Bushfire Prone Area (BPA). Whilst the proposed development is primarily for commercial / industrial operations associated with materials recycling and processing, an additional educational building component will be incorporated and considered as sensitive use development (SUD) in accordance with ACT Bushfire Management Standards (BMS).

Whilst the location of proposed development site on land mapped as BPA and an associated risk is acknowledged, it is reasonable to suggest that risk is relatively low, and the associated Bushfire Attack Level (BAL) analysis reflects this risk – i.e. BAL-12.5 or LOW.

General fire safety construction provisions of the NCC, including requirements of AS2419 Fire Hydrant Installation, that would be applicable to development of this classification and size would reasonably exceed any normal requirement for bushfire safety.

The subject property and proposed development will be accessed by an existing public roadway system which has capacity for both heavy industrial vehicles access (John Cory & Recycling Road) and local arterial / regional access (Mugga Lane & Monaro Highway). In any reasonable circumstance, firefighting appliances should always have provision of safe access to and from the available public road system during a bush fire event, as well as occupants being able to safely egress the site for evacuation.

As a significant commercial / industrial building complex servicing the ACT, it is anticipated that the facility would be fully managed and controlled in accordance with normal AS3745 Planning for Emergencies in Facilities. In this regard, additional requirements for bushfire safety and associated emergency management and evacuation procedures could be easily incorporated into AS3745 procedures and warnings / signage for occupant safety.

The proposed development will be connected to available industrial water supply services and will further incorporate additional and significant static supplies and pumping facilities for firefighting purposes.

This assessment acknowledges that the proposed development may contain or store hazardous materials or else significant amounts of combustible materials as part of its operation. In this regard, specific requirements for defendable space, additional firefighting hose reels and installation of a radiant heat barrier are recommended.

On the basis of conservatively assessing the proposed development as SUD, it is reasonable to suggest that any bushfire safety measure or additional emergency management procedure would provide a far better outcome for bushfire safety compliance than was ever originally considered and in place.

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In this regard, the following is recommended or identified as an appropriate mix of bushfire protection measures for risk management and compliance in this instance:

1) All associated components of the proposed development shall incorporate general fire safety construction provisions of the NCC as applicable to the classification, use and occupancy of the structure.

2) All associated components of the proposed development should be entirely non-combustible and otherwise incorporate at least materials and design in accordance with Sections 3 and 5 (BAL-12.5) of AS3959 or equivalent performance standard wherever reasonably practicable for the intended operation / use of the structure.

3) The educational building component of the proposed development shall be designed and constructed in accordance with Sections 3 and 6 (BAL-19) of AS3959.

4) Excluding any area identified as riparian / grassland constraint, the subject property shall be identified and maintained as an APZ area from the building lines of the processing plant component for at least 50m or to the boundary of the block if a lesser distance.

5) Excluding any area identified as riparian / grassland constraint, any retained natural vegetation (grassland) and/or landscaping within direct vicinity (<50m) of the processing plant component shall be maintained as an APZ for the life of the proposed development and in accordance with Appendix 4 of the BMS. This would primarily include maintaining any retained grassland to <200mm in height, particularly during the bushfire danger period.

6) Excluding any area identified as riparian / grassland constraint, defendable space of at least 10m (or to the boundary of the subject property if a lesser distance) shall be always maintained around any identified component of the proposed development to ensure a safe working environment and enable unimpeded access for firefighting operations around the building component before and after the passage of a bush fire. There shall be no retained or re-introduced vegetation or combustible items stored or located within the defendable space.

7) A 2m high non-combustible and solid barrier (e.g. colourbond fencing) shall be located along the southern boundary of the subject property to neighbouring Block 5 Section 25 Jerrabomberra (vegetated screening to Mugga Lane) to shield the processing plant component from any remnant woodland / scrub or unmanaged grassland within 20m of the building line.

8) The barrier (e.g. colourbond fencing) should also ensure that the enclosed bins / dangerous goods containers component are shielded from vegetated screening to Mugga Lane, or else that component of the proposed development be re-located and not less than 10m to any unmanaged bushfire hazard or other component of the proposed development.

9) Any future vegetation management / landscaping within the remaining undeveloped area of the subject property should ensure at all times that;

   - Grasslands are maintained at ≤200 mm height when grassland curing ≥70%, and
   - grass is kept mown / slashed.

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10) Any landscaped plantings or vegetated areas that may be re-incorporated as part of the proposed development shall be maintained as low threat vegetation, as per Appendix 1 (A1.10) of the BMS, for guidance including:

- *Single areas of vegetation less than 1 hectare in area and greater than 100 metres separation from other areas of forest or woodland vegetation.*
- *Multiple areas of vegetation less than 0.25 hectares in area and not within 20m of the site, or each other or of other areas of vegetation being classified vegetation.*
- *Strips of vegetation less than 20 metres in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20m of the site or to each other, or other areas of hazardous vegetation.*
- *Vegetation regarded as low threat due to factors such as flammability, moisture content or fuel load, including grassland managed in a minimal fuel condition, wetlands (with little grassland vegetation and no forest vegetation), maintained lawns, golf courses such as playing areas and fairways, maintained public reserves and parklands, sporting fields, vineyards, orchards, market gardens and other non-curing crops, cultivated gardens, arboretums, commercial nurseries, nature strips and windbreaks.*

  Note: 1. Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bush fire attack (recognizable as short, cropped grass for example, to a nominal height of 200 mm).

  2. A windbreak is considered a single row of planted trees located on a boundary and used as a screen or to reduce the effect of wind on the leeward side of the trees.

- *Existing areas of managed gardens and lawns within curtilage of buildings.*
- *Non-vegetated areas, including waterways, roads, footpaths, buildings, and rocky outcrops.*

11) Any landscaped plantings or vegetated areas that may be re-incorporated as part of the proposed development shall ensure trees planted or retained directly adjacent to the internal roadway sections do not significantly overhang or obstruct the access of larger vehicle's entering the subject property. Any overhanging vegetation shall be maintained to ensure a minimum height of 4m above the road at all times.

12) Any identified hazardous material, including temporary storage of large amounts of combustible materials, should not be located within 10m of any identified building component of the proposed development.

13) All new or re-positioned electrical line supply and connections (including communication lines) to service the proposed development should be located underground.

14) Where any overhead power line must be located or retained within the subject property, *no part of a tree or taller shrub shall be closer to a power line than the distance set out in* https://www.evoenergy.com.au/residents/trees-and-powerlines .

15) All external / exposed water pipes supplying the proposed development shall be metal.

16) Any stored water supply tank(s) within the subject property should incorporate a standard storz outlet (65mm).

17) Emergency management and fire evacuation procedures for the proposed development shall be formally prepared (or updated to include the educational building component) and submitted to ACT Fire Rescue for comment / support prior to the occupation of the proposed development.

    This should specifically include pre-emptive and annually practiced bushfire evacuations procedures (including identified refuge locations / assembly areas) or otherwise a Bushfire Operational, Response & Coordination Plan as described by the SBMP.

18) Emergency management procedures for the proposed development should incorporate bushfire emergency management and fire evacuation procedures consistent with *The NSW RFS document - A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan* or reasonably equivalent format.

19) Any required gas supply and associated storage facilities to be incorporated as part of the proposed development shall be installed and maintained in accordance with AS1596 and requirements of the relevant authority, including (where applicable):

- the use of exposed / above ground metal piping only, including connections to and from gas cylinders,
- any fixed gas cylinders being kept clear of all flammable materials to a distance of 10m and shielded on the hazard side,
- gas cylinders kept close to the building shall ensure safety valves are directed away from the building and at least 2m away from any combustible material, &
- polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used.

20) Fixed firefighting hose and reels should be installed externally on the proposed development and be of reasonable length (≈ 36m nominal) so as to reach all the immediate areas surrounding the proposed development and associated curtilage, including any combustible or hazardous stockpiling.

21) Fixed fire hose reels shall be manufactured in accordance with the Australian/New Zealand Standard AS/NZS 1221:1997 'Fire hose reels' and installed in accordance with AS2441-2005 'Installation of fire hose reels'.

22) The subject property shall be clearly signposted to identify;

- Emergency vehicle access provisions where applicable,
- Location & availability of internal hydrant connection points and static water supplies, &
- Site evacuation procedures and refuge locations.

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Statement of Compliance: The proposed development complies as SUD predicated upon the performance criteria and requirements of the BMS (Section 6.7 – Tables 6.7.1 to 6.7.4) as identified and/or recommended:

(Ref: 6.7.1 - Table 7 - BMS 2023)		
PERFORMANCE CRITERIA		**ACCEPTABLE SOLUTIONS & RELATIONSHIP OF PROPOSAL TO PERFORMANCE CRITERIA**
The intent may be achieved where:		
ASSET PROTECTION ZONES	*Radiant heat levels of greater than 10kW/m² (calculated at 1200K) will not be experienced on any part of the building.*	☒ *the building is provided with an APZ in accordance with Table 19 in Appendix 1.* **By either calculated or prescribed assessment, the proposed development (main processing and educational building components) would not be exposed to radiant heat greater than 10kW/m² (calculated at 1200K).**
	APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimized.	☒ *APZs are located on lands with a slope less than 14 degrees.* **All associate land gradients within and directly adjacent to the subject property / proposed development site do not significantly exceed 0°.**
	APZs are managed and maintained to prevent the spread of fire to the building. *The APZ is provided in perpetuity.*	☒ *APZ is managed in accordance with the requirements of Appendix 4.* ☐ *APZ are wholly within the boundaries of the development site.* ☒ *other structures located within the APZ need to be located further than 6m from the refuge building.* **As per the recommendations of this report.** **Where the APZ extends beyond the boundary of the subject property, the land is developed and maintained as public roadway (i.e. Recycling & John Cory Road)**
	Variations:	
	***Camping and primitive camping**: no performance criteria applicable.*	*N/A*
	***Bed and breakfast and farmstay:** the building will not be exposed to radiant heat levels exceeding 29kW/m² (1090K).*	☐ ~~*an APZ is provided in accordance with Tables 20 in Appendix 1…around the entire building or structure.*~~ **The variation is not applicable to the proposed development.**
	***Ecotourism**: radiant heat levels of greater than 10kW/m² (1200K) are not experienced by emergency service personnel and occupants during firefighting and emergency management around a building on site that can be used as a refuge.*	☐ ~~*an APZ is provided in accordance with Table 19 in Appendix 1…around the entire refuge building or structure.*~~ **The variation is not applicable to the proposed development.**

(Ref: 6.7.1 - Table 7 - BMS 2023)		
	PERFORMANCE CRITERIA	**ACCEPTABLE SOLUTIONS & RELATIONSHIP OF PROPOSAL TO PERFORMANCE CRITERIA**
The intent may be achieved where:		
	***Manufactured home estates**: APZs achieve radiant heat levels that are commensurate with the construction standard for the proposed dwellings*	☐ ~~*an APZ in accordance with Table 19 in Appendix 1…is provided to all new dwellings; or*~~ ☐ ~~*an APZ in accordance with Table 20 in Appendix 1…is provided where it is demonstrated that all new dwellings will be constructed in accordance with BAL-29.*~~ **The variation is not applicable to the proposed development.**
LANDSCAPING	Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	☒ *landscaping is in accordance with Appendix 4.* **As per the recommendations of this report.**
CONSTRUCTION STANDARDS	*The proposed building can withstand bush fire attack in the form of wind embers, radiant heat and flame contact.*	☒ *a construction level of BAL-12.5 (or BAL-19 for class 9 buildings) under AS 3959 or NASH Standard.* **The proposed development achieves BAL-12.5 or lower.** **As per the recommendations of this report.**
	Variations:	
	***Camping and primitive camping**: no performance criteria applicable*	*N/A*
	***Bed and breakfast and farmstay**: the proposed building can withstand bush fire attack in the form of wind, embers, radiant heat and flame contact*	☐ ~~*construction is applied in accordance with Appendix 1.*~~ **The variation is not applicable to the proposed development.**
	***Ecotourism**: the proposed refuge building can withstand bush fire attack in the form of wind, embers, radiant heat and flame contact*	☐ ~~*a construction level of BAL-12.5 or greater is applied to the refuge building in accordance with AS3959 or NASH Standard.*~~ **The variation is not applicable to the proposed development.**
	***Manufactured home estates**: the proposed manufactured home can withstand bush fire attack in the form of wind, embers, radiant heat and flame contact*	☐ ~~*Where an APZ is provided in accordance with Table 19 in Appendix 1…the construction standards for BAL 12.5 shall apply; or*~~ ☐ ~~*Where an APZ is provided in accordance with Table 20 in Appendix 1…the construction standards for BAL-29 shall apply.*~~ **The variation is not applicable to the proposed development.**

(Ref: 6.7.1 - Table 7 - BMS 2023)		
	PERFORMANCE CRITERIA	**ACCEPTABLE SOLUTIONS & RELATIONSHIP OF PROPOSAL TO PERFORMANCE CRITERIA**
The intent may be achieved where:		
	***Ecotourism**: occupants of the ecotourism facility are provided with appropriate shelter in the event of a bush fire*	☐ ~~*a refuge building is provided*~~ ☐ ~~*the refuge building must have sufficient space for all occupants and comply with the occupancy levels permissible for that structure; and*~~ ☐ ~~*the refuge building must be constructed to BAL-12.5 or greater in accordance with AS 3959 or NASH Standard.*~~ **The variation is not applicable to the proposed development.**

(Ref: 6.7.2 - Table 8 - BMS 2023)		
	PERFORMANCE CRITERIA	**ACCEPTABLE SOLUTIONS & RELATIONSHIP OF PROPOSAL TO PERFORMANCE CRITERIA**
The intent may be achieved where:		
ACCESS	*Firefighting vehicles are provided with safe, all-weather access to structures.*	☒ *sensitive use development access roads are two-wheel drive, all-weather roads.* ☒ *access is provided to all structures.* ☒ *traffic management devices are constructed to not prohibit access by emergency services vehicles.* ☒ *access roads must provide suitable turning areas in accordance with Appendix 3; and* ☐ ~~*one way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.*~~ **The proposed development will be accessed from a high capacity hardstand area designed to carry and support operational maneuvering of larger heavy vehicles transporting significant amounts of material for recycling.**
	Variations:	
	***Primitive camping**: Firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation*	☐ ~~*access is provided in accordance with the property access requirements of Table 5.3b of PBP 2019*~~ **The variation is not applicable to the proposed development.**
	***Bed and breakfast and farmstay**: Firefighting vehicles are provided with safe, all-weather access to structures*	☐ ~~*access is provided in accordance with the property access requirements of Table 5.3b of PBP 2019*~~ **The variation is not applicable to the proposed development.**

(Ref: 6.7.2 - Table 8 - BMS 2023)		
	PERFORMANCE CRITERIA	**ACCEPTABLE SOLUTIONS & RELATIONSHIP OF PROPOSAL TO PERFORMANCE CRITERIA**
The intent may be achieved where:		
	***Ecotourism**: fire fighting vehicles are provided with safe, all-weather access to the proposed refuge building*	☐ ~~*vehicular access is provided to the refuge building from a public road in accordance with property access requirements of Table 5.3b of PBP 2019*~~ ☐ ~~*accommodation is within 100m of the refuge building; and*~~ ☐ ~~*pedestrian paths from accommodation to the refuge building/s are provided and clearly signposted.*~~ **The variation is not applicable to the proposed development.**
	The capacity of access roads is adequate for firefighting vehicles. There is appropriate access to water supply.	☒ *the capacity of road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles.* ☒ *hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression.* ☒ *hydrants are provided in accordance with the relevant clauses of AS 2419.1 and ESA requirements; and* ☐ ~~*there is suitable access for a Category 1 fire appliances to within 4m of the static water supply where no reticulated supply is available.*~~ **As per the recommendations of this report.**
PERIMETER ROADS	*Perimeter access roads are designed to allow safe access and egress for firefighting vehicles while occupants are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.*	☒ *there are two way sealed roads.* ☒ *minimum 7.5m carriageway width kerb to kerb;* ☒ *parking is provided outside of the carriageway width;* ☒ *hydrants are to be located clear of parking areas.* ☐ *there are through roads, and these are linked to the internal road system at an interval of no greater than 500m.* ☒ *curves of roads have a minimum inner radius of 6m.* ☒ *the maximum grade road is 15 degrees and average grade of not more than 10 degrees.* ☒ *the road crossfall does not exceed 3 degrees; and* ☒ *a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.* **The proposed development would reasonably have the benefit of perimeter roadway / parking area access, which would reasonably exceed the acceptable solutions.**

(Ref: 6.7.2 - Table 8 - BMS 2023)		
	PERFORMANCE CRITERIA	**ACCEPTABLE SOLUTIONS & RELATIONSHIP OF PROPOSAL TO PERFORMANCE CRITERIA**
The intent may be achieved where:		
NON-PERIMETER ROADS	*Non-perimeter access roads are designed to allow safe access and egress for firefighting vehicles while occupants are evacuating*	☐ ~~*minimum 5.5m carriageway width kerb to kerb.*~~ ☐ ~~*parking is provided outside of the carriageway width;*~~ ☐ ~~*hydrants are located clear of parking areas.*~~ ☐ ~~*there are through roads, and these are linked to the internal road system at an interval of no greater than 500m.*~~ ☐ ~~*curves of roads have a minimum inner radius of 6m.*~~ ☐ ~~*the maximum grade road is 15 degrees and average grade of not more than 10 degrees.*~~ ☐ ~~*the road crossfall does not exceed 3 degrees; and*~~ ☐ ~~*a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.*~~ **Performance criteria / acceptable solution not considered relevant to the proposed development.**

