

## **BUSHFIRE ASSESSMENT REPORT**

## Proposed Industrial Development – Stage 3

35-47 Stennett Road, Ingleburn Prepared for Stockland



## **Bushfire Planning Australia**

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Ref: 2207 Ingleburn Version: FINAL – March 2022







#### **Disclaimer and Limitation**

This report is prepared solely for Stockland (the 'Client') for the specific purposes of only for which it is supplied (the 'Purpose'). This report is not for the benefit of any other person; either directly or indirectly and is strictly limited to the purpose and the facts and matters stated in it and will not be used for any other application.

This report is based on the site conditions surveyed at the time the document was prepared. The assessment of the bushfire threat made in this report is made in good faith based on the information available to Bushfire Planning Australia at the time.

The recommendations contained in this report are considered to be minimum standards and they do not guarantee that a building or assets will not be damaged in a bushfire. In the making of these comments and recommendations it should be understood that the focus of this document is to minimise the threat and impact of a bushfire.

Finally, the implementation of the adopted measures and recommendations within this report will contribute to the amelioration of the potential impact of any bushfire upon the development, but they do not and cannot guarantee that the area will not be affected by bushfire at some time.

#### **Document Status: 2207 - Industrial Development**

Version	Status	Purpose	Author	Review Date
1	1 Draft Draft for Review		Katrina Mukevski	23 March 2022
2	2 Draft Draft for Client Review		Stuart Greville	24 March 2022
3	Final	Final for Submission	Stuart Greville	24 March 2022

#### Certification

As the author of this Bushfire Assessment Report (BAR), I certify this BAR provides the detailed information required by the NSW Rural Fire Service under Clause 44 of the Rural Fires Regulation 2013 and Appendix 2 of Planning for Bushfire Protection 2019 in accordance with the requirements of section 4.14 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

**Stuart Greville** 

Accredited Bushfire Practitioner

BPAD-26202

Date: 24 March 2022



In signing the above, I declare the report is true and accurate to the best of my knowledge at the time of issue.



### **Executive Summary**

Bushfire Planning Australia (BPA) has been engaged by Stockland (the 'Client') to undertake a Bushfire Assessment Report (BAR) for Stage 3 of the proposed industrial development of 35-47 Stennett Road, Ingleburn; legally known as Lot 1 DP1092198. Stage 3 occupies the western portion of the subject site and is referred to as the 'study area'.

The National Construction Code (NCC) does not provide for any bush fire specific performance requirements for the proposed development; being a development that will facilitate the construction of non-habitable buildings. The general fire safety construction provisions of the NCC are taken as acceptable solutions in this instance. A hazard assessment has been completed and found the study area was exposed to a low bushfire hazard located to the south of the subject site. The predominant vegetation surrounding the site is consistent with a *grassland* vegetation formation as described in the NSW Rural Fire Service document Planning for Bushfire Protection 2019 (PBP 2019).

PBP 2019 refers to the proposed industrial development as 'Other development'. Given the unique features of these developments, compliance with PBP is strongly focused in satisfying the aims and objectives of PBP 2019.

The following recommendations when implemented will reduce the impact of a bushfire to an acceptable level for the proposed industrial (non-habitable) buildings and demonstrate the proposed development is ably to comply with PBP 2019:

- 1. The entire site shall be managed as an Inner Protection Area (IPA) as outlined within Appendix 4 of PBP 2019 and the RFS document *Standards for asset protection zones*;
- **2.** All land within 12m of the southern boundary is to be managed as an APZ as outlined within Appendix 4 of PBP 2019 and the RFS document *Standards for asset protection zones*;
- 3. Property access roads are to be constructed in accordance with Table 5.3b of PBP 2019 and as shown of the development plans contained in **Appendix A**;
- 4. All new buildings are to be connected to a reliable water supply network and that suitable fire hydrants are located throughout the development site that are clearly marked and provided for the purposes of bushfire protection. Fire hydrant spacing, sizing and pressure shall comply with AS2419.1 2005 and Table 5.3c of PBP 2019;
- **5.** Consideration should be given to landscaping and fuel loads on site to decrease potential fire hazards on site; and
- **6.** All hazardous materials to be stored on land within 100m of any designated bushfire prone land shall be stored in a secure enclosure away from the bushfire hazard.

This assessment has been made based on the bushfire hazards observed in and around the site at the time of inspection and production (March 2022).

Should the above recommendations be implemented, the existing bushfire risk should be suitably mitigated to offer an acceptable level of protection to life and property for those persons and assets occupying the site, but they do not and <u>cannot</u> guarantee that the area will <u>not</u> be affected by bushfire at some time.



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Appendix A: Proposed Development Layout

Appendix B: AHIMS Search Results



## **Terms and Abbreviations**

Abbreviation	Meaning
APZ	Asset Protection Zone
AS2419 -2005	Australian Standard – Fire Hydrant Installations
AS3959-2018 Australian Standard – Construction of Buildings in Bush Fire Prone Ar	
BAR	Bushfire Assessment Report
BAL	Bushfire attack level
BCA	Building Code of Australia
BC Act	NSW Biodiversity Act 2016
ВМР	Bush Fire Management Plan
BPA	Bush Fire Prone Area (Also Bushfire Prone Land)
BFPL	Bush Fire Prone Land
BFPLM	Bush Fire Prone Land Map
BPM	Bush Fire Protection Measures
CCC	Campbelltown City Council
DoE	Commonwealth Department of the Environment
DPI Water	NSW Department of Primary Industries – Water
EP&A Act	NSW Environmental Planning and Assessment Act 1979
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
FDI Fire Danger Index	
FMP	Fuel Management Plan
ha	hectare
IPA	Inner Protection Area
LGA	Local Government Area
NCC	National Construction Code
OPA	Outer Protection Area
OEH	NSW Office of Environment and Heritage
PBP or PBP (2019)	Planning for Bushfire Protection 2019
RF Act	Rural Fires Act 1997
RF Regulation	Rural Fires Regulation
RFS	NSW Rural Fire Service
SFR Short fire run	
TSC Act	NSW Threatened Species Conservation Act 1995 (as repealed)
URA	Urban release area



#### 1. Introduction

Bushfire Planning Australia (BPA) has been engaged by Stockland (the 'Client') to undertake a Bushfire Assessment Report (BAR) for Stage 3 of the proposed industrial development of 35-47 Stennett Road, Ingleburn; legally known as Lot 1 DP1092198.

Section 8.3 of PBP 2019 refers to any type of development that are not residential/ rural residential subdivisions, SFPPs or residential infill development as 'Other development'. The proposed industrial development seeks consent for the construction of several non-habitable buildings on the subject site.

The National Construction Code (NCC) does not provide for any bush fire specific performance requirements for other development, such as the proposed industrial development. The general fire safety construction provisions of the NCC are taken as acceptable solutions in this instance.