(Ref: 5.3.2 - Table 4 - BMS 2023)		
	PERFORMANCE CRITERIA	**ACCEPTABLE SOLUTIONS & RELATIONSHIP OF PROPOSAL TO PERFORMANCE CRITERIA**
The intent may be achieved where:		
PROPERTY ACCESS	*Firefighting vehicles can access the dwelling and exit the property safely*	☐ ~~*there are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles.*~~ *In circumstances where this cannot occur, the following requirements apply:* ☐ ~~*minimum 4m carriageway width*~~ ☐ ~~*in forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long by 2m wide, making a minimum trafficable width of 6m at the passing bay*~~ ☐ ~~*a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches*~~ ☐ ~~*provide a suitable turning area in accordance with Appendix 3*~~ ☐ ~~*curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress*~~ ☐ ~~*the minimum distance between inner and outer curves is 6m*~~ ☐ ~~*the crossfall is not more than 10 degrees*~~ ☐ ~~*maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads*~~ ☐ ~~*a development comprising more than three dwellings has access by dedication of a road and not by right of way.*~~ **Performance criteria / acceptable solution not considered relevant to the proposed development.**

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(Ref: 6.7.3 – Table 9 – BMS 2023)		
	PERFORMANCE CRITERIA	**ACCEPTABLE SOLUTIONS & RELATIONSHIP OF PROPOSAL TO PERFORMANCE CRITERIA**
	The intent may be achieved where:	
WATER SUPPLIES	*An adequate water supply for firefighting purposes is installed and maintained.*	☒ *reticulated water is to be provided to the development, where available, or* ☒ *a 10,000 litres minimum static water supply for firefighting purposes is provided for each occupied building where no reticulated water is available.* **The proposed development will be connected to the existing reticulated water supply to Hume industrial precinct and well as having access to a significant stored water supply and pumping facility within the subject property.**
	Variations:	
	Caravan and camping grounds: *an adequate water supply for firefighting purposes is installed and maintained.*	☐ ~~either a reticulated water supply is provided or a 10,000 litres minimum water supply on site.~~ **The variation is not applicable to the proposed development.**
	Primitive camping: *an adequate water supply for firefighting purposes is installed and maintained.*	**The variation is not applicable to the proposed development.**
	Water supplies are located at regular intervals. *The water supply is accessible and reliable for firefighting operations.*	☒ *fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1 and ESA requirements.* ☒ *hydrants are not located within any road carriageway; and* ☒ *reticulated water supply to sensitive use developments uses a ring main system for areas with perimeter roads.* **As per the recommendations of this report.**
	Flows and pressure are appropriate	☒ *fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1 and ESA requirements.* **As per the recommendations of this report.**
	The integrity of the water supply is maintained	☒ *all above-ground water service pipes external to the building are metal, including and up to any taps.* **As per the recommendations of this report.**
	Water supplies are adequate in areas where reticulated water is not available	☒ *a connection for firefighting purposes is located within the IPA or non-hazard side and away from the structure;* ☒ *a 65mm Storz outlet with a ball valve is fitted to the outlet.* ☒ *ball valve and pipes are adequate for water flow and are metal.* ☒ *supply pipes from tank to ball valve have the same bore size to ensure flow volume.* ☒ *underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank.*

(Ref: 6.7.3 – Table 9 – BMS 2023)	
PERFORMANCE CRITERIA	**ACCEPTABLE SOLUTIONS & RELATIONSHIP OF PROPOSAL TO PERFORMANCE CRITERIA**
The intent may be achieved where:	
	☒ *a hardened ground surface for truck access is supplied within 4m of the access hole.* ☒ *above-ground tanks are manufactured from concrete or metal;* ☒ *raised tanks have their stands constructed from non-combustible material or bush fire-resisting timber (see Appendix F AS 3959).* ☒ *unobstructed access is always provided.* ☒ *tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters; and* ☒ *underground tanks are clearly marked,* ☒ *all exposed water pipes external to the building are metal, including any fittings.* ☒ *where pumps are provided, they are a minimum 5hp or 3kW petrol or diesel-powered pump, and are shielded against bush fire attack;* ☒ *any hose and reel for firefighting connected to the pump shall be 19mm internal diameter; and* ☒ *fire hose reels are constructed in accordance with AS/NZS 1221:1997 Fire hose reels, and installed in accordance with the relevant clauses of AS 2441:2005 Installation of fire hose reels.* **As per the recommendations of this report.**
ELECTRICITY Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings	☒ *where practicable, electrical transmission lines are underground.* *where overhead, electrical transmission lines are proposed as follow:* ☒ *lines are installed with short pole spacing (30m), unless crossing gullies, gorges or riparian areas; and* ☒ *no part of a tree is closer to a power line than the distance set out in https://www.evoenergy.com.au/residents/trees-and-powerlines* **As per the recommendations of this report.**

(Ref: 6.7.3 – Table 9 – BMS 2023)		
PERFORMANCE CRITERIA		**ACCEPTABLE SOLUTIONS & RELATIONSHIP OF PROPOSAL TO PERFORMANCE CRITERIA**
The intent may be achieved where:		
GAS	Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.	☒ *reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596 and the requirements of relevant authorities, and metal piping is used* ☒ *all fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side; connections to and from gas cylinders are metal* ☒ *if gas cylinders need to be kept close to the building, safety valves are directed away from the building and at least 2m away from any combustible material, so they do not act as a catalyst to combustion* ☒ *polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used* ☒ *above-ground gas service pipes external to the building are metal, including and up to any outlets* **As per the recommendations of this report.**

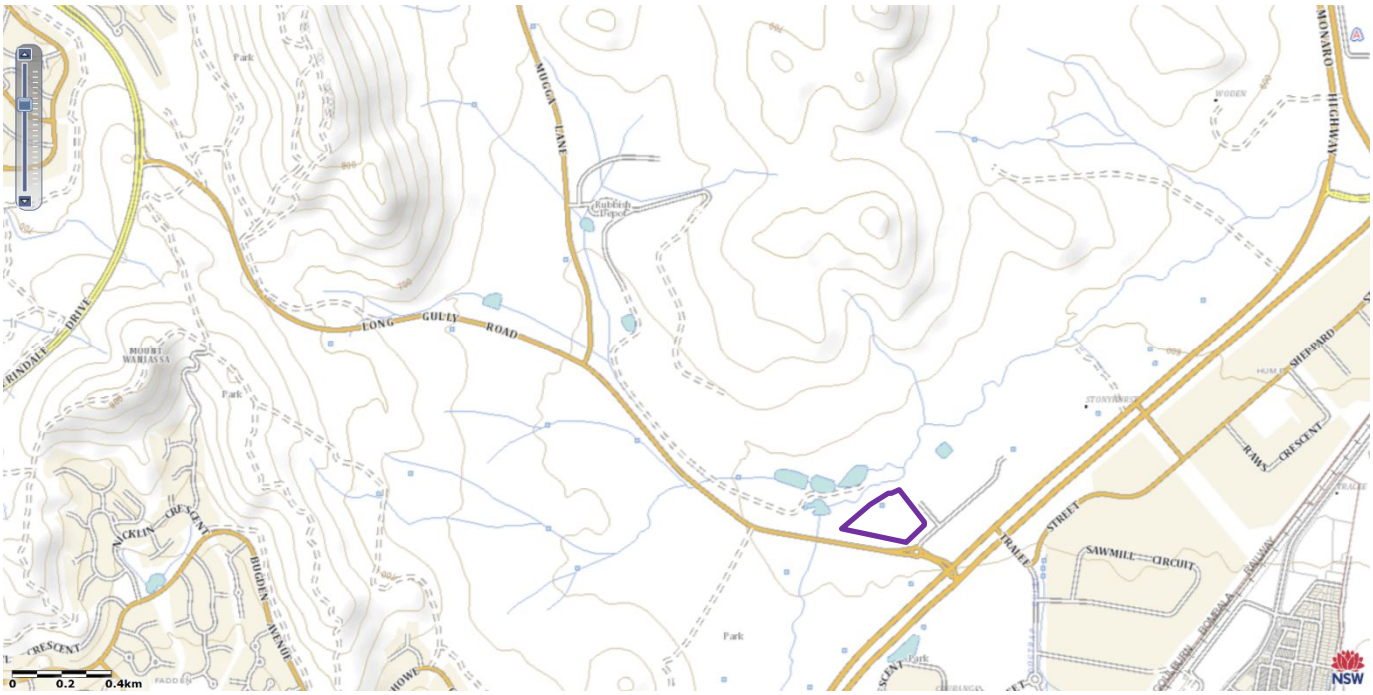
(Ref: 6.7.4 - Table 10 - BMS 2023)		
PERFORMANCE CRITERIA		**ACCEPTABLE SOLUTIONS & RELATIONSHIP OF PROPOSAL TO PERFORMANCE CRITERIA**
The intent may be achieved where:		
EMERGENCY MANAGEMENT	*A Bush Fire Emergency Management and Evacuation Plan is prepared*	☒ *Bush Fire Emergency Management and Evacuation Plan is prepared consistent with the:* ➢ *The NSW RFS document - A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan.* ➢ *Australian Standard AS 3745:2010 Planning for emergencies in facilities; and* ➢ ~~*Australian Standard AS 4083:2010 Planning for emergencies – Health care facilities (where applicable)*~~ ☒ *the Bush Fire Emergency Management and Evacuation Plan should include planning for the early relocation of occupants.* *Note: A copy of the Bush Fire Emergency Management and Evacuation Plan should be provided to the Local Emergency Management Committee for its information prior to occupation of the development.* **As per the recommendations of this report.**
	Appropriate and adequate management arrangements are established for consultation and implementation of the Bush Fire Emergency Management and Evacuation Plan	☐ ~~*an Emergency Planning Committee is established to consult with residents (and their families in the case of aged care accommodation and schools) and staff in developing and implementing an Emergency Procedures Manual.*~~ ☒ *detailed plans of all emergency assembly areas including on-site and off-site arrangements as stated in AS 3745 are clearly displayed, and an annually emergency evacuation is conducted.* **As per the recommendations of this report.**

(Ref: 6.7.4 - Table 10 - BMS 2023)	
PERFORMANCE CRITERIA	**ACCEPTABLE SOLUTIONS & RELATIONSHIP OF PROPOSAL TO PERFORMANCE CRITERIA**
The intent may be achieved where:	
	Variations:
Caravan and camping grounds: *a Bush Fire Emergency Management and Evacuation Plan is prepared* ***Primitive camping****: a Bush Fire Emergency Management and Evacuation Plan is prepared* ***Ecotourism****: a Bush Fire Emergency Management and Evacuation Plan is prepared*	☐ ~~*a Bush Fire Emergency Management and Evacuation Plan is prepared consistent with the NSW RFS document: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan, and AS 3745.*~~ ☐ ~~*for proposals in isolated or remote areas which involve large travel distances through bush fire prone vegetation, the following issues should be determined and addressed:*~~ • ~~*the amount of travel likely to be generated during an emergency evacuation*~~ • ~~*the capacity of the broader road network to facilitate safe emergency evacuation*~~ • ~~*limitations/constraints inherent in the road system*~~ • ~~*management of potential traffic conflicts (such as emergency vehicles versus evacuating members of the public)*~~ ☐ ~~*the Bush Fire Emergency Management and Evacuation Plan must consider a mechanism for the early relocation of occupants on days when adverse fire weather is notified or adverse fire activity occurs in the local government area in which the development operates.*~~ ~~*Note: A copy of the Bush Fire Emergency Management and Evacuation Plan should be provided to the Local Emergency Management Committee for its information prior to occupation of the development.*~~ **The variation is not applicable to the proposed development.**
	Appropriate and adequate management arrangements are established for consultation and implementation of the Bush Fire Emergency Management and Evacuation Plan
	☐ ~~*an Emergency Planning Committee is established to consult with residents (and their families in the case of aged care accommodation and schools) and staff in developing and implementing an Emergency Procedures Manual; and*~~ ☒ *detailed plans of all emergency assembly areas including on-site and off-site arrangements as stated in AS 3745:2010 are clearly displayed, and an annually emergency evacuation is conducted.* **As per the recommendations of this report.**

Table 19 Minimum distances for APZs – Sensitive use development (<10kW/m2, 1200K)

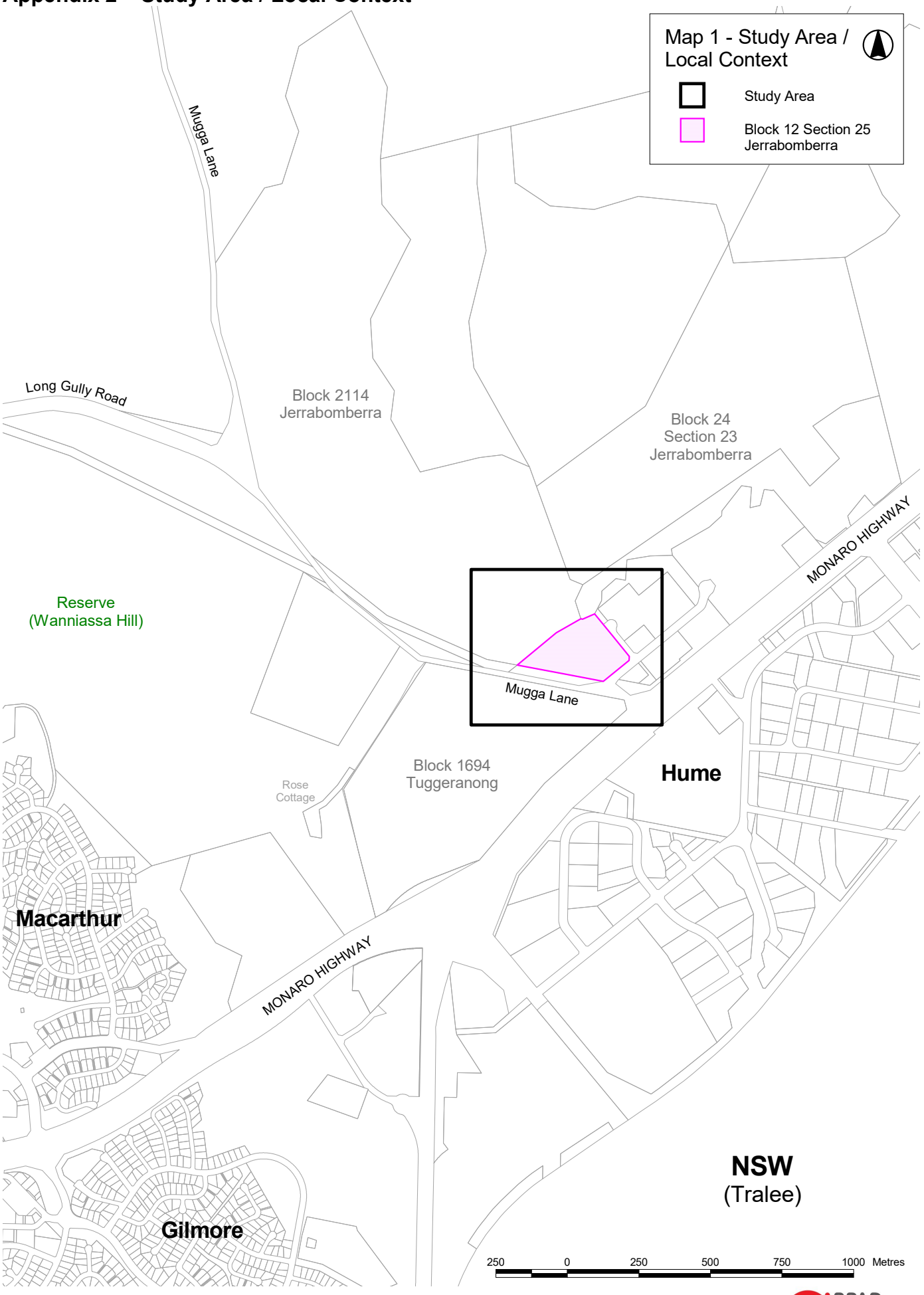
KEITH VEGETATION FORMATION	EFFECTIVE SLOPE				
	Up slopes and flat	>0°-5°	>5°-10°	>10°-15°	>15°-20°
	Distance (m) from the asset to the predominant vegetation formation				
Rainforest	38	47	57	69	81
Forest (wet and dry sclerophyll) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland	67	79	93	100	100
Grassy and Semi-Arid Woodland (including Mallee)	42	50	60	72	85
Forested Wetland (excluding Coastal Swamp Forest)	34	42	51	62	73
Freshwater Wetlands	19	22	25	28	30
Grassland	36	40	45	50	55

Appendix 1 – Subject Property / Local Context - Block 12 Section 25 Jerrabomberra



Courtesy: SIX Maps (nsw.gov.au)

Appendix 2 – Study Area / Local Context



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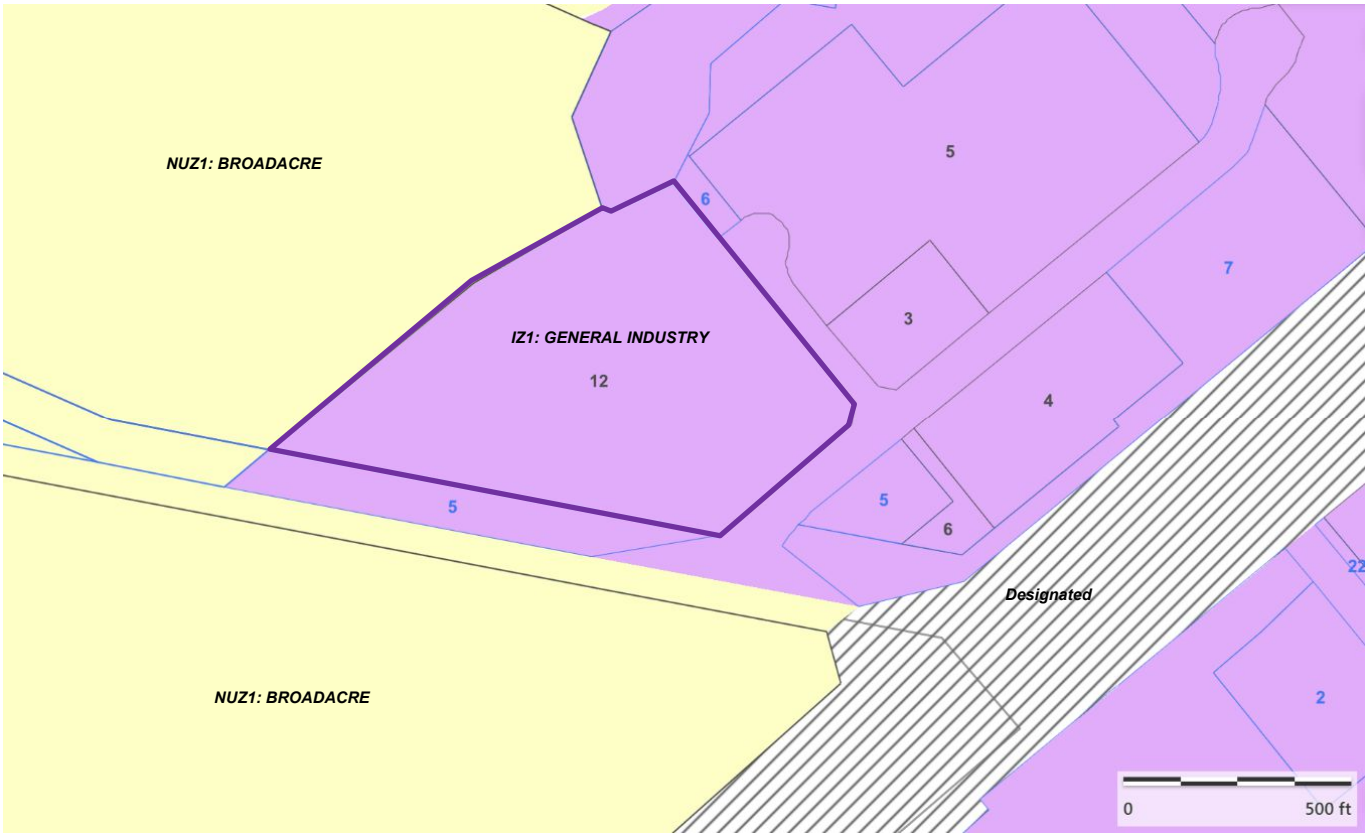
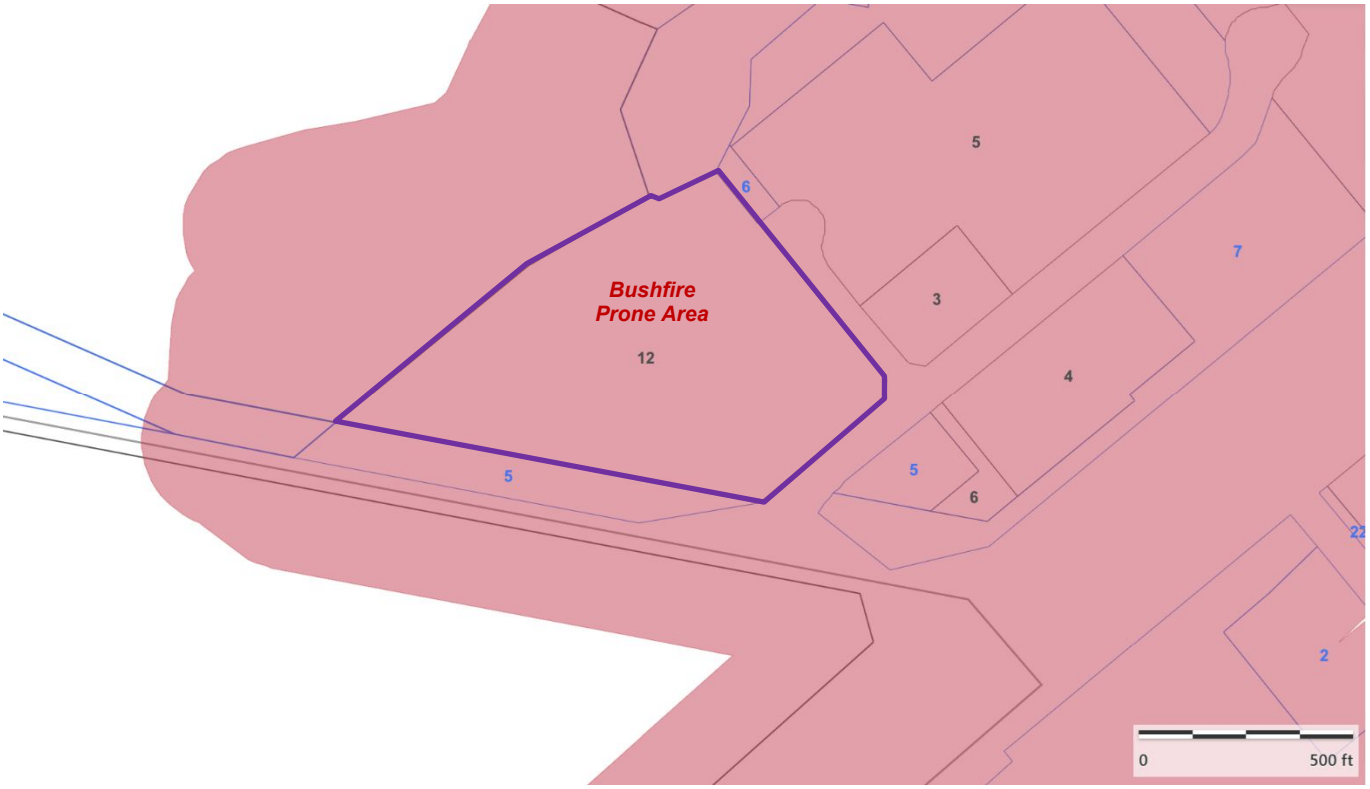
Appendix 3 – Territory Plan & Bushfire Prone Area (BPA) Mapping

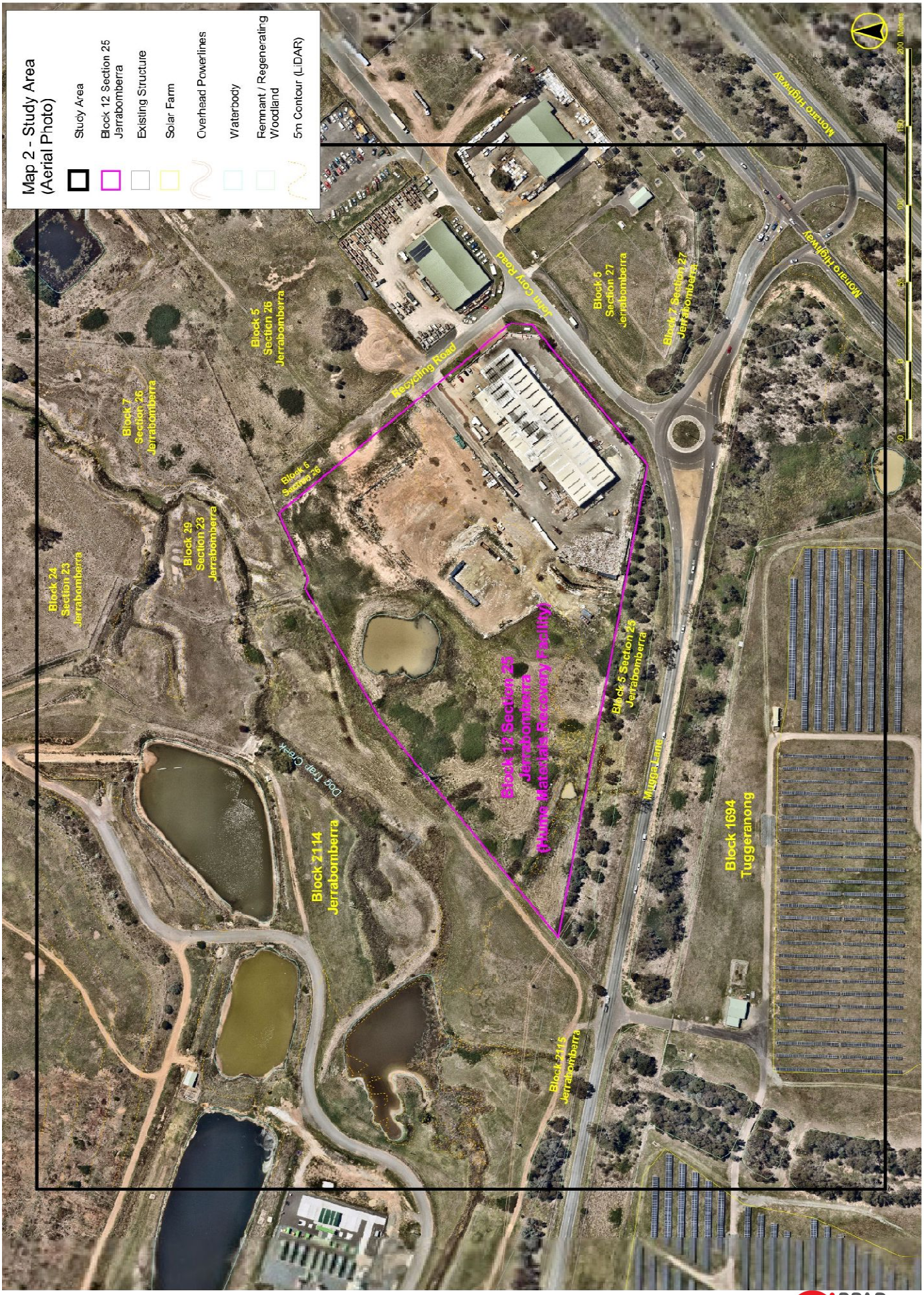




Courtesy http://www.actmapi.act.gov.au

Subject Property

Appendix 4 – Study Area (Aerial Photo)



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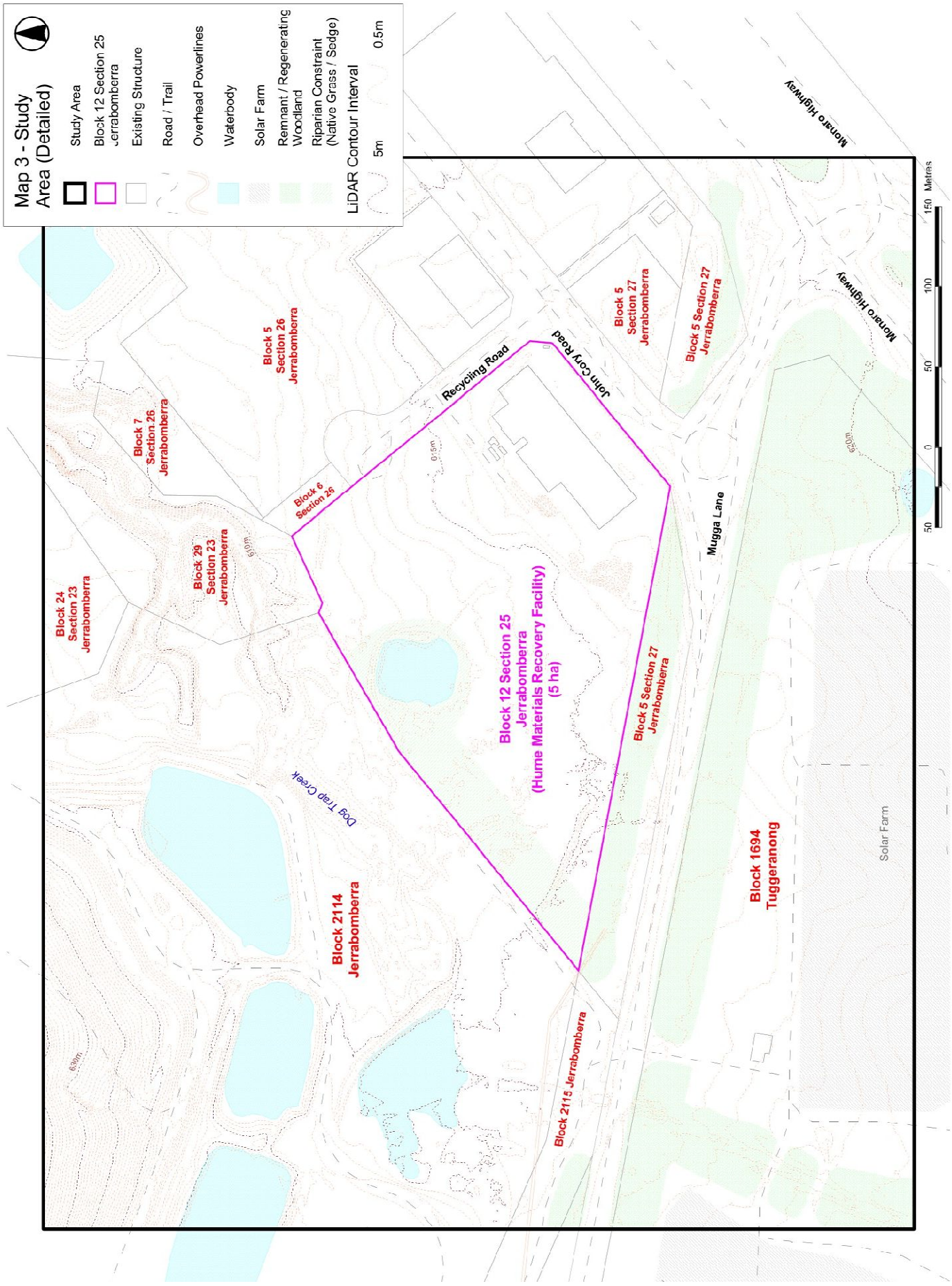
Appendix 5 – Study Area (Detailed)



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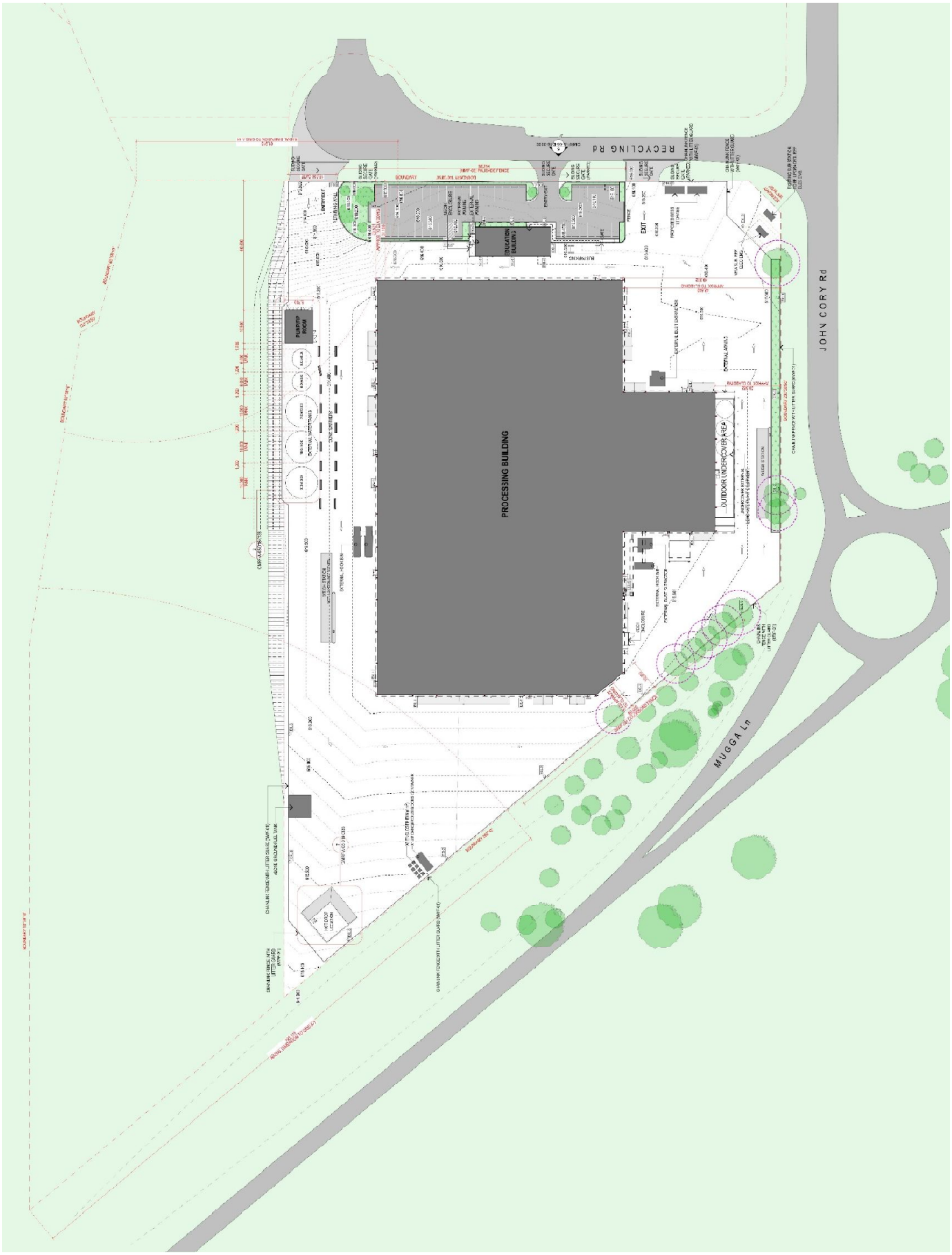
Appendix 6 – Proposed Development (Site Plan)