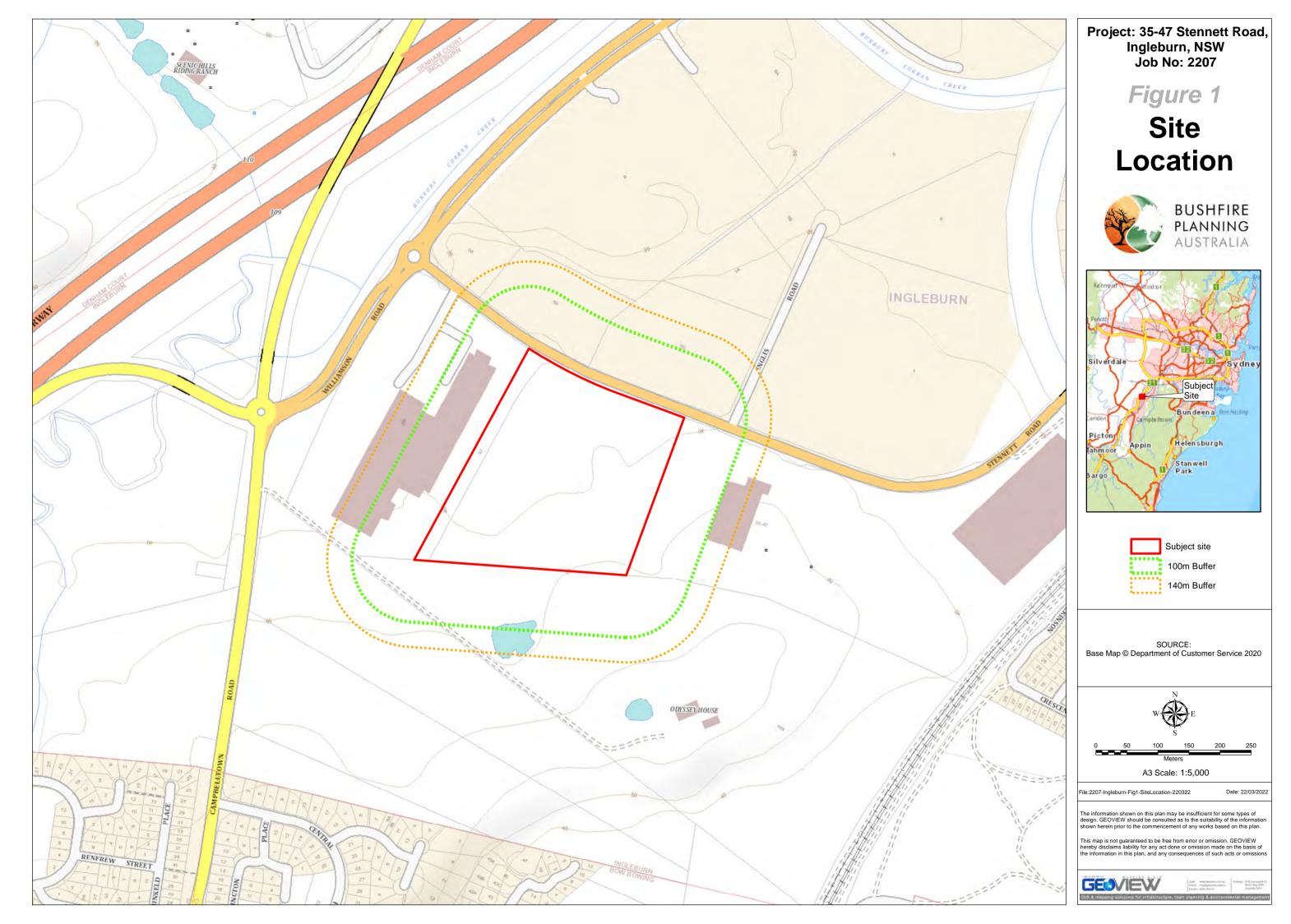
Nevertheless, in order to demonstrate the proposed industrial development is able to satisfy the aims and objectives of PBP 2019, this BAR was completed to determine the bushfire hazard that has the potential to threaten the proposed development. Based on this assessment, a series of bushfire protection measures that will provide for an increased level of protection on property and life from the threat of bushfire have been recommended; thereby satisfying the aims and objectives of PBP 2019.



## 2. Site Description

**Table 1: Site Details** 

Address	35-47 Stennett Road, Ingleburn		
Title	Lot 1 DP1092198		
LGA	Campbelltown City Council		
Site Area	27.16 hectares		
Study Area	~9.5 hectares		
Land Use Zone	IN1 General Industrial		
Context	The site is located on Stennett Road, and currently forms part of Ingleburn Logistics Park used primarily for commercial and distribution purposes.  The development site is currently a carpark / storage area located at the western portion of the site.		
Topography	There is a gradual slope from the rear (south) towards Stennett Street. The fall in grade is approximately 4 degrees (6%). The grade of the slope steeply rises up to the south along the rear boundary.		
Fire Danger Index	The site lies within a local government area with a Fire Danger Index (FDI) rating of 100.		





#### 2.1. Bushfire Prone Land

Bushfire activity is prevalent in landscapes that carry fuel and the two predominant bushfire types are grassland and forest fires. Factors such as topographic characteristics and quantity of fuel loads influence the intensity and spread of fire. The scale of a bushfire hazard is tailored to the characteristics of the hazard, the size and characteristics of the affected population, types of land use exposed to bushfire, predicted development growth pressures and other factors affecting bushfire risk.

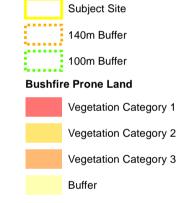
**Figure 2** demonstrates majority of the site is not bushfire prone land with exception of a narrow corridor along the southern site boundary identified as Vegetation Buffer. Within 140m of the site, immediately to the south, Vegetation Category 3 bushfire prone land exists. Additionally, there is a portion of Vegetation Category 2 bushfire prone land located further south-west, within 140m from the subject site.



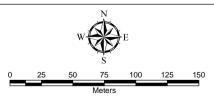
Figure 2

# NSW Bush Fire Prone Land





SOURCE:
Cadastral Boundary: NSW Department of Finance,
Services and Innovation 2022
Aerial photo: NearMap17/02/2022
NSW Bush Fire Prone Land: NSW Rural Fire Service
2021



A3 Scale: 1:3,000

File:2207-Ingleburn-Fig2-BFPL-220322

Date: 22/03/20

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#### 2.2. Proposed Development

The proposed development seeks to develop a portion of Lot 1 DP1092198; 35-47 Stennett Road, Ingleburn (the 'site') known as Stage 3 to create 7 new warehouses, office buildings and carpark areas for industrial land uses.

A plan of the proposed development is contained in **Appendix A** and shown in **Figure 3**.



Figure 3: Plan of Proposed industrial development



Figure 4: Perspective of proposed industrial development



#### 2.3. Industrial Development

Section 8.3 of PBP 2019 provides specific advice for developments that are not residential subdivision, special fire protection purposes (SFPPs) or residential infill. The proposed development is limited to Class 5-8 and 10 buildings of the National Construction Code: Building Code of Australia (NCC). These classes of buildings include factories, warehouses, offices and other industrial facilities. Residential development and habitable buildings are not permissible on the subject site.

The general aims and objectives of PBP 2019 apply in relation to matters such as access, water and services, emergency planning and landscaping/ vegetation management. However, it is prudent that a suitable package of bushfire protection measures be proposed commensurate with the assessed level of risk of the future development. Accordingly, this BAR will recommend areas cleared of vegetation are maintained at the hazard interface to ensure defendable space is provided for firefighting purposes.

Notwithstanding the available bushfire protection measures outlined in PBP 2019, the NCC does not provide for any bushfire specific performance requirements for industrial (non-habitable buildings) and as such Australian Standard *AS3959-2018 Construction of buildings in bushfire prone areas* (AS3959-2018) does not apply as a set of deemed-to-satisfy provisions. However, the following objectives apply in relation to access, water and services, and emergency and evacuation planning:

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	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
	Consideration of storage and hazardous materials away from the hazard wherever possible.



#### 3. Bushfire Hazard Assessment

#### 3.1. Vegetation Assessment

Environment 2021 Figure 7.