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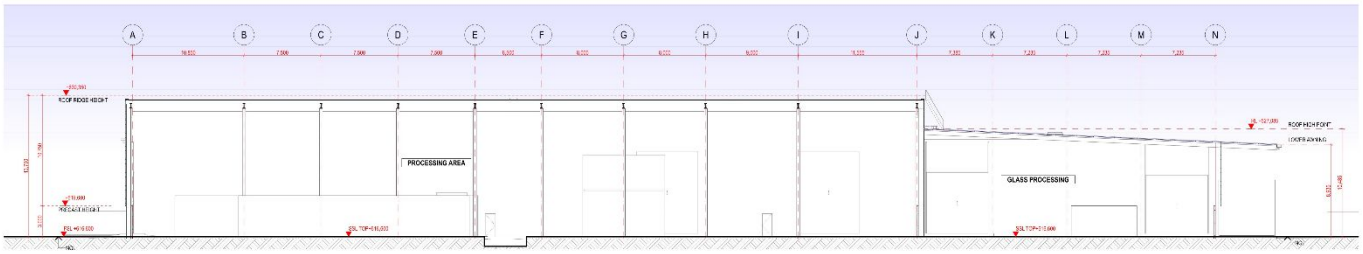
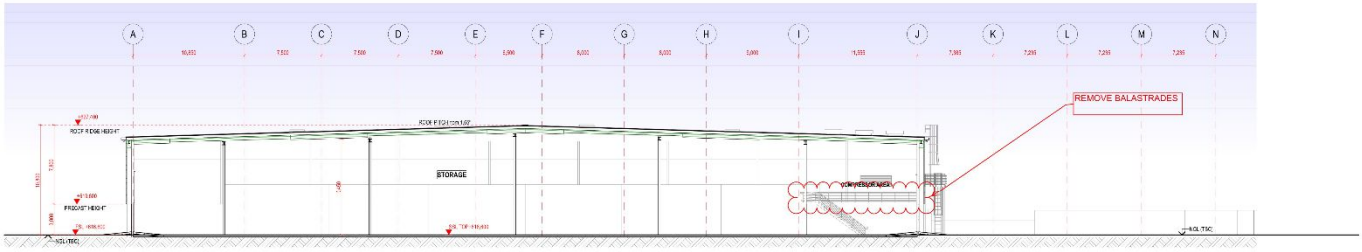
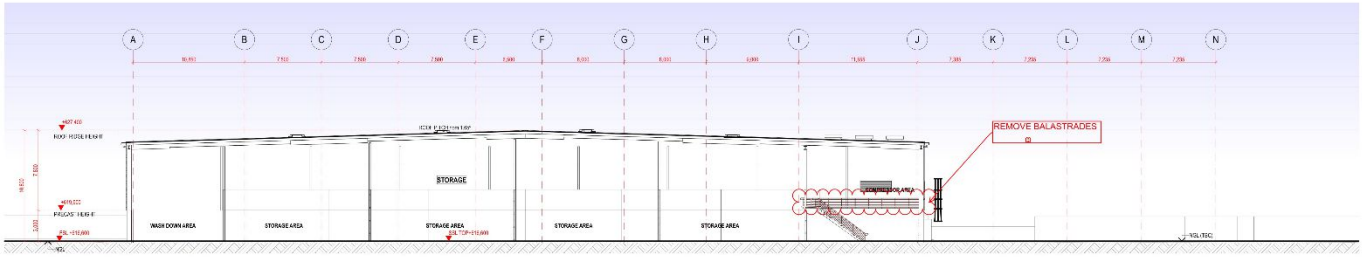
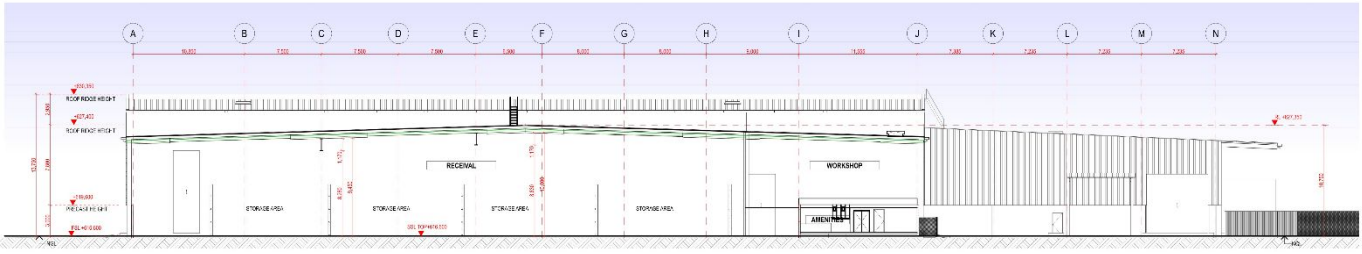
Appendix 7 – Proposed Development – Processing Component (Sections)









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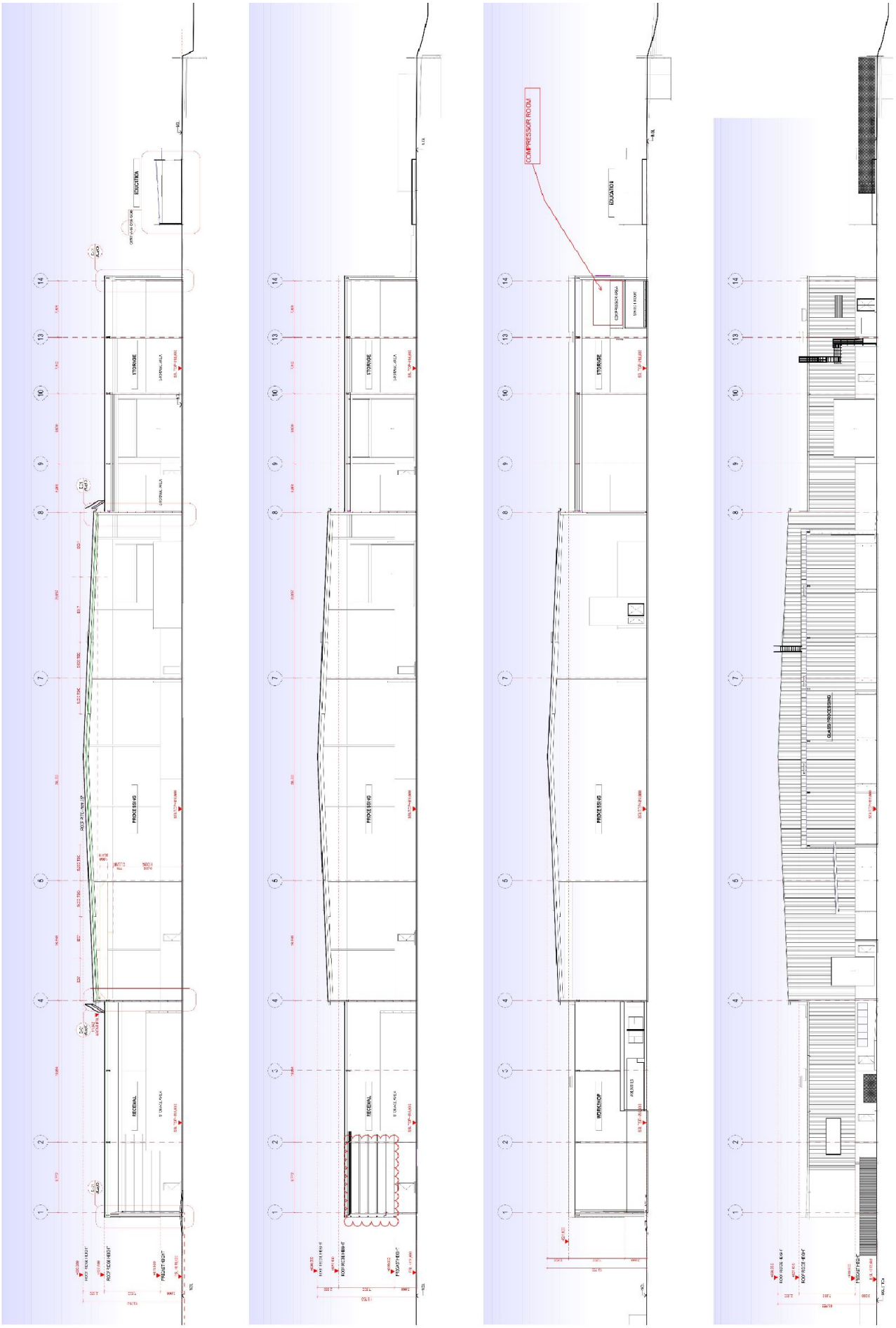
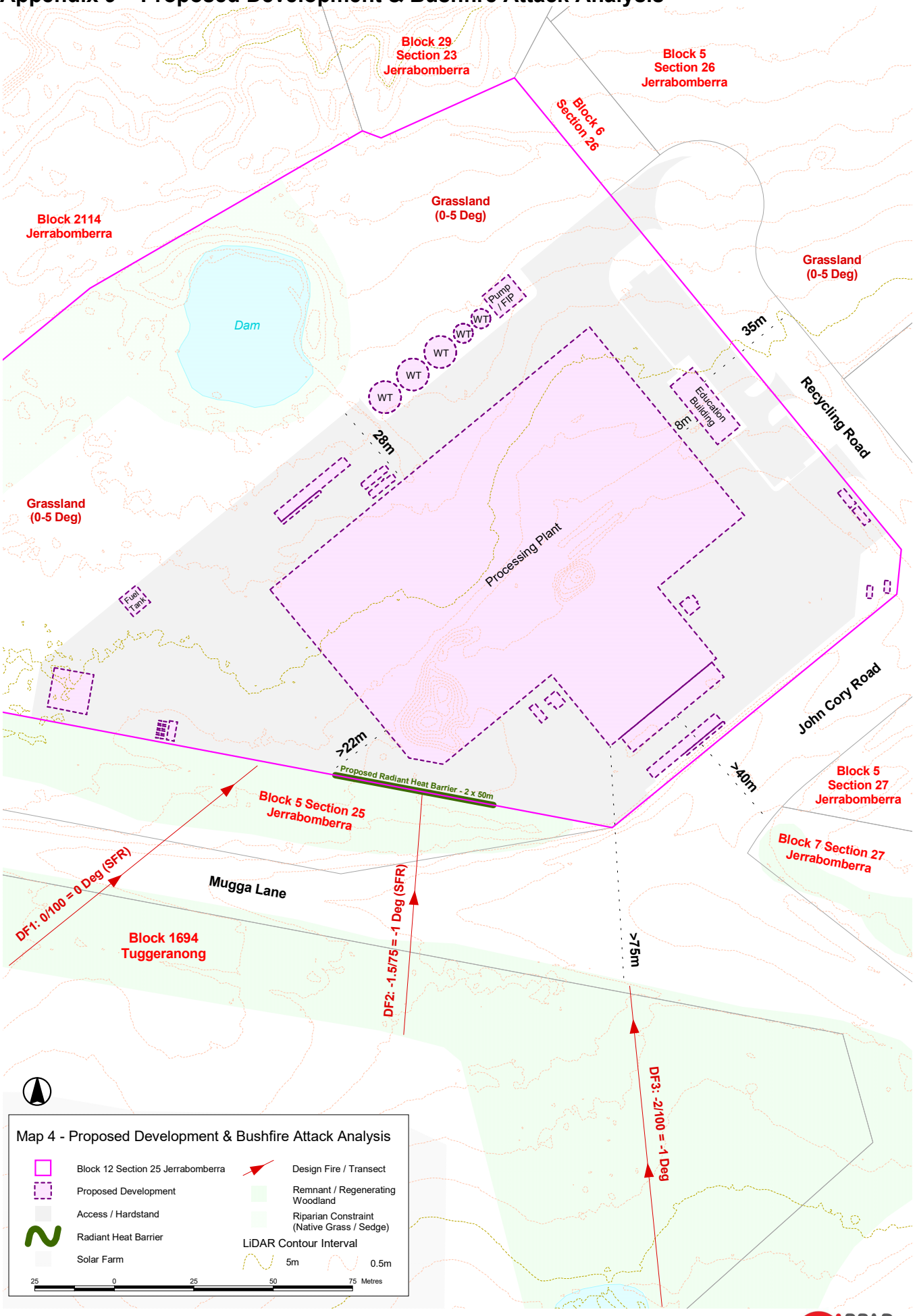
Appendix 8 – Proposed Development – Processing Component (Elevations)

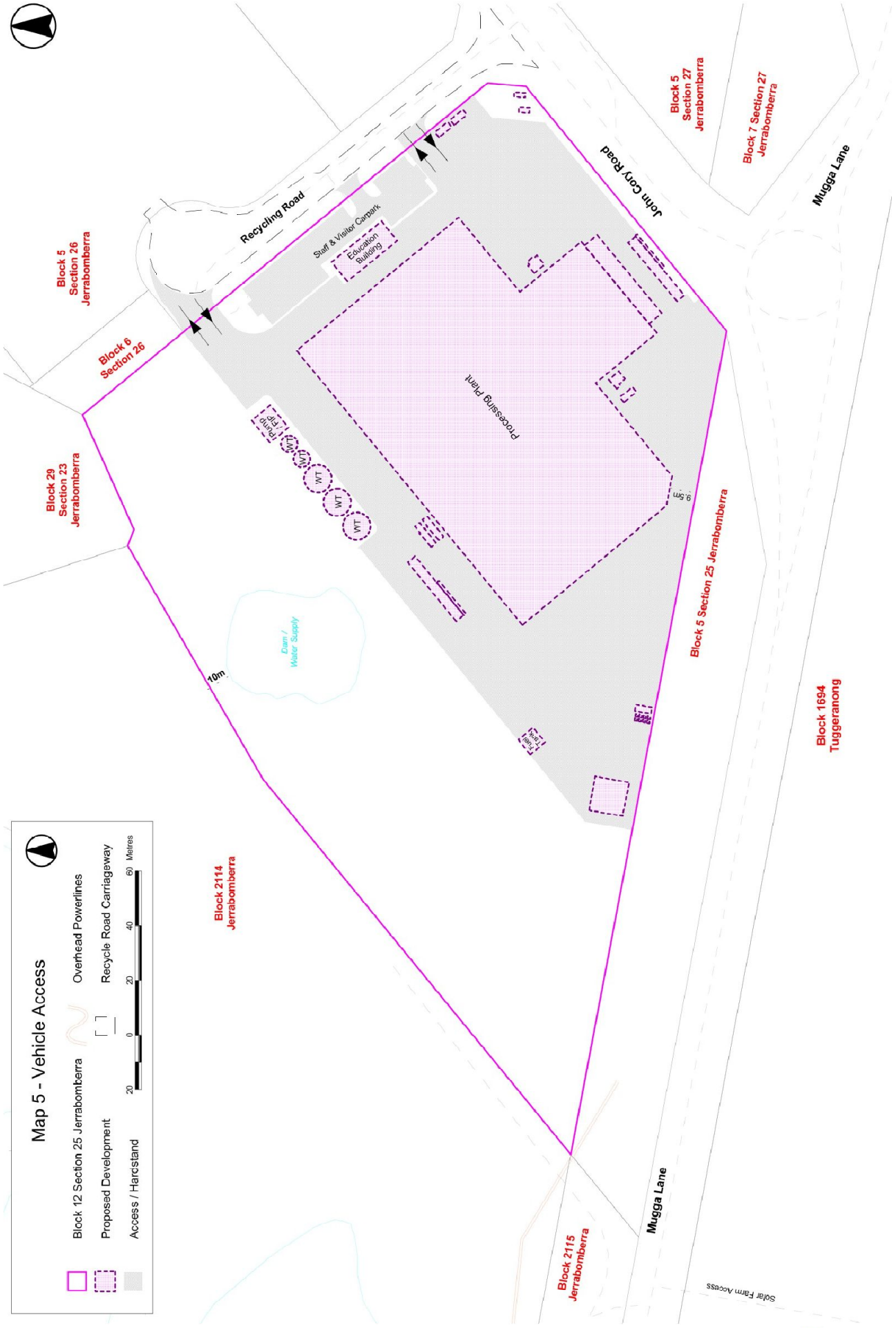


Appendix 9 – Proposed Development & Bushfire Attack Analysis



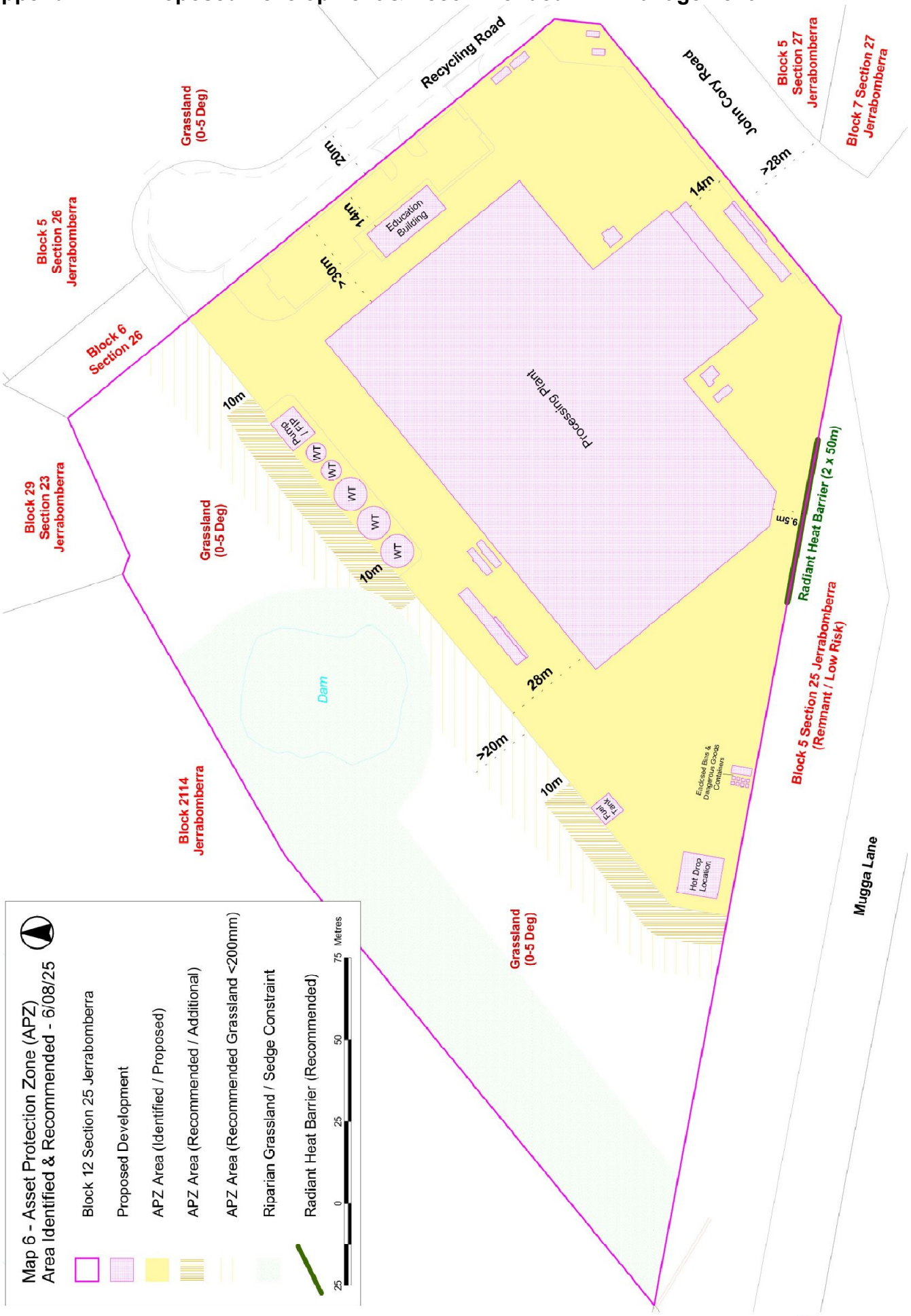
Enquiries: 0428 296 526 – mattjones@bppass.com.au

Appendix 10 – Proposed Access



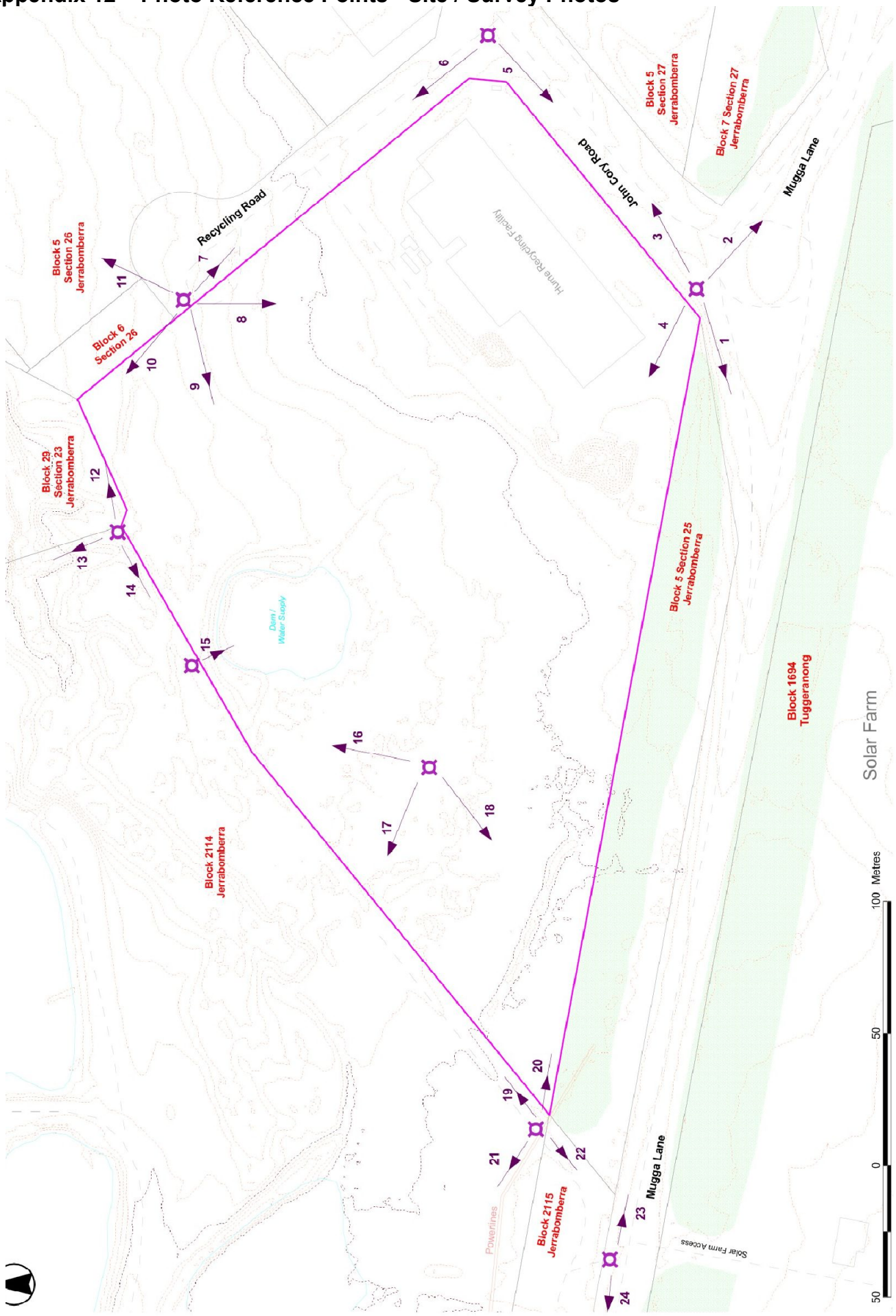
Enquiries: 0428 296 526 – mattjones@bppass.com.au

Appendix 11 – Proposed Development & Recommended APZ Management



Enquiries: 0428 296 526 – mattjones@bppass.com.au

Appendix 12 – Photo Reference Points - Site / Survey Photos



Enquiries: 0428 296 526 – mattjones@bppass.com.au

Appendix 13 – Site / Survey Photos (18th July 2025)

Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

Photo 10

Photo 11

Photo 12

Enquiries: 0428 296 526 – mattjones@bppass.com.au

Photo 13

Photo 14

Photo 15

Photo 16

Photo 17

Photo 18

Photo 19

Photo 20

Photo 21

Photo 22

Photo 23

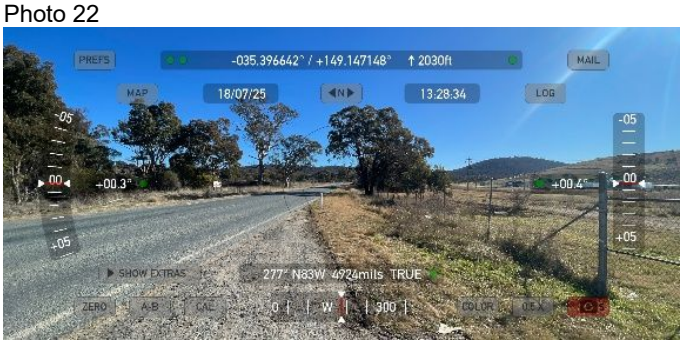


Photo 24

NBC Bushfire Attack Assessment Report V4.1

AS3959 (2018) Appendix B - Detailed Method 2

Print Date: 06/08/2025 **Assessment Date:** 06/08/2025

Site Street Address: Hume Materials Recovery Facility - No.1 John Cory Road, Hume

Assessor: Matthew Jones; BPPASS Pty Ltd

Local Government Area: ACT **Alpine Area:** No

Equations Used

Transmissivity: Fuss and Hammins, 2002
Flame Length: RFS PBP, 2001/Vesta/Catchpole
Rate of Fire Spread: Noble et al., 1980
Radiant Heat: Drysdale, 1985; Sullivan et al., 2003; Tan et al., 2005
Peak Elevation of Receiver: Tan et al., 2005
Peak Flame Angle: Tan et al., 2005
Short Fire Run - Methodology for Assessing Bush Fire Risk for Low Risk Vegetation May 2019 NSW RFS

Run Description: DF1

Vegetation Information

Vegetation Type:	Woodland		
Vegetation Group:	Forest and Woodland		
Vegetation Slope:	0 Degrees	**Vegetation Slope Type:**	Level
Surface Fuel Load(t/ha):	15	**Overall Fuel Load(t/ha):**	25
Vegetation Height(m):	1	Only Applicable to Shrub/Scrub and Vesta	

Site Information

Site Slope:	0 Degrees	**Site Slope Type:**	Level
Elevation of Receiver(m):	14	**APZ/Separation(m):**	20

Fire Inputs

Veg./Flame Width(m):	36.6	**Flame Temp(K):**	1200

Radiant Heat Shielding Inputs

Shield Height(m):	0	**Shield Width(m):**	0

Calculation Parameters

Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg)	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	100

Program Outputs

Level of Construction:	BAL 12.5	**Peak Elevation of Receiver(m):**	3.95
Radiant Heat(kW/m2):	10.61	**Fire Intensity(kW/m):**	23250
Flame Length(m):	8.26	**Flame Angle (degrees):**	83
Shielded View Factor:	0	**Maximum View Factor:**	0.113
Rate Of Spread (km/h):	1.8	**Inner Protection Area(m):**	20
Transmissivity:	0.841	**Outer Protection Area(m):**	0

Short Fire Run Calculations

Fire Run(m):	100	**Length to Breadth Ratio:**	2.82
Full Ellipse Length(m):	60.29	**Headfire Backfire Ratio:**	29.85
Travel Duration (mins):	3.33	**Total Ellipse Length(m):**	103.35
ROS and H/B Ratio:	31		

NBC Bushfire Attack Assessment Report V4.1

AS3959 (2018) Appendix B - Detailed Method 2

Print Date: 05/08/2025 **Assessment Date:** 05/08/2025

Site Street Address: Hume Materials Recovery Facility - No.1 John Cory Road, Hume

Assessor: Matthew Jones; BPPASS Pty Ltd

Local Government Area: ACT **Alpine Area:** No

Equations Used

Transmissivity: Fuss and Hammins, 2002
Flame Length: RFS PBP, 2001/Vesta/Catchpole
Rate of Fire Spread: Noble et al., 1980
Radiant Heat: Drysdale, 1985; Sullivan et al., 2003; Tan et al., 2005
Peak Elevation of Receiver: Tan et al., 2005
Peak Flame Angle: Tan et al., 2005
Short Fire Run - Methodology for Assessing Bush Fire Risk for Low Risk Vegetation May 2019 NSW RFS

Run Description: DF2

Vegetation Information

Vegetation Type:	Woodland		
Vegetation Group:	Forest and Woodland		
Vegetation Slope:	1 Degrees	**Vegetation Slope Type:**	Upslope
Surface Fuel Load(t/ha):	15	**Overall Fuel Load(t/ha):**	25
Vegetation Height(m):	1	Only Applicable to Shrub/Scrub and Vesta	

Site Information

Site Slope:	1 Degrees	**Site Slope Type:**	Upslope
Elevation of Receiver(m):	14	**APZ/Separation(m):**	9.5

Fire Inputs

Veg./Flame Width(m):	27.45	**Flame Temp(K):**	1200

Radiant Heat Shielding Inputs

Shield Height(m):	2	**Shield Width(m):**	2

Calculation Parameters

Flame Emissivity:	95	**Relative Humidity(%):**	25
Heat of Combustion(kJ/kg)	18600	**Ambient Temp(K):**	308
Moisture Factor:	5	**FDI:**	100

Program Outputs

Level of Construction:	BAL 12.5	**Peak Elevation of Receiver(m):**	3.6
Radiant Heat(kW/m2):	11.64	**Fire Intensity(kW/m):**	21700
Flame Length(m):	7.86	**Flame Angle (degrees):**	92
Shielded View Factor:	0.002	**Maximum View Factor:**	0.12
Rate Of Spread (km/h):	1.68	**Inner Protection Area(m):**	10
Transmissivity:	0.872	**Outer Protection Area(m):**	0

Short Fire Run Calculations

Fire Run(m):	75	**Length to Breadth Ratio:**	2.82
Full Ellipse Length(m):	56.27	**Headfire Backfire Ratio:**	29.85
Travel Duration (mins):	2.68	**Total Ellipse Length(m):**	77.51
ROS and H/B Ratio:	28.94		

Doc Ref: MC40625_BAL_SUD_ASSESS_250725.docx
Enquiries: 0428 296 526 – mattjones@bppass.com.au

Appendix 15 – Radiant Heat / Reduced Fire Head Width (NE Fire Run)

FLAMESOL
FPA AUSTRALIA

Calculated August 5, 2025, 2:53 pm (BALc v.4.9)

No.1 John Cory Road, Hume ACT 2620 - NE Fire Run

Bushfire Attack Level calculator - AS3959-2018 (Method 2)			
Inputs		Outputs	
Grassland Fire Danger Index	130	Rate of spread	16.9 km/h
Vegetation Classification	Grassland	Flame length	8.619999999999999 m
Understorey fuel load	6 t/ha	Flame angle	77 °
Total fuel load	6 t/ha	Panel height	8.4 m
Vegetation height	n/a	Elevation of receiver	4.2 m
Effective slope	0 °	Fire intensity	52,390 kW/m
Site slope	0 °	Transmissivity	0.805
Distance to vegetation	35 m	Viewfactor	0.061
Flame width	30 m	Radiant heat flux	5.49 kW/m²
Windspeed	n/a	Bushfire Attack Level	BAL-12.5
Heat of combustion	18,600 kJ/kg		
Flame temperature	1,200 K		

Rate of Spread - Noble et al. 1980

Flame length - Purton, 1982

Elevation of receiver - Douglas & Tan, 2005

Flame angle - Douglas & Tan, 2005

Radiant heat flux - Drysdale, 1999, Sullivan et al., 2003, Douglas & Tan, 2005

Enquiries: 0428 296 526 – mattjones@bppass.com.au

BLACKASH
BUSHFIRE CONSULTING

3 March 2025

Mr. Trevor Fitzpatrick
Principal Planner
Element Environmental Pty Ltd
ABN 45 162 835 083
PO Box 1563 Warriewood, NSW, 2101
By email: trevor@elementenvironment.com.au

Dear Mr. Fitzpatrick,

Re: Canberra Material Recovery Facility EIS - bushfire review

Blackash Bushfire Consulting has been engaged by Element Environmental Pty Ltd to provide a Bushfire Risk Assessment – Review of GHD Bushfire Risk Assessment, 18 August 2023 (GHD Bushfire Assessment) and to provide bushfire expertise in relation to the proposed development.

The ACT Government is proposing to replace and upgrade the existing Material Recovery Facility (MRF) on Block 12, Section 25 Hume, ACT (the site). The proposal site is located to the north of the Monaro Highway in an industrial and rural area located approximately 12.5 km south of Canberra City. The existing MRF was extensively damaged due to fire on 26 December 2022 and the facility is non-operational. The main shed remains standing and is currently being used as a waste transfer station to accept recyclables, sort and store materials before being shipped to other processing facilities. GHD have provided a detailed Bushfire Risk Assessment dated 18 August 2023. The proposed development is at Figure 1.

The ACT provides an integrated approach to new development in bushfire prone areas to reduce risk and build resilience. The ACT *Strategic Bushfire Management Plan* recognises the obligation of landholders to manage fuels and for new development to provide a degree of resilience from bushfire. The *ACT Bushfire Management Standards 2023 (BMS)* provides guidance for new development in the ACT.

The site is within designated Bushfire Prone Land. The site has been highly modified over time and is within a highly modified and managed landscape. The current site includes multiple existing buildings, large areas for parking and works associated with the MRF.

The GHD Bushfire Assessment (Section 3.1) identified that:

> *Due to the inclusion of education within the building the entirety of the building is assessed as sensitive use using Section 6 of the BMS.*

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M 0419 203 853 | E lew.short@blackash.com.au
W blackash.com.au

TINTAGEL INVESTMENTS PTY LTD T/A BLACKASH BUSHFIRE CONSULTING ABN 99 000 704 861

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

The primary purpose of the development is commercial/ industrial in nature, and this classification remains unchanged despite the potential for school groups or other educational visitors to access the site. The mere availability of the site for visits by school groups does not in my opinion, in itself, designate the development as "sensitive use" (i.e. that it should be treated as a school) under the ACT BMS regulations.