Vegetation classification over the site and surrounding area has been carried out as follows:
 Aerial Photograph Interpretation to map the vegetation classification and extent;
 Review or UAV imagery captured on 23 September 2021;
 Reference to Priority 5 Mapping Area Vegetation VIS ID 4172 Office of Environment and Heritage (OEH) 2015 Figure 5;
 Reference to Southeast NSW Native Vegetation Classification and Mapping VIS ID 2230 OEH 2011 Figure 6; and

□ Reference to NSW State Vegetation Type NSW Department of Planning, Industry and

In accordance with PBP 2019, an assessment of the vegetation over a distance of 140m in all directions from the site was undertaken. Vegetation that may be considered a bushfire hazard was identified in all directions from the development footprint. The vegetation classification is based on the revised Table 2.3 in AS3959-2018 and Appendix 1 of PBP 2019. The inconsistencies between the mapping sources listed above was quantified during the site inspection and compared to the Keith Vegetation Formations. It was confirmed there was no unmanaged hazardous vegetation is located within the site. Immediately to the south of the study area is a vast open area of unmanaged grassland. As it cannot be verified if the grassland is managed in accordance with the requirements of an APZ; eg, the height of grass is kept below 100mm, the vegetation is considered a bushfire hazard.

It is noted a site inspection was not conducted by the author. As a non-residential development that is exposed to a low-threat grassland, a site inspection was not considered necessary. Furthermore, with the benefit of reviewing recent (21 September 2021) high-resolution imagery obtained from a UAV, it was confirmed the vegetation was a grassland and there were no significant trees that would potentially alter the vegetation formation (eg. unlikely a multi-stratum vegetation community would have established since September 2021 that would increase the fuel load to a woodland or forest).

The results of the vegetation assessment are shown in Figure 10 and Table 2.

Direction of Classification of **Bushfire Attack / Vegetation or Other Infrastructure Vegetation Formations** PBP 2019 **Transect** T1 Grassland located in the southern corner of the site Grassland Woodland T2 Grassland transitioning to Woodland (Coastal Valley Grassy Woodland) Grassland transitioning to managed land on the T3 Grassland neighbouring site Corridor of grassland located between the site and T4 Grassland the neighbouring industrial site Excluded Stennett Road located to the north of the site **T5** (cleared land) Grassland T6 Grassland located to the south-east of the site Grassland located to the south of the site with a T7 Grassland water body

**Table 2: Vegetation formations** 





Plate 1: Study area looking south west across existing industrial precinct towards grassland



Plate 2: Looking over unmanaged grassland hazard towards study area





Plate 3: Grassland hazard to the south of the subject site is contained in single ownership



Plate 4: Grassland hazard within 100m of study area continues east and west before transitioning to woodland





Plate 5: Row planting within study area along southern and western boundaries. Managed grassland within property along western boundary



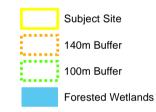
Plate 6: Vegetation within study area along western boundary contained with open drainage channel



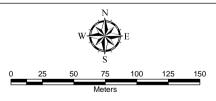
## Figure 5

# Priority 5 Mapping Area Vegetation





SOURCE:
Cadastral Boundary: NSW Department of Finance,
Services and Innovation 2022
Aerial photo: NearMap17/02/2022
Vegetation: Priority 5 Mapping Area (P5MA)
Vegetation Extent VIS ID 4172 Office of Environment
and Heritage (OEH) 2015



A3 Scale: 1:3,000

File:2207-Ingleburn-Fig3-Vegetation-VIS4172-220322

Date: 22/03/202

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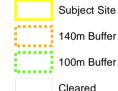




# Figure 6

# **Southeast NSW Native Vegetation**





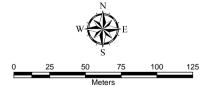
Subject Site

100m Buffer

Cleared

Cumberland River Flat Forest

SOURCE:
Cadastral Boundary: NSW Department of Finance,
Services and Innovation 2022
Aerial photo: NearMap17/02/2022
Vegetation: Southeast NSW Native Vegetation
Classification and Mapping - SCIVI. VIS ID 2230
Office of Environment and Heritage (OEH) 2011



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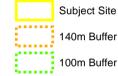




## Figure 7

# **NSW State** Vegetation Type (Class)

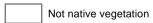




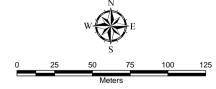
#### **Vegetation Class**



Coastal Valley Grassy Woodlands



SOURCE:
Cadastral Boundary: NSW Department of Finance,
Services and Innovation 2021
Aerial photo: NearMap17/02/2022
Vegetation: Pre-Release v1.1.0 Eastern NSW
Vegetation Type: NSW Department of Planning,
Industry and Environment 2021



A3 Scale: 1:2,500

File:2207-Ingleburn-FigX-Vegetation-SV-Class-220322 Date: 22/03/2022









#### 3.2. Slope Assessment

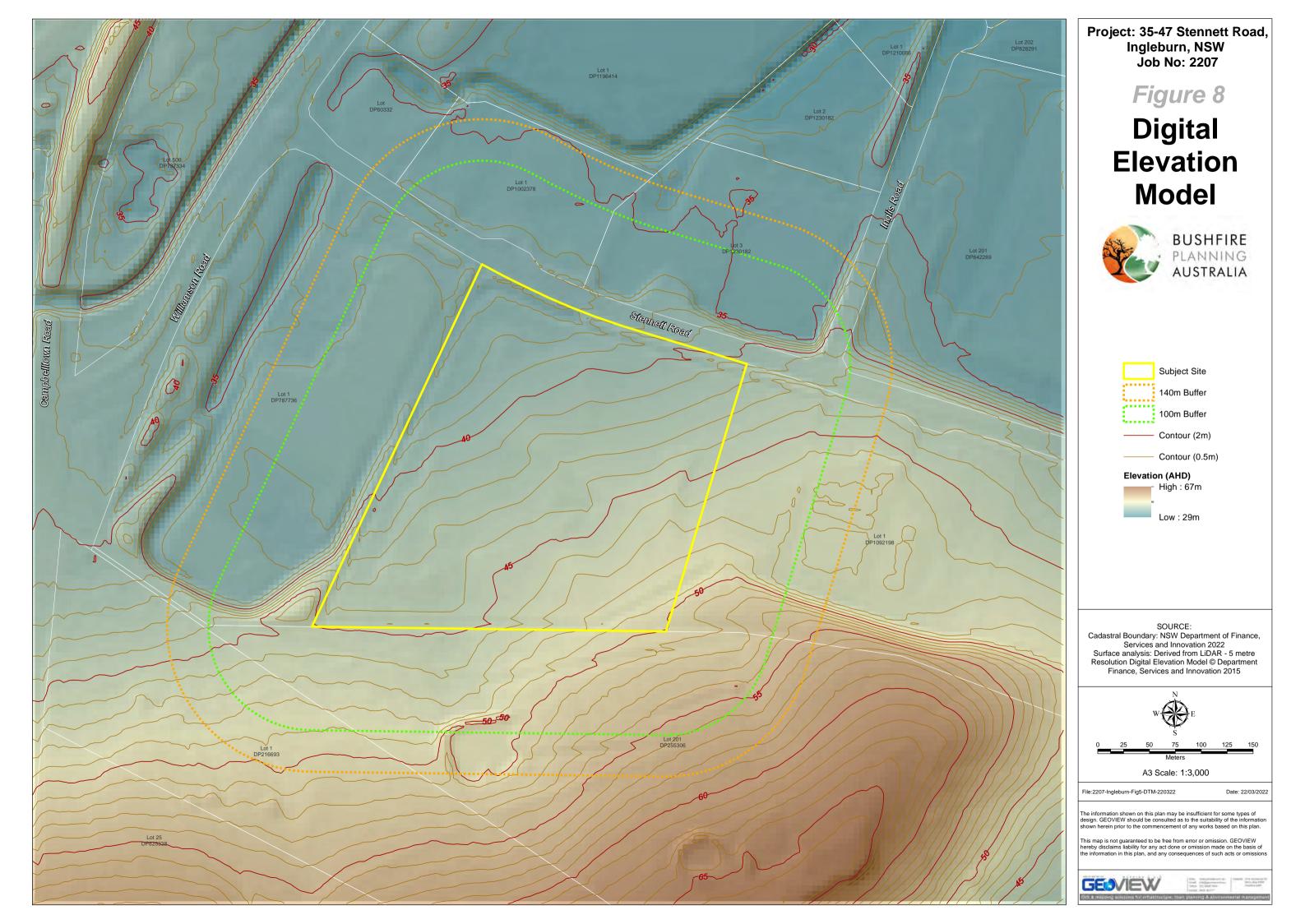
The slope assessment was undertaken as follows:

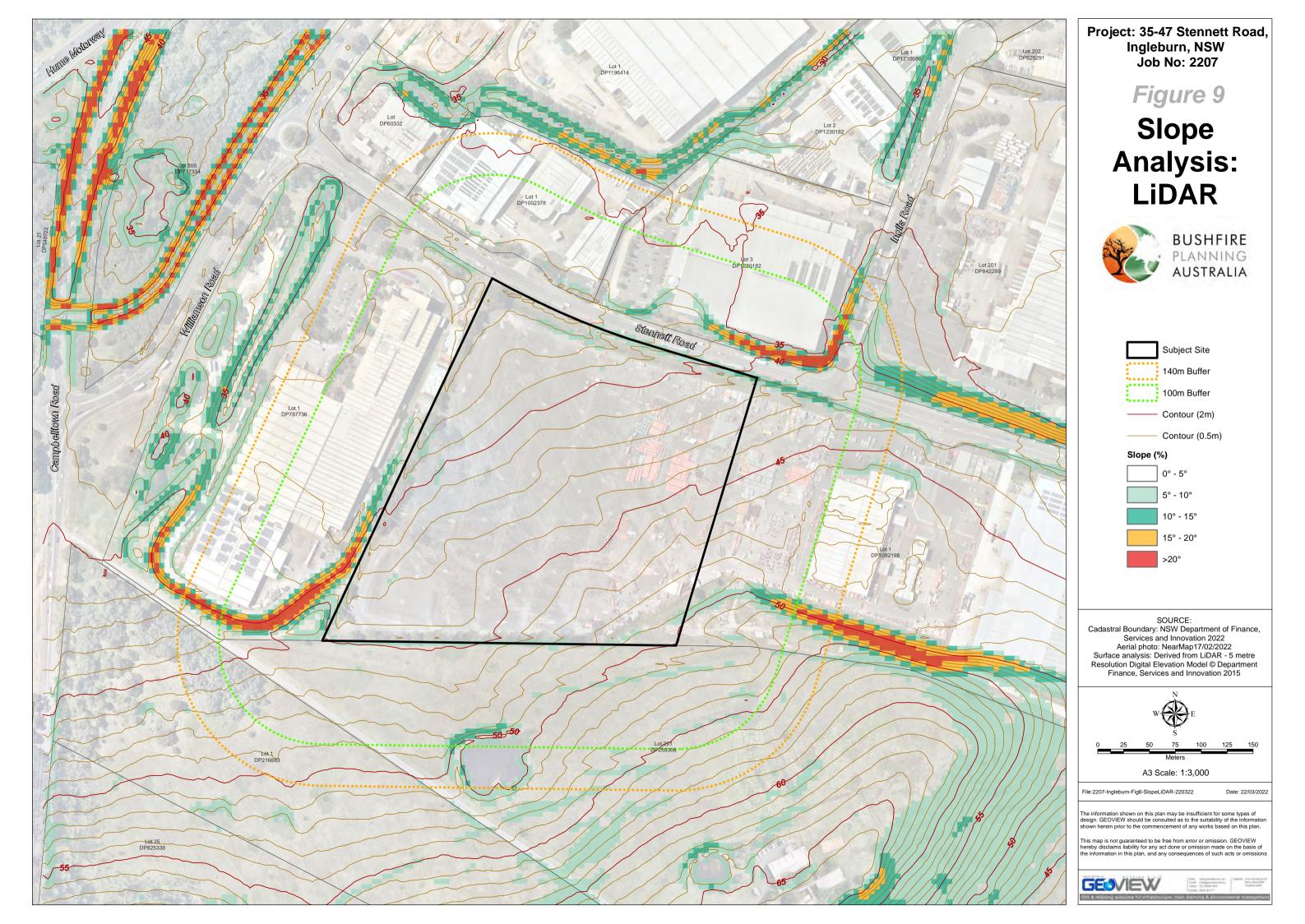
Review of LiDAR point cloud data – including DEM (NSW LPI); and

Detail survey of existing contours.

An assessment of the slope over a distance of 100m in the hazard direction from the site boundary was undertaken. The effective slope was then calculated under the classified vegetation where there was a fire run greater than 50m. The topography of the site has been evaluated to identify both the average slope and by identifying the maximum slope present. These values help determine the level of gradient which will most significantly influence the fire behaviour of the site.

The effective slope in all directions is shown in Figure 8 and Figure 9 and Table 3.







-2.8°

Upslope

#### 3.4. Results

All vegetation identified within the current Bush Fire Prone Land map was confirmed during the site inspection.

The entire development site is managed land and therefore excluded for the purposes of PBP 2019. Vegetation located to the south within 140m of the proposed development site was confirmed as *grassland* and is identified as the primary bushfire hazard (T1, T6 & T7). There is also a contained *woodland* located to the south-west of the proposed development site within 140m (T2).

The results of the Bushfire Hazard Assessment are presented in **Table 3** and **Figure 10**.

**Classification of Vegetation Formations Transect/ Direction** Slope **PBP 2019** -0.2° T1 Grassland Upslope 1.7° T2 Woodland Downslope 3.4° T3 Grassland Downslope 9.5° T4 Grassland Downslope -0.5° T5 **Excluded** Upslope -3.4° T6 Grassland Upslope

**Table 3: Slope and Vegetation Assessment results** 

#### 3.5. Significant Environmental Features

There are no know environmental features of significance within the development footprint or the balance of the site. The development footprint is wholly located within that part of the site that is predominantly cleared.

Grassland

#### 3.6. Threatened Species, populations or ecological communities

The area of the site to be affected by the proposed development has been identified to avoid impact on any threatened species, population or EEC. All bushfire mitigation measures; including APZs have considered the existing and potential biodiversity values to avoid impact where possible.

#### 3.7. Aboriginal Objects

T7

A search of the AHIMS database (results contained in **Appendix B**) revealed there are no Aboriginal sites or places recorded in or near the subject site. All bushfire mitigation measures, such as APZs have considered this and been designed to avoid disturbing any artefacts if identified.