A "sensitive use" is typically defined as one where the primary function involves vulnerable populations, such as schools, childcare centers, hospitals, or aged care development, where prolonged exposure to bushfire risk or impact could be of concern. In this case, while school groups may visit the site, they are not the primary occupants or beneficiaries of the site. The site's core function remains commercial/ industrial, with any educational visits being incidental and not altering its fundamental classification. The control of school groups can be managed by the exclusion of such vulnerable occupants if certain thresholds are met such as declaration of a Total Fire Ban Day, Catastrophic fire weather conditions of fires burning in the vicinity of the site. This can be easily achieved by emergency planning arrangements.

This distinction is crucial when assessing regulatory requirements, land use compatibility, and potential environmental or operational constraints. Reclassifying a development based on occasional or ancillary activities would set an impractical precedent and is inconsistent with standard planning principles.

Of note, the proposed education building is at the entrance to the site (Figure 1) which has the best access and is surrounded by managed areas. The education building is just within the BAL 12.5 area and is able to meet the 36m separation from adjoining unmanaged grassland to the north west.

The GHD Bushfire Assessment has determined an asset protection zone (APZ) of 36m from the building footprint. As GHD have classified the use "sensitive use" this 36m APZ for grassland spills onto adjoining land to the south, west and east (Figure 2). The APZ for residential development (Table 20 of the BMS) requires a 10m APZ based on 29kW of radiant heat at the building. Figure 3 provides the BALs that can be applied to the site as "other" development.

Of note:

- Land to the east along Recycling Road is managed land and is not a bushfire risk. This meets the requirements of an APZ.
- Land to the south within the John Cory Road and road reserve is managed land consisting of a paved surface and managed road reserve and managed land within adjoining properties (see Photo 1)

- Mugga Lane to the west of the site provides a two way paved surface with managed roadside verge. A narrow band of vegetation is between Mugga Land and the site that provides trees for screening that do not pose a bushfire threat to the site.

The narrow band of vegetation situated between Mugga Land and the site serves primarily as a visual buffer, providing tree cover that enhances screening without contributing to bushfire risk. Due to its fragmented nature, the vegetation within this strip does not form a continuous or dense fuel load capable of sustaining or spreading a bushfire. Additionally, the absence of significant undergrowth, ladder fuels, or highly combustible species further minimizes its potential to escalate bushfire hazards.

Given these factors, there is no necessity for additional fuel management within this area. The existing vegetation is already in a state that does not require intervention to mitigate bushfire risk. Any further management would provide negligible risk reduction benefits while potentially impacting the ecological and visual screening values of the site. Therefore, the land within this narrow vegetation strip should remain as it is without compromising site safety or compliance with bushfire protection measures.

Section 8 of the BMS provides the requirements for "other" development in the ACT. Section 8.3.1 of the BMS (p. 66) states:

> ***Buildings of Class 5 to 8 under the NCC***
> *Under the building classification system within the NCC, Class 5 to 8 buildings include offices, shops, factories, warehouses, public car parks and other commercial and industrial facilities. Where no residential component is included, commercial and industrial development is addressed through the aim and objectives of BMS (see Section 1 of this document).*
>
> *The NCC does not provide for any bush fire specific performance requirements for these classes of buildings. As such AS 3959 and the NASH Standard are not considered as a set of Deemed to Satisfy provisions, however compliance, where possible, with AS 3959 and the NASH Standard must be considered when meeting the aims and objectives of BMS. A suitable package of BPMs should be proposed commensurate with the assessed level of risk to the development. The scale of the development and numbers of people likely to be occupying the building will be directly relevant to the BPMs proposed. The provisions within Section 7 of this document should be used as a base for the development of a package of measures. Each development will be assessed on its own individual merits.*
>
> *Whilst bush fire is not captured in the NCC for Class 5-8 buildings, the following objectives will be applied in relation to access, water supply and services, and emergency and evacuation*

planning:

- *to provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation.*
- *to provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development.*
- *to provide adequate services of water for the protection of buildings during and after the passage of bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building; and*
- *provide for the storage of hazardous materials away from the hazard wherever possible.*

The NCC does not impose specific bushfire-related requirements for commercial and industrial buildings (Classes 5–9). Unlike residential buildings, which are subject to Australian Standard AS 3959 for bushfire-prone areas, commercial and industrial structures are not mandated to comply with prescriptive bushfire construction standards. This regulatory gap means that determining an appropriate level of bushfire resilience for these buildings is primarily a risk-based decision left to the owner, operator, or developer.

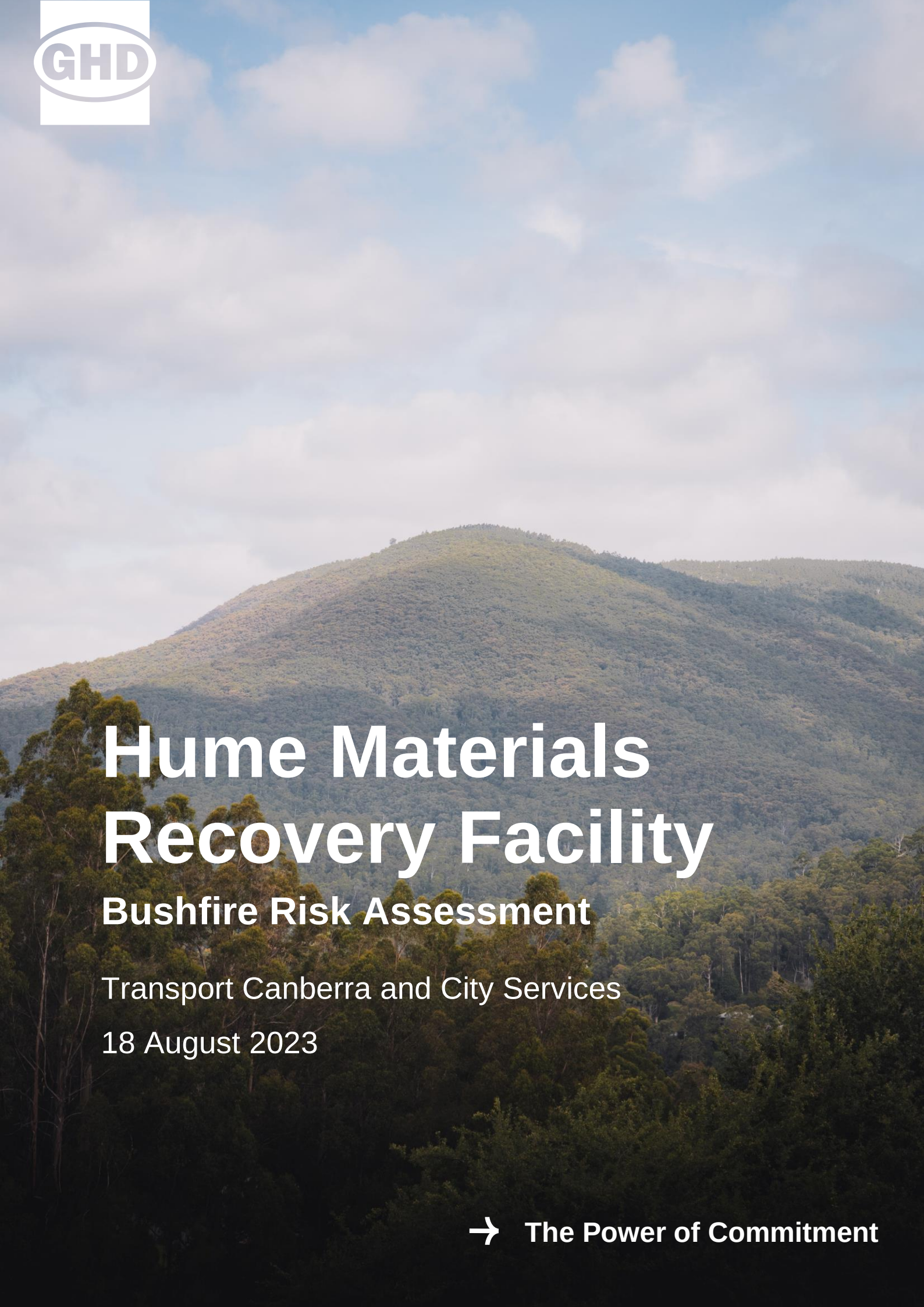
Given this, the construction level concerning the Bushfire Attack Level (BAL) should be assessed based on factors such as the site's bushfire exposure, operational continuity needs, asset protection priorities, and insurance requirements. Operators should consider the potential consequences of bushfire impact on business operations, employee and customer safety, and asset loss. Ultimately, the decision to incorporate bushfire-resistant construction measures should align with the operator's risk tolerance and business objectives, balancing upfront costs against potential losses and disruptions caused by a bushfire event. The GHD Bushfire Assessment provides guidance on such an approach (see Figure 4) and is a reasonable approach to mitigating the bushfire risk.

The GHD Bushfire Assessment addresses the bushfire requirements, including Bushfire Attack Level (BAL) construction recommendations (Figure 4). The construction recommendations provide for BAL 12.5 or BAL Low across the site. This approach is supported and does not rely on or seek off site APZs as adjoining land is managed or not of sufficient risk to warrant specific mitigation treatment – specifically adjacent to the buildings on Mugga Lane. Access, water and utilities are also covered in the GHD Bushfire Assessment that are in accordance with the BMS which is summarised in Section 4 in tabular format. Of note, the GHD Bushfire Assessment does not consider the narrow band of vegetation between the site and Mugga Land a risk that warrants mitigation which is supported.

If you require any further information in relation to this matter, please contact me on 0419 203 853.

Yours sincerely,

Lew Short | Principal
B.A., Grad. Dip. (Design for Bushfires), Grad. Cert. of Management (Macq), Grad. Cert. (Applied Management)



Hume Materials Recovery Facility

Bushfire Risk Assessment

Transport Canberra and City Services

18 August 2023

The Power of Commitment

Project name		Materials Recovery Facility Hume ACT PMCA					
Document title		Hume Materials Recovery Facility | Bushfire Risk Assessment					
Project number		12540460					
File name		12540460-REP-MRF Bushfire Report.docx					
Status Code	**Revision**	**Author**	**Reviewer**		**Approved for issue**		
			Name	**Signature**	**Name**	**Signature**	**Date**
S3	A	K Dart	M George	On file			
S4	0	K Dart	M George	On file	A Montgomery	Record on file	18/08/23

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Contents

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1. Introduction

1.1 Overview

The ACT Government is proposing to replace and upgrade the existing Material Recovery Facility (MRF) on Block 12, Section 25 Hume, ACT (the proposal site). The proposal site is located to the north of the Monaro Highway in an industrial and rural area located approximately 12.5 km south of Canberra City. The existing MRF was extensively damaged due to fire on 26 December 2022 and the facility is non-operational. The main shed remains standing and is currently being used as a waste transfer station to accept recyclables, sort and store materials before being shipped to other processing facilities.

The proposal would replace the existing MRF and provide technological improvements to facilitate greater resource recovery by both increasing the quality of recycled materials and by reducing the amount of nonrecyclable residual waste generated that is currently sent to landfill. The new Hume MRF would be one of the first advanced facilities in Australia to enable separation mixed plastics. Upgraded technology would also improve the quality and therefore marketability of paper and mixed cardboard, mixed plastics and glass that would be received from the ACT and five regional NSW councils.

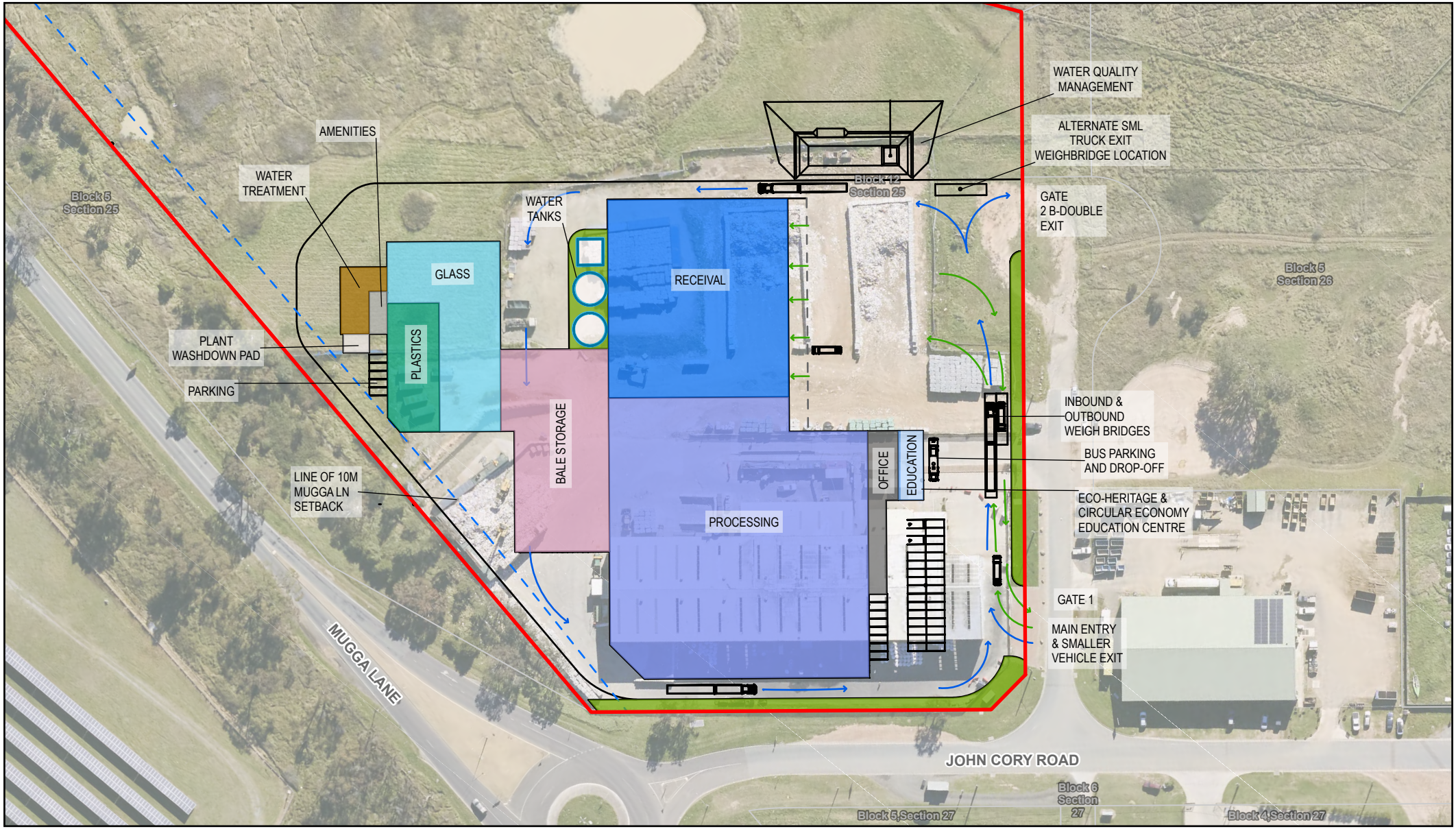
The proposal would be designed to process up to 115,000 tonnes per year of mixed recyclables. The proposed capacity would provide for population growth and changing consumer behaviours which are expected to contribute to increases in recoverable materials over time.

Key features of the proposal include:

– Replacement of the existing MRF
– Additional warehouse style facilities
– Civil works and piling to support the dynamic loads imposed by rotating and high frequency vibrating equipment
– Expansion of hardstand space towards the west of the proposal site
– A trade waste system to capture contaminated stormwater runoff

The full site detail plan is presented in Figure 1.

GHD Pty Ltd (GHD) was engaged to prepare a Bushfire Risk Assessment (BRA) for the proposed upgrades to the Materials Recovery Facility (MRF) with a licenced area of Blocks 12, Section 25 Hume ACT. The BRA is to support specific requirements of a Development Application and comments from the ACT Emergency Services Agency (ESA) so that the proposed future land use is in an appropriate location to minimise the risk to life and property from bush fire attack. The licence area is shown in Figure 1.



Legend

- Proposal site
- Cadastre
- Water Tanks
- Amenities
- Bale Storage
- Education
- Glass
- Office
- Plant Washdown
- Plastics
- Processing
- Receival
- Water Treatment
- Grass

Paper Size ISO A4

0 20 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

Transport Canberra and City Services
Hume Materials Recovery Facility
Bushfire Report

Project No. **12540460**
Revision No. **0**
Date **16/08/2023**

Site detail plan

FIGURE 1

\\ghdnet\ghd\AU\Canberra\Projects\23\12540460\GIS\Maps\Deliverables\BFR_MRF.aprx
Print date: 17 Aug 2023 - 09:46

Data source: Metromap Tile Service: extracted 17/08/2023; Watercourses, Roads, Suburbs, Cadastre; Land zones - ACTmapi, 2022. Created by: pfernandes

1.2 Purpose of this report

The BRA addresses the bushfire risk and the potential impact of potential development in the identified areas upon the wider infrastructure network to assess the appropriateness of the proposal in the bush fire hazard context, particularly with regard to the risk of and from recovered materials fires. This BRA assesses the strategic implications for bush fire mitigation and management.

1.3 Scope

This report has been prepared in accordance with the recently legislated ACT Bushfire Management Standards (BMS) 2023 and Strategic Bushfire Management Plan 2019-2024 (SBMP v4) addressing the following:

– Bush fire landscape assessment
– Land use assessment
– Access and egress
– Emergency services
– Infrastructure
– Adjoining land

GHD proposed the following scope to address the requirements of the report:

– Site inspections to collect site information and data
– Preparation of the assessment, involving responses to the issues detailed above on the project description, consultation with the client and the ESA and the desktop assessment. The responses will include:
    - Assessment of the risk profile of the proposal site and the impact of siting on Asset Protection Zones
    - Identification and prioritisation of mitigation measures appropriate for proposed use and development type
    - Assessment of the existing road network to evaluate the capacity to deal with evacuating site users and responding emergency services
    - Consideration and analysis of the increase in demand for emergency services responding to bush fire, and the ability of emergency services to carry out fire suppression because of the proposed development
    - Identification and prioritisation of issues associated with infrastructure and utilities, particularly water for firefighting
    - Assessment of the impact on adjoining land owners and their ability to undertake bush fire management

1.4 Limitations

This report: has been prepared by GHD for Transport Canberra and City Services and may only be used and relied on by Transport Canberra and City Services for the purpose agreed between GHD and Transport Canberra and City Services as set out in Section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Transport Canberra and City Services arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer Section 1.5 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Transport Canberra and City Services and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

Accessibility of documents

If this report is required to be accessible in any other format, this can be provided by GHD upon request and at an additional cost if necessary.

1.5 Assumptions

The following assumptions have been made for the preparation of the report:

– Information on the vegetation is based on preliminary ecological a mapping published on ACTMapi
– The layout on which this assessment is based has been provided by the client
– It is assumed that the proposal site be managed lands and not revert to vegetated state unless otherwise specified

1.6 Relevant documentation

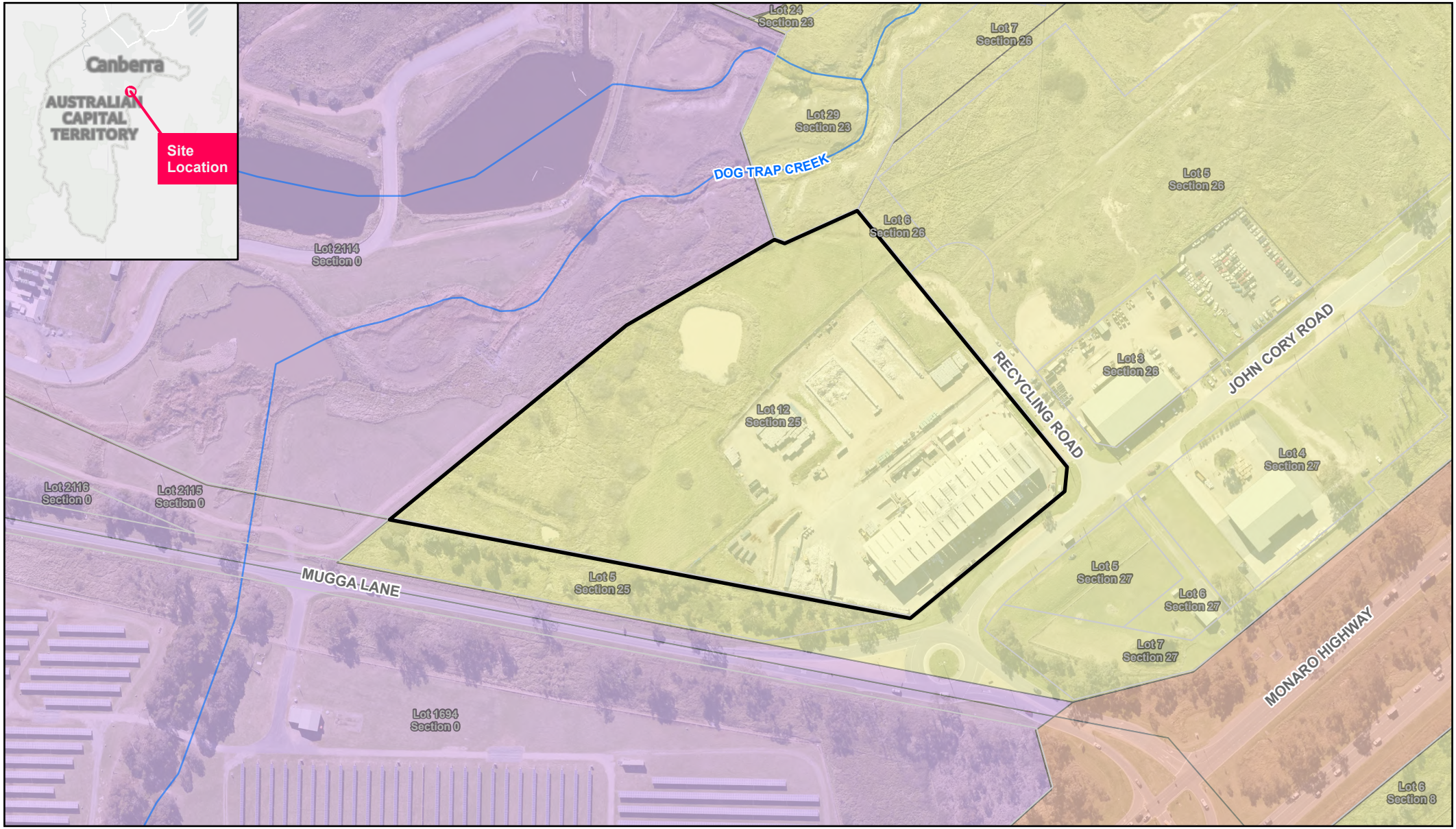
In undertaking this bushfire risk assessment, the following has been considered:

– *Planning and Development Act 2007*
– *Emergencies Act 2004*
– ACT Strategic Bushfire Management Plan 2019 (SBMP v4)
– ACT Bushfire Management Standards 2023 (BMS)
– Australian Standard 3959-2018 (AS 3959-2018) Construction of buildings in bushfire-prone areas

2. Bushfire assessment

2.1 Siting and landscape context

The proposal site (Block 12, Section 25, Hume) is located to the north of the Monaro Highway on the corner of John Cory Road and Mugga Lane. The site is located approximately 12.5 km south of Canberra City with the surrounding area predominately occupied by industrial (IZ1: General Industry) and rural (NUZ1: Broadacre) land use.



Legend

- Proposal site
- Cadastre
- Watercourses

Land use

- Broadacre
- Designated
- General industry

Paper Size ISO A4

0 25 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

N

Transport Canberra and City Services
Hume Materials Recovery Facility
Bushfire Report

Project No. **12540460**
Revision No. **0**
Date **16/08/2023**

Surrounding land use

FIGURE 2

\\ghdnet\ghd\AU\Canberra\Projects\23\12540460\GIS\Maps\Deliverables\BFR_MRF.aprx
Print date: 17 Aug 2023 - 09:47

Metromap Tile Service: ,Light Gray Base: Vicmap, Esri, HERE, Garmin, FAO, NOAA, USGS,Light Gray Reference: Vicmap, Esri, HERE, Garmin, FAO, NOAA, USGSextracted 26/04/2022; Watercourses, Land use zones, Roads, Cadastre - ACTmapi, 2022. Created by: pfernandes

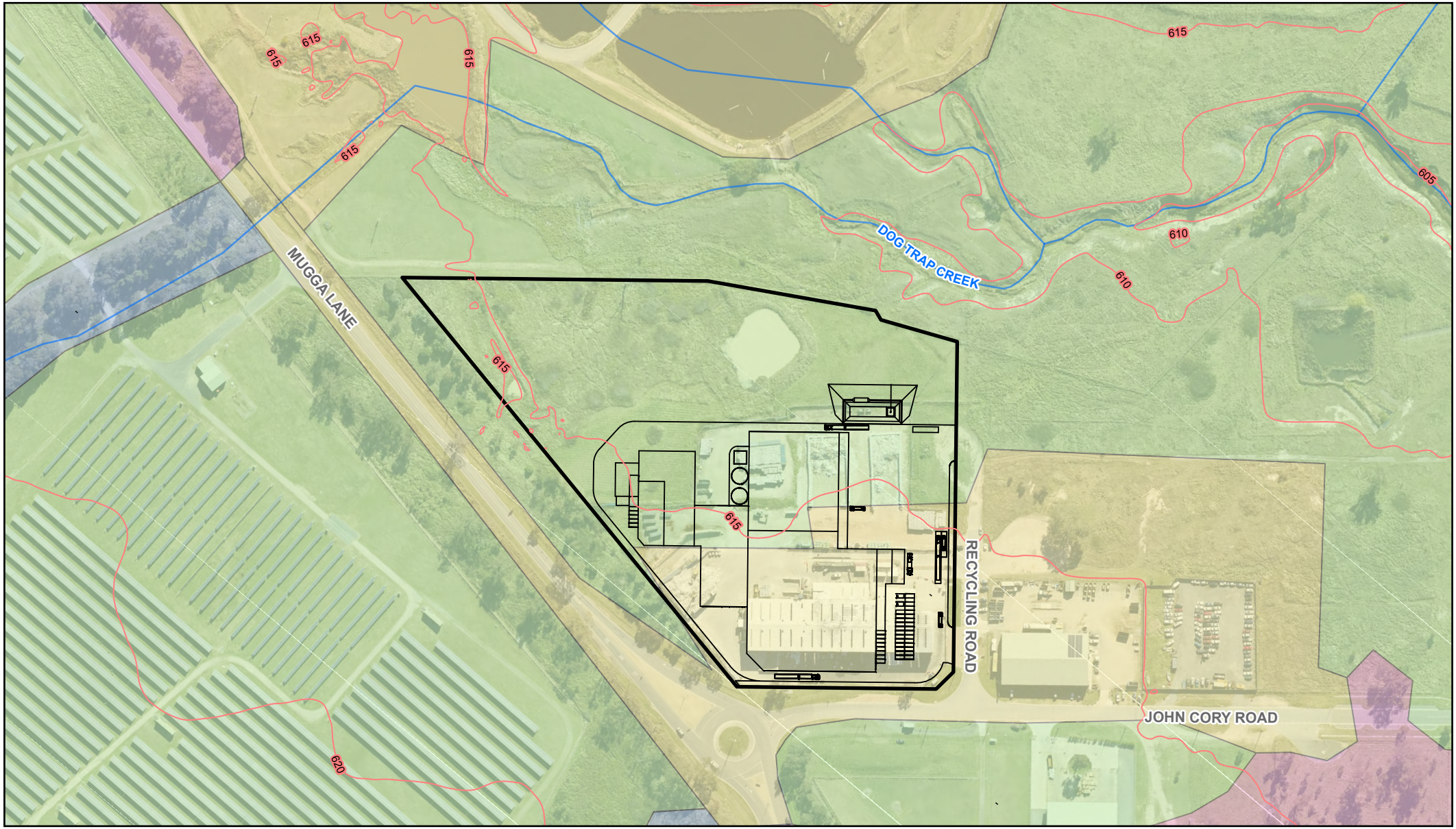
2.2 Vegetation

The existing mapped vegetation for the proposal site and surrounding land is shown in Figure 3, showing predominantly grassland vegetation, with a small portion of remnant grassy woodland present opposite John Cory Road along the Monaro highway to the southeast.

A solar farm to the south of Mugga Lane is classified as grassland vegetation however this is considered managed due to an extensive network of tracks that provide fire breaks and vegetation maintenance to minimise the grass growth under the solar panels. The solar farm is also managed un accordance with a bushfire management plan.

2.3 Effective slope

Effective slope describes the slope underneath the vegetation, not between the site and the vegetation. The effective slope was assessed using AHD contours on ACTmapi (**http://www.actmapi.act.gov.au**). The vegetation to the south of the site toward the solar farm is approximately 1-2 degrees downslope of the site, with the effective slope in all other directions flat or upslope.



Legend

- Proposal site
- Watercourses
- Contours (5m) 2015

Vegetation

- Grassland
- Amenity planting native
- Urban
- Grassy woodland

Paper Size ISO A4

0 25 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

GHD

Transport Canberra and City Services
Hume Materials Recycling Facility
Bushfire Report

Project No. **12540460**
Revision No. **0**
Date **16/08/2023**

Surrounding vegetation bushfire hazard

FIGURE 3

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3. Bushfire protection measures

3.1 Asset protection zones

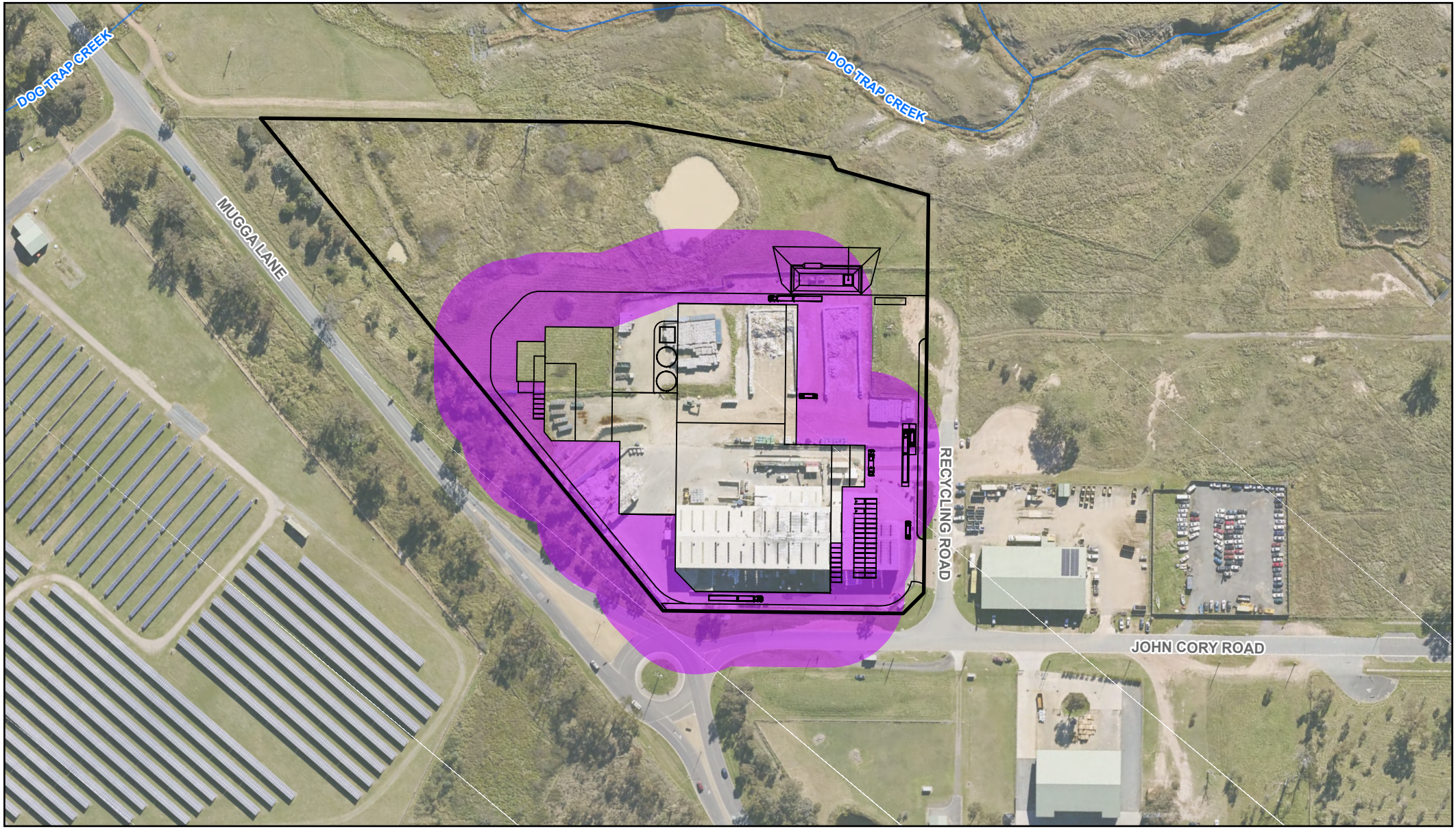
The subject land is currently mapped as a Bushfire Prone Area by the ACT ESA[1] and the following assessment is undertaken in accordance with the BMS Section 6 and Method 1 of AS 3959-2018. Due to the inclusion of education within the building the entirety of the building is assessed as sensitive use using Section 6 of the BMS. APZ requirements for the proposed MRF siting are provided in Table 1 with an indication of the separation distances shown in Figure 5.

Table 1 Asset Protection Zone requirements (m)

Aspect	Vegetation type (BMS)	Location	Minimum required Sensitive use development APZ (m)	Comment
Northeast	Grassland	Northeast of the receival and processing, office and education areas	36	Non-compliant – not contained within proposal site. Portion of APZ extends into the Recycling Road reserve between the proposal site and the road.
Northwest	Grassland	Northwest of the receival bale storage and glass areas	36	Contained within the proposal site
Southeast	Grassland	Southeast of the processing building toward john cory road	36	Non-compliant – not contained within the proposal site. Extends into the John Cory Road reserve and into adjacent block (Block 5, Section 27, Hume).
South	Grassland	South of the proposal site toward mugga lane	40	Non-compliant – not contained within proposal site. Extends beyond proposal site boundary into Mugga Lane reserve. 10m of the reserve is already managed as Inner APZ.