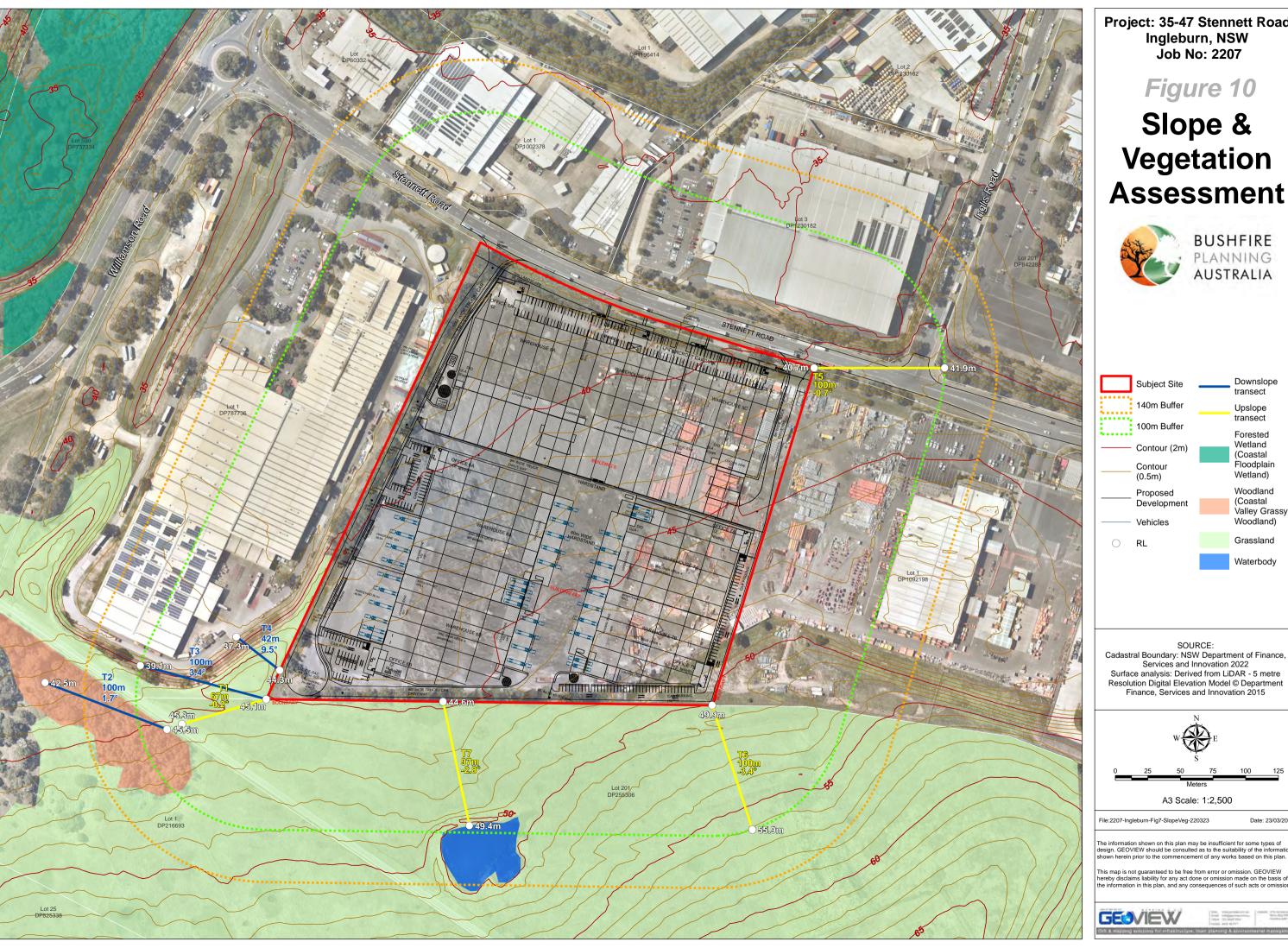


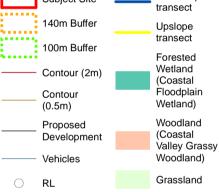
Figure 10

# Slope & Vegetation **Assessment**

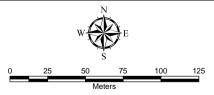


Downslope

Waterbody



Cadastral Boundary: Now Department of Finance, Services and Innovation 2022 Surface analysis: Derived from LiDAR - 5 metre Resolution Digital Elevation Model © Department Finance, Services and Innovation 2015



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#### 4. Bush Fire Protection Measures

with PBP, the development should:
Note the range of available Bush Fire Protection Measures (BFPMs);
Satsify the aims and objectives of PBP 2019;
Consider any matters listed for the specific purpose; and
Propose an appropriate combination of BPMs.
Additional provisions relevant to 'other development' detailed in PBP 2019 state that in order to comply with PBP 2019, the following conditions must be met:
Satisify the aims and objectives of PBP outlined in Chapter 1;
Consider any issues listed for the specific purpose for the development; and
Propose an appropriate combination of BFPMs.

PBP 2019 refers to the proposed industrial development as 'Other development'. In order to comply

This BAR has adopted the methodology to determine the appropriate BFPMs detailed in PBP 2019. As part of the BAR, the recommended BFPMs demonstrate the aims and objectives of PBP 2019 are able to be satisified; including the matters considered by the RFS necessary to protect persons, property and the environment from the danger that may arise from a bushfire.

#### 4.1. Asset Protection Zones

An APZ is an area surrounding a development that is managed to reduce the bushfire hazard to an acceptable level to mitigate the risk to life and property. The required width of the APZ varies with slope and the type of hazard.

#### 4.1.1. Determining the Appropriate Setbacks

PBP 2019 does not explicitly require the proposed industrial development to provide an APZ in accordance with Appendix 1 of PBP 2019. Notwithstanding, the provision of access and defendable space is provided by the service roads. In this instance consideration has been given to the type of hazard; including the average slope and also the steepest slope.

The APZ has been calculated in accordance with Table A1.12.2 of PBP 2019.



**Table 4: Recommended Asset Protection Zones** 

Transect/ Direction	Classification of Vegetation Formations PBP 2019 Slope		APZ (Table A1.12.2)	
T1	Grassland	-0.2° Upslope	10m	
T2	Woodland	1.7° Downslope	16m	
T3	Grassland	3.4° Downslope	12m	
T4	Grassland	9.5° Downslope	13m	
T5	Excluded	-0.5° Upslope	N/A	
T6	Grassland -3.4° Upslope		10m	
Т7	Grassland	-2.8° Upslope	10m	

A minimum 8m wide truck / car driveaway and carparking provides the primary separation that can be identified as an APZ.

All areas of land identified as an APZ should be managed as an IPA in accordance with Appendix 4 of PBP 2019.

#### 4.2. Access

In the unlikely event of a serious bushfire, it will be essential to ensure that adequate ingress / egress and the provision of defendable space are afforded in the development layout. The following design specifications detailed in PBP 2019 are relevant to the proposed development:

spe	chications detailed in FBF 2019 are relevant to the proposed development.
	be two-wheel drive all weather roads;
	be through roads, but if unavoidable then dead ends should be not more than 200 metres in length, incorporate a minimum 12 metres turning circle (either in cul-de-sac or T-head formation) and should be clearly sign posted as dead ends;
	the capacity of road surfaces is sufficient to carry fully loaded fire fighting vehicles (approximately 15 tonnes for areas with reticulated water, 28 tonnes for all other areas);
	non perimeter roads comply with table – Road widths for Category 1 Tanker;
	curves of roads (other than perimeter roads) are a minimum inner radius of 6 metres and minimal in number, to allow for rapid access and egress;
	maximum grade for sealed roads do not exceed 12.5°;
	have a minimum vertical clearance to a height of four metres at all times;
	parking bays are a minimum of 2.6 metres wide from kerb edge to road pavement. No services or hydrants are located within the parking bays.

The site is accessible from Stennett Road by 3 separate points of access. Direct access is provided to a continuous perimeter loop road that will enable firefighters to access the site whilst occupants are evacuating the site or any of the buildings. The wide internal roads intersect at multiple junctions and offer multiple evacuation routes should an obstruction block access along 1 of the three evacuation routes.



All proposed internal roads satisfy the requirements for perimeter and non-perimeters roads required by PBP 2019 as they are designed to suit large heavy vehicles.

Whilst there is a continuous driveway/ road around the perimeter of the development (as indicated by the blue dashed line in **Figure 11**, a security fence will be installed halfway along the eastern boundary to prevent access between Warehouse 5C and 7A. The fence is to prevent unrestricted access between separate tenancies but will remain available for access by emergency services personnel.

Refer to **Appendix 1** for proposed development showing access.

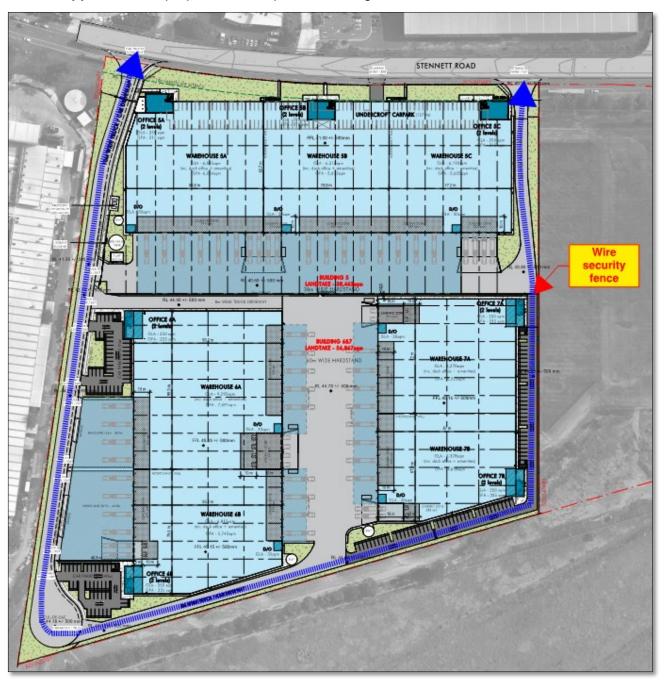


Figure 11: Excerpt of site plan indicating access along site boundaries



#### 4.3. Services - water electricity and gas

#### 4.3.1. Water

Fire hydrant spacing, sizing and pressure should comply with AS 2419.1-2005. Hydrants are not to be located within any road carriageway.

All buildings within the proposed development will be connected to a reticulated water supply.

#### 4.3.2. Electricity

All electricity services are located underground.

#### 4.3.3. Gas

Any reticulated or bottled gas should be installed and maintained according to the requirements of the relevant authorities and AS 159-2002. It is expected that the location of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.

#### 4.4. Construction Standards - Bushfire Attack Level

The proposed land use zone permits a variety of non-habitable buildings included bulky goods premises, general industries, warehouses and distribution centres. The NCC does not provide for any bushfire specific performance requirements for these particular classes of buildings. As such, AS3959-2018 are not considered as a set of deemed-to-satisfy provisions. However, compliance with AS3959-2018 and the NASH standard may be considered when meeting the aims and objectives of PBP 2019 – for future industrial buildings.

The determinations of the appropriate bushfire attack level (BAL) is based on the maximum potential radiant heat exposure. BALs are based upon parameters such as weather modelling, fire-line intensity, flame length calculations, as well as vegetation and fuel load analysis. The determination of the BAL is derived by assessing the:

Relevant FDI = 100;
Flame temperature = 1090K;
Slope = varied;
Vegetation classification = Grassland; and
Building location.

The BALs for each transect have been calculated and provided in **Table 5**. To demonstrate the BAL ratings, **Figure 13** has been prepared in accordance with the methodology to prepare a Subdivision BAL Plan outlined in the RFS User Guide for Subdivision of Urban Release Areas on Bush Fire Prone land to represent the BALs required prior to the development of Lot 4.



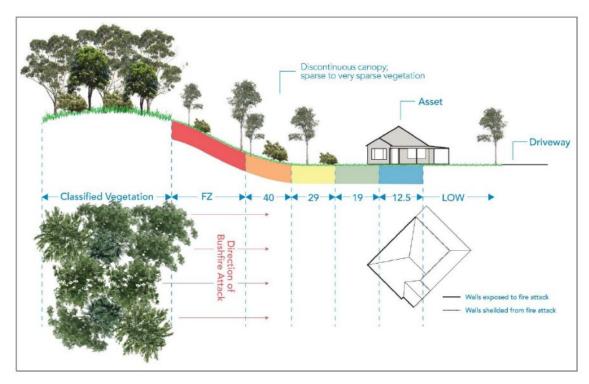


Figure 12: Bushfire Attack Level



Table 5: Required BALs

Transect	Vegetation Classification (PBP 2019)	Slope	APZ (PBP A.12.5)	Distance from Hazard	Bushfire Attack Level (BAL)
				0m-<8m	BAL-FZ
				8m-<10m	BAL-40
T1	Grassland	-0.2° Upslope	10m	10m-<15m	BAL-29
		Opsiope		15m-<22m	BAL-19
				22m<50m	BAL-12.5
				0m-<12m	BAL-FZ
	Woodland	. =0		12m-<16m	BAL-40
T2	(Coastal Valley Grassy	1.7° Downslope	16m	16m-<23m	BAL-29
	Woodland)	Downslope		23m-<32m	BAL-19
				32m-<100m	BAL-12.5
				0m-<9m	BAL-FZ
		0.40		9m-<12m	BAL-40
Т3	Grassland	3.4° Downslope	12m	12m-<17m	BAL-29
		Downslope		17m-<25m	BAL-19
				25m-<50m	BAL-12.5
	Grassland	9.5° <b>15</b> Downslope	15m	0m-<10m	BAL-FZ
				10m-<13m	BAL-40
T4				13m-<20m	BAL-29
				20m-<28m	BAL-19
				28m-<50m	BAL-12.5
T5	Excluded (Cleared land)	-0.7° Upslope	N/A	BAL-LOW	
				0m-<8m	BAL-FZ
	Grassland Grassland	-3.4° Upslope	10m	8m-<10m	BAL-40
Т6				10m-<15m	BAL-29
				15m-<22m	BAL-19
				22m<50m	BAL-12.5
		-2.8° Upslope	10m	0m-<8m	BAL-FZ
				8m-<10m	BAL-40
T7				10m-<15m	BAL-29
				15m-<22m	BAL-19
				22m<50m	BAL-12.5

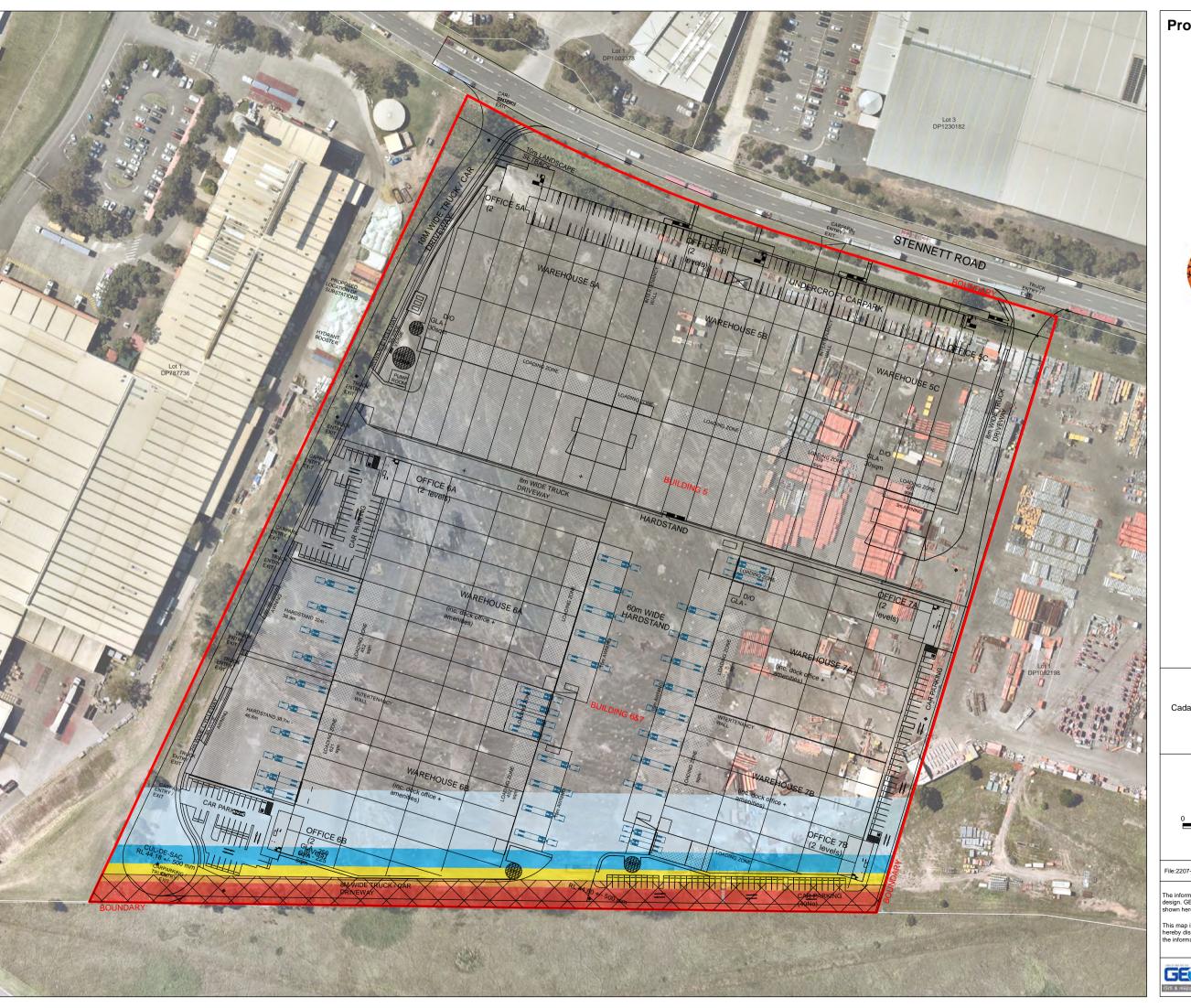


Figure 13

# **BAL Contour Plan**





Proposed Development

Vehicles

Asset Protection Zone

Required Bushfire Attack Levels (AS3959-2018)

BAL - FZ

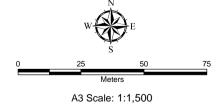
BAL - 40

BAL - 29

BAL - 19

BAL - 12.5

SOURCE: Cadastral Boundary: NSW Department of Finance, Services and Innovation 2022 Aerial photo: NearMap 17/02/2022



File:2207-Ingleburn-Fig8-BALs-220322

The information shown on this plan may be insufficient for some types of design. GEOVIEW should be consulted as to the suitability of the informatio shown herein prior to the commencement of any works based on this plan.

his map is not guaranteed to be free from error or omission. GEOVIEW ereby disclaims liability for any act done or omission made on the basis of ne information in this plan, and any consequences of such acts or omission





#### 4.5. Landscaping and Vegetation Management

The design and management of the landscaped areas in the vicinity of buildings have the potential to improve the chances of survival of people and buildings. Generally landscaping in and around a bushfire hazard should consider the following:

	Priority given to retaining species that have a low flammability;
	Priority given to retaining species which do not drop much litter in the bushfire season and which do not drop litter that persists as ground fuel in the bush fire season;
	Priority given to retaining smooth barked species over stringy bark; and
	Create discontinuous or gaps in the vegetation to slow down or break the progress of fire towards the dwellings.
	dscaping should give due regard to fire retardant plants and ensure that fuel loads do not umulate as a result of the selected plant varieties.
The	principles of landscaping for bushfire protection aim to:
	Prevent flame impingement on buildings;
	Provide a defendable space for property protection;
	Reduce fire spread;
	Deflect and filter embers;
	Provide shelter from radiant heat; and
	Reduce wind speed.
Pla	nts that are less flammable have the following features;
	High moisture content;
	High levels of salt;
	Low volatile oil content of leaves;
	Smooth barks without 'ribbons' hanging from branches or trunks; and
	Dense crown and elevated branches.

Avoiding understorey planting and regular trimming of the lower limbs of trees also assists in reducing fire penetration into the canopy. Rainforests species such as Syzygium and figs are preferred to species with high fine fuel and/or oil content.

Trees with loose, fibrous or stringy bark should be avoided. These trees can easily ignite and encourage ground fire to spread up to, and then through the crown of trees.

Careful thought must be given to the type and physical location of any proposed site landscaping. Inappropriately selected and positioned vegetation has the potential to 'replace' any previously removed fuel load.

Bearing in mind the desired aesthetic and environment sought by site landscaping, some basic principles have been recommended to help minimise the chance of such works contributing to the potential hazard on site.

Whilst it is recognised that fire-retardant plant species are not always the most aesthetically pleasing choice for site landscaping, the need for adequate protection of life and property requires that a suitable balance between visual and safety concerns be considered.

It is reiterated again that it is <u>essential</u> that any landscaped areas and surrounds are subject to ongoing fuel management and reduction to ensure that fine fuels do not build up.



#### 4.6. Emergency Services

There is a NSW Fire & Rescue Station located at 41 Carlisle Street, Ingleburn, approximately 4.9km or 6 minutes drive away from the site (**Figure 12**). A second Fire & Rescue Station is located at the corner of Ben Lomond Road and Campbelltown Road, St Andrews (4.5kms) if required (**Figure 13**).

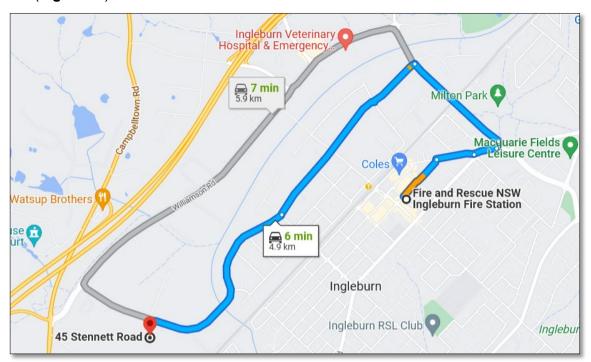


Figure 14: Fire and Rescue Ingleburn Fire Station

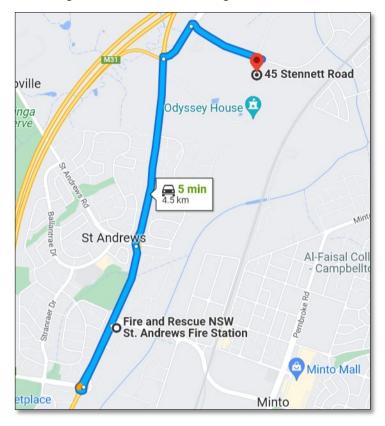


Figure 15: Fire and Rescue St Andrews Fire Station



#### 5. Conclusion and Recommendations

Bushfire Planning Australia has been engaged by Stockland to undertake a Bushfire Assessment Report (BAR) for Stage 3 of the proposed industrial development of 35-47 Stennett Road, Ingleburn.

A hazard assessment has been completed and found the study area was exposed to a low bushfire hazard located to the south of the subject site. The predominant vegetation surrounding the site is consistent with a *grassland* vegetation formation.

The following recommendations when implemented will reduce the impact of a bushfire to an acceptable level for the proposed industrial (non-habitable) buildings and demonstrate the proposed development is ably to comply with PBP 2019:

- 7. The entire site shall be managed as an Inner Protection Area (IPA) as outlined within Appendix 4 of PBP 2019 and the RFS document *Standards for asset protection zones*;
- **8.** All land within 12m of the southern boundary is to be managed as an APZ as outlined within Appendix 4 of PBP 2019 and the RFS document *Standards for asset protection zones*;
- **9.** Property access roads are to be constructed in accordance with Table 5.3b of PBP 2019 and as shown of the development plans contained in **Appendix A**;
- **10.** All new buildings are to be connected to a reliable water supply network and that suitable fire hydrants are located throughout the development site that are clearly marked and provided for the purposes of bushfire protection. Fire hydrant spacing, sizing and pressure shall comply with AS2419.1 2005 and Table 5.3c of PBP 2019;
- 11. Consideration should be given to landscaping and fuel loads on site to decrease potential fire hazards on site; and
- **12.** All hazardous materials to be stored on land within 100m of any designated bushfire prone land shall be stored in a secure enclosure away from the bushfire hazard.

This assessment has been made based on the bushfire hazards observed in and around the site at the time of inspection and production (March 2022).

Should the above recommendations be implemented, the existing bushfire risk should be suitably mitigated to offer an acceptable level of protection to life and property for those persons and assets occupying the site, but they do not and <u>cannot</u> guarantee that the area will <u>not</u> be affected by bushfire at some time.

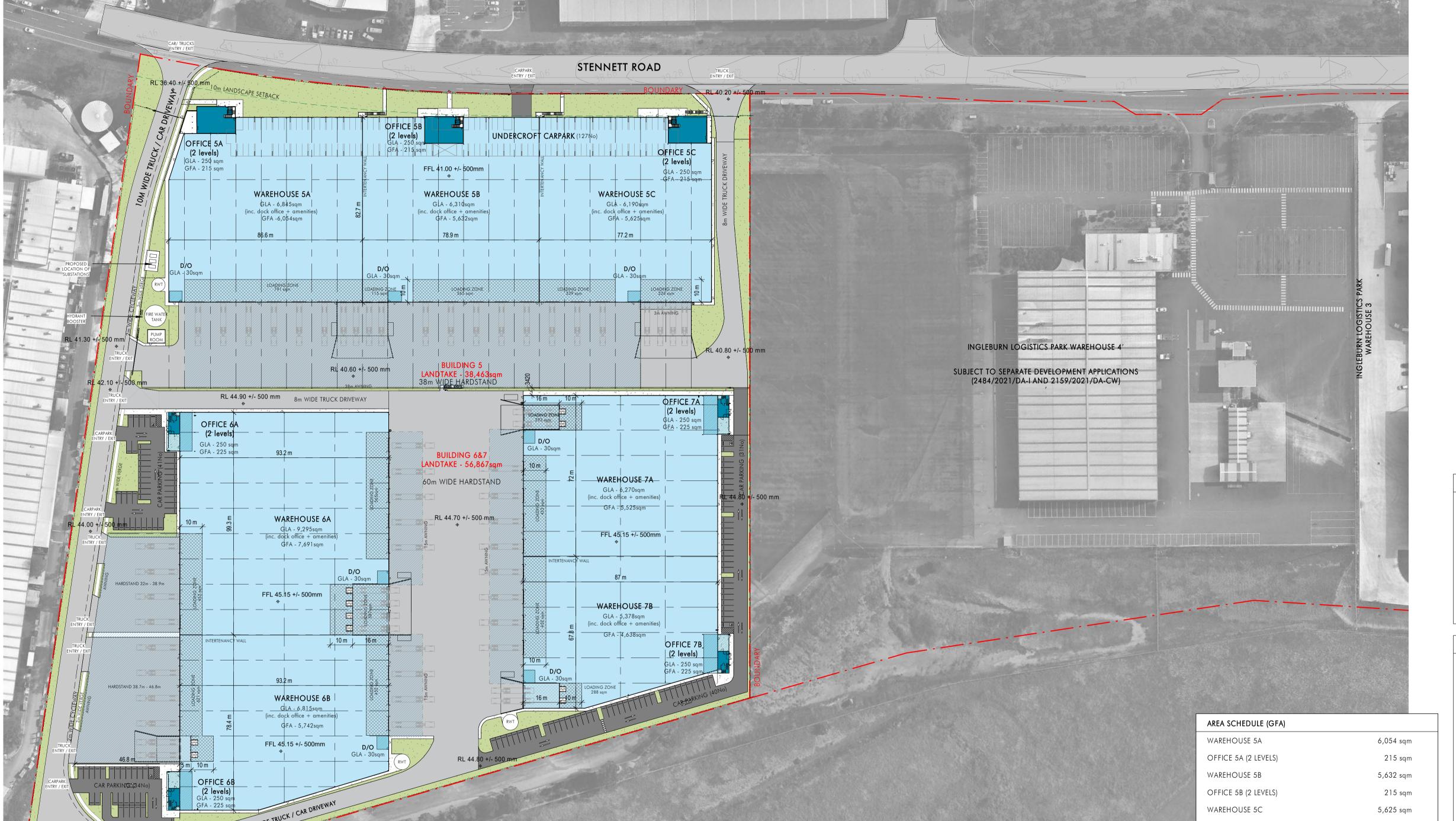


## 6. References

NSW Rural Fire Service (2005). Standards for Asset Protection Zones. NSW Rural Fire Service.
NSW Rural Fire Service (2019). Planning for Bushfire Protection – A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.
Ramsay, GC and Dawkins, D (1993). <i>Building in Bushfire-prone Areas – Information and Advice</i> . CSIRO and Standards Australia.
Rural Fires and Environmental Assessment Legislation Amendment Act 2002.
Standards Australia (2018). AS 3959 – 2018: Construction of Buildings in Bushfire-prone Areas.



## **Appendix A: Proposed Development Layout**



CONCEPT STORMWATER PLAN CO12813.09-DA40 DWG NO: PREPARED BY: COSTIN ROE 22/10/2021

FINISHED LEVEL PLAN REFERENCE

SURVEY REFERENCE PLAN SHOWING SELECT FEATURE&LEVEL
OVER PART OF LOT 1 IN DP 1092198 & LOT 26 IN DP 863617, BEING No. 41-47 STENNETT ROAD, INGLEBURN, NSW

REVISION: PREPARED BY: **REAL SERVE** 06/09/2021

TOTAL LANDTAKE	95,330 sqm
WH 5 SITE AREA	38,463 sqm
WH 6&7 SITE AREA	56,867 sqm
TOTAL BUILDING AREA (GLA)	48,853 sqm
PARKING REQUIRED (1/208sqm)	235
PARKING PROVIDED	273
SITE EFFICENCY	51.25%

AREA SCHEDULE (GLA)	
WAREHOUSE 5A	6,845 sqm
OFFICE 5A (2 LEVELS)	250 sqm
WAREHOUSE 5B	6,310 sqm
OFFICE 5B (2 LEVELS)	250 sqm
WAREHOUSE 5C	6,190 sqm
OFFICE 5C (2 LEVELS)	250 sqm
TOTAL BUILDING AREA (WH5) (GLA)	20,095 sqm
PARKING REQUIRED (1/208sqm)	97
PARKING PROVIDED	127
WAREHOUSE 6A	9,295 sqm
OFFICE 6A (2 LEVELS)	250 sqm
WAREHOUSE 6B	6,815 sqm
OFFICE 6B (2 LEVELS)	250 sqm
TOTAL BUILDING AREA (WH6) (GLA)	16,610 sqm
PARKING REQUIRED (1/208sqm)	80
PARKING PROVIDED	75
WAREHOUSE 7A	6,270 sqm
OFFICE 7A (2 LEVELS)	250 sqm
WAREHOUSE 7B	5,378 sqm
OFFICE 7B (2 LEVELS)	250 sqm
TOTAL