The APZ extends into adjoining land associated with the Recycling Road and John Cory Road Reserves and Block 5, Section 27, Hume. The areas of the APZ on adjoining land is required to be maintained by Transport Canberra and City Services along with that contained within the proposal site. Written agreement between the adjoining land holder(s) and Transport Canberra and City Services about APZ management on land adjoining the facility should be provided prior to operation of the facility.

[1] http://www.actmapi.act.gov.au



Legend

- Proposal site
- APZ
- Watercourses

Paper Size ISO A4

0 25 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

GHD

Transport Canberra and City Services
Hume Materials Recycling Facility
Bushfire Report

Bushfire hazard assessment and asset protection zone

Project No. **12540460**
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FIGURE 4

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Light Grey Base, Light Grey Reference - Vicmap, Esri, HERE, Garmin, FAO, NOAA, USGS, 2022; Imagery - Metromap Tile Service extracted 26/04/2022; Watercourses, Roads, Cadastre, Vegetation - ACTmapi, 2022. Created by: pfernandes

3.2 Landscaping

Any proposed landscaping and management of open spaces or residual areas is required to consider bushfire risk in determining location, species, density, extent and ongoing maintenance. All open space within the proposal site would undergo management to meet APZ or low hazard standards under AS3959-2018.

The proposed APZ would not require vegetation clearance or tree removal to support the proposal due to the predominant cleared nature of the proposal site, the proposed site layout, distance to vegetation surrounding the subject land and existing and proposed access. Fuel management practices to be implemented by the site operator within the APZ (both within the licence area and outside to the north and north -west) shall be as follows in accord with the ACT BMS:

All APZs will require regular slashing of grass fuels to a maximum height of 200 mm before the start of the bushfire season (generally 1st October) and maintained at this maximum height when grassland curing is ≥ 70 per cent.

When establishing and maintaining an APZ the following requirements apply as defined in Appendix 4 of BMS:

– Trees
  - canopy cover should be less than 15% (at maturity)
  - trees (at maturity) should not touch or overhang the building
  - lower limbs should be removed up to a height of 2m above ground
  - tree canopies should be separated by 2 to 5 m
  - preference should be given to smooth barked and evergreen trees
– Shrubs
  - create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided
  - shrubs should not be located under trees
  - shrubs should not form more than 10% ground cover
  - clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation
– Grass
  - grassland maintained at ≤200mm height when grassland curing is ≥70%
  - grass should be kept mown
  - leaves and vegetation debris should be removed

Other principles that should be considered and incorporated where possible include:

– avoid creating fuel ladders (shrubs, bark, dropped branches, leaves etc.)
– select suitable plants (low flammability, avoid dense and elevated fine fuels)
– no plants near vulnerable building components (windows, decks)

3.3 Construction standards

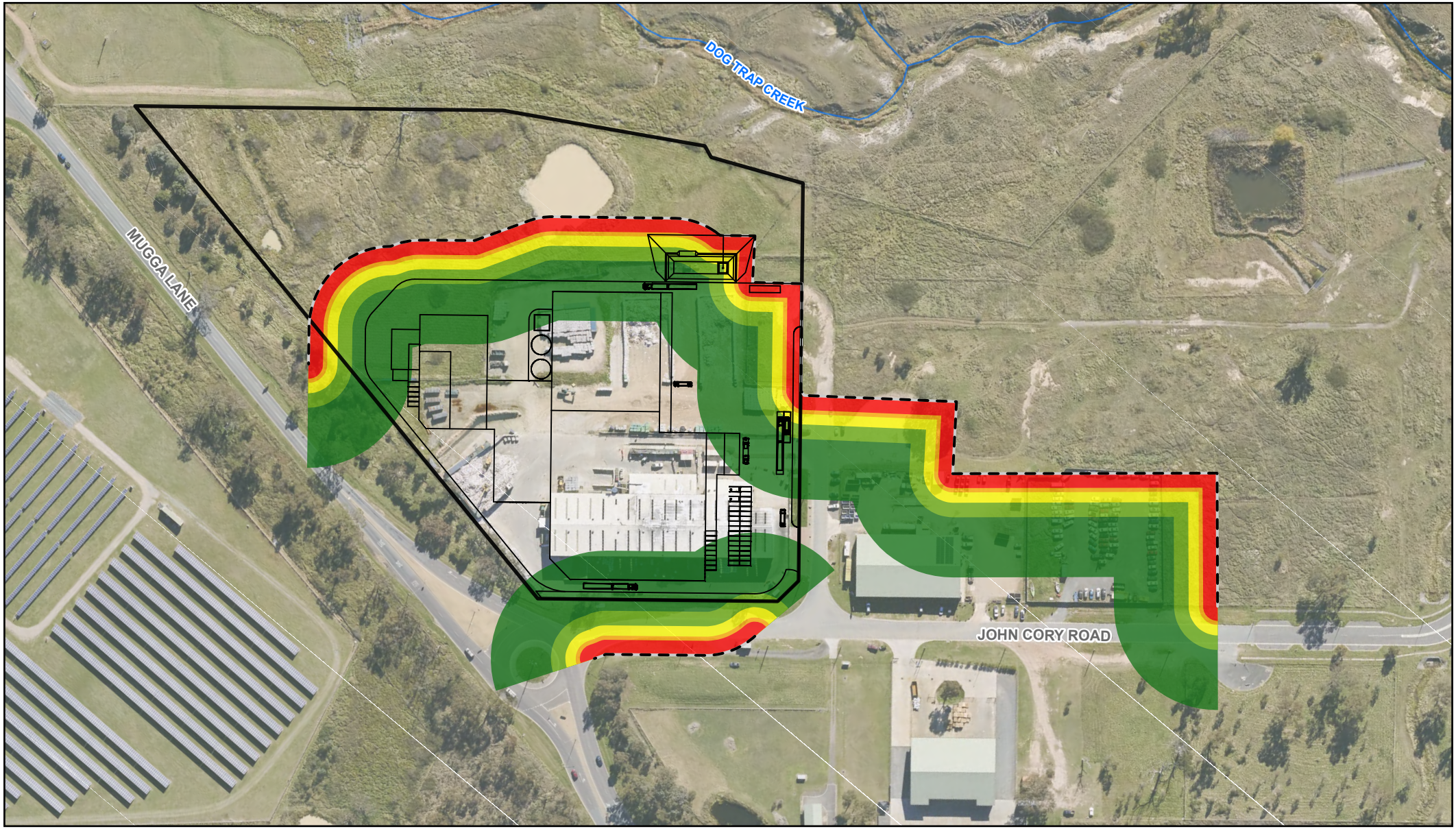
The building construction standard for bushfire prone land required under the SBMP v4 is a minimum of Bushfire Attack Level (BAL) of BAL-12.5 and maximum of BAL-29 as defined in AS 3959-2018. Sensitive use development in the ACT requires a construction level of BAL-12.5 under AS3959 or NASH Standard under BMS. Based on the proposed layout using a Fire Danger Index of 100 for the ACT and the APZ presented in Figure 4 the indicative BAL for the proposal is indicated in Table 2 and shown in Figure 5.

Table 2 Indicative Bushfire Attack Levels for the proposal

Aspect	Vegetation	Slope	BAL (AS 3959)
Northeast	Grassland	Upslope/flat	12.5
Southeast	Woodland	Upslope/flat	12.5
South	Low threat vegetation	0-5°	LOW
Northwest	Grassland	Upslope/flat	12.5
West	Grassland	Upslope/flat	12.5

3.4 Storage risk mitigation

Fire safety guideline – Fire safety in waste facilities (NSW Fire and Rescue 2020) provides guidance to manage fire risk, for fire prevention using effective storage management, monitoring hazards and implementing policies and procedures that should be considered in the development of bushfire mitigation and operational plans for the proposal site. Included is guidance on pile dimensions to reduce fire risks, as pile access, height, length and width play a key role in the severity, duration and intensity of fires. The maximum internal stockpile size in a building fitted with an automatic fire sprinkler system should be a maximum of 1000 m^3, with a minimum of 6 m unobstructed access on each accessible side. Where there is no automatic fire sprinkler system the stockpile should be limited in size to be able to be moved to a dedicated external quarantine area using on-site resources only within one hour and maintain a minimum unobstructed access on each accessible side of 10 m.



Legend

- Proposal site
- Watercourses
- Hazard interface

BAL

- 12.5
- 19
- 29
- 40
- FZ

Paper Size ISO A4

0 25 50

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
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GHD

Transport Canberra and City Services
Hume Materials Recycling Facility
Bushfire Report

BAL assuming management of design area

Project No. **12540460**
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FIGURE 5

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Print date: 17 Aug 2023 - 09:55

Light Grey Base, Light Grey Reference - Vicmap, Esri, HERE, Garmin, FAO, NOAA, USGS, 2022; Imagery - Metromap Tile Service extracted 26/04/2022; Roads, Cadastre - ACTmapi, 2022. Created by: pfernandes

3.5 Access and egress

Primary access to the MRF would be provided Recycling Road off John Cory Road. The road within the proposed site is not a public access road with the remaining access requirements for the proposed for the MRF able to meet the applicable access requirements detailed in Table 8 of the BMS for emergency services appliances through design. This includes:

- Sensitive use development access roads are two-wheel drive, all weather roads
- Access is prohibited to all structures
- Traffic management devices are constructed to not prohibit access by emergency services vehicles
- Access roads must provide suitable turning areas in accordance with Appendix 3 of the BMS
- One way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression

3.6 Water supply

The proposal site would be serviced by reticulated water supply. ICON Water supplied reticulated water supply would be connected to the upgraded MRF meeting acceptable solutions of the BMS and complying with *Utilities Act 2000*. Installation of fire hydrants spacing, sizing and pressure would comply with AS2419.1:2021. Hydrants would be accessible (i.e., outside parking bays or within the access road) and suitably spaced. Additionally, all above ground water service pipes external to the building will be metal, including taps.

The MRF would also be fitted with an internal automatic fire sprinkler system.

Static water supply is also available in the form of a stormwater pond within the proposal site as well as a number of ponds and dams in the surrounding landscape.

3.7 Utilities

Gas is proposed to be connected to the proposal site and would be installed and maintained in accordance with AS/NZS 1596:2014. Exposed gas pipes and fittings would be metal where the metal type, thickness and pipe installation would comply with AS 3959-2018. All above-ground gas service pipes external to the building will be metal including up to any outlets.

Electrical servicing for the proposal site would be provided via overhead power lines. Overhead powerlines would be kept clear of existing vegetation with no part of a tree closer than the distance set out in **https://www.evoenergy.com.au/residents/trees-and-powerlines** as per the BMS. To meet the standards set out in BMS pole spacing should be short (30m) unless crossing gullies, gorges or riparian areas. Consultation with the service provider is recommended for any new overhead powerlines.

3.8 Emergency management planning

Any existing emergency management plans in place for the current MRF would be required to be updated and amended to reflect the upgrades to the proposal site prior to the construction, operation and occupancy of the proposed new assets. These plans should clearly identify bushfire preparedness actions, bushfire response actions, evacuation plans and procedures (for onsite and offsite evacuation), and on-site refuge locations.

4. Compliance with BMS

The bushfire protection measures, and standard identified in this report are aligned to the acceptable solutions for each performance measure within Section 6.7 of BMS 2023.

Measure	Acceptable solutions	Compliance
Asset Protection Zones	– The building is provided with an APZ in accordance with Table 19 in Appendix 1 of BMS – APZs are located on lands with slopes less than 14 degrees – The APZ is managed in accordance with the requirements of Appendix 4 of BMS and is wholly within the boundaries of the development site – APZ are wholly within the boundaries of the development site; and – Other structures located within the APZ need to be located further than 6 m from the refuge building	**Does not comply** The APZ is to be provided in accordance with Table19 of BMS. The APZ is **not** wholly within the boundaries of the development site. Three options are presented to meet the standards of the BMS in Section 5.1
Landscaping	– Landscaping is in accordance with Appendix 4 of BMS	**Can comply** Landscaping of areas within the APZ are to be managed in accordance with Appendix 4 of BMS It is recommended that all grassland vegetation throughout the proposal site is kept to a height ≤200mm when grass curing is ≥70%.
Construction standards	– A construction level of BAL-12.5 (or BAL-19 for class 9 buildings) under AS3959 or NASH standard	**Can comply** BAL determined using Table 21 of BMS. Construction materials can meet BAL-12.5 under AS3959 or NASH through design.
Access	– Sensitive use development access roads are two-wheel drive, all weather roads – Access is provided to all structures – Traffic management devices are constructed to not prohibit access by emergency services vehicles – Access roads must provide suitable turning areas in accordance with Appendix 3 of BMS; and – One way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression	**Can comply** The road within the proposed site is not a public access road with the remaining access requirements for the proposed for the MRF able to meet the applicable access requirements detailed in Table 8 of the BMS for emergency services appliances through design
Water supplies	– Reticulated water is to be provided to the development where available; or – A 10,000 litres minimum static water supply for firefighting purposes is provided for each occupied building where no reticulated water is available	**Complies** ICON Water would supply reticulated water to the upgraded MRF meeting acceptable solutions of the BMS
Electricity services	– Where practicable, electrical transmission lines are underground – Where overhead, electrical transmission lines are proposed as follows: • Lines are installed with short pole spacing (30m), unless crossing gullies, gorges, or riparian areas; and	**Can comply** Electrical transmission lines are proposed to be overhead. The requirements of overhead powerlines described in Table 8 of the BMS can be met through design in consultation with the service provider.

Measure	Acceptable solutions	Compliance
	• No part of a tree is closer to a power line than the distances set out in **https://www.evoenergy.com.au/residents/trees-and-powerlines**	
Gas services	– Reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities, and metal piping used – All fixed gas cylinders are kept clear of all flammable materials to 10m and shielded on the hazard side – Connections to and from gas cylinders are metal – If gas cylinders need to be kept close to the building, safety valves are directed away from the building and at least 2m away from any combustible material, so they do not act as a catalyst to combustion – Polymer-sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used; and – Above-ground gas service pipes external to the building are metal including and up to any outlets	**Can comply** The requirements of BMS can be met through design and installation.
Emergency management	– Bush Fire Emergency Management and Evacuation Plan is prepared consistent with the: • The NSW RFS document: *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan* • Australian Standard AS 3745:2010 *Planning for emergencies in facilities*; – The Bush Fire Emergency Management and Evacuation Plan should include planning for the early relocation of occupants. Note: a copy of the Bush Fire Emergency Management and Evacuation Plan should be provided to ACT ESA for its information prior to occupation of the development	**Can comply** The requirements for emergency management and planning can be met prior to occupation of the development. It is recommended that a copy of the Bush Fire Emergency Management and Evacuation Plan is provided to ACT ESA for its information prior to occupation of the development.

5. Recommendations and conclusion

5.1 Recommendations

The Development Application is required to address bushfire protection measures identified within this report and summarised below:

Recommendation 1 – APZ is to be provided in accordance with BMS under one of the following options:

– APZ to be provided in accordance with Table 1. Where the APZ falls outside the proposal site, the areas of the APZ on adjoining land is required to be maintained by Transport Canberra and City Services along with that contained to the proposal site. Written agreement between the adjoining land holder(s) and Transport Canberra and City Services about APZ management on land adjoining the facility should be provided prior to operation of the facility.

– Due to the inclusion of use for education the entire building is assessed as sensitive use to provide adequate protection to human life and property under BMS Section 6. Buildings (not attached to buildings used for education) can be assessed under Section 8 of BMS and reduce the APZ requirement for those buildings.

– Performance-based solutions could be employed in building design or material to effectively segregate the building section used for education while still meeting acceptable solutions set out in Section 6 of BMS for that section of the building. All performance-based solutions should be accompanied by a Bush Fire Management Plan and may require a Bush Fire Design Brief. A qualified fire engineer should be consulted if this approach was to be taken.

Recommendation 2 – APZ landscaping is to comply with the ACT BMS Appendix 4 and be guided by the fuel management principles. These will be managed by the site operator.

Recommendation 3 – Construction to a level of BAL-12.5 (or BAL-19 for class 9 buildings) under AS3959 or NASH standard is required and should implemented at construction stage.

Recommendation 4 – Internal pile size should be no large than 1000 m^3, with a minimum of 6 m unobstructed access on each accessible side.

Recommendation 5 – Access to meet the specification detailed in Section 3.5.

Recommendation 6 – Overhead electrical transmission lines are to be installed with short pole spacing (30m) and away from vegetation in line with BMS. Consultation with the electrical transmission line service provider is undertaken to ensure the overhead electrical transmission.

Recommendation 7 – Existing emergency and evacuation plans be updated and amended prior to construction, operation, and occupancy of the proposed new assets as summarised in Section 3.8 and in compliance with the requirements set out in the BMS. A copy of the Bush Fire Emergency Management and Evacuation Plan should be provided to ACT ESA for its information prior to occupation of the development.

5.2 Conclusion

It is considered that the proposal can comply with all bushfire planning requirements if the above recommendations are incorporated.

6. References

ACT Government. 2019. *ACT Strategic Bushfire Management Plan 2019-2024* (SBMP v4) ACT Emergency Services Authority, Canberra.

ACT Government. 2023. *Emergencies Bushfire Management Standards 2023* (BMS) ACT Emergency Services Authority, Canberra, NI2023-427.

Australian Standards. 2018. *Construction of buildings in bushfire-prone areas* (AS3959-2018). SAI Global.

NSW Fire and Rescue. *Fire Safety Guideline – Fire safety in waste facilities*. Document ID: D17/81582 Version 02.02. 27 February 2020

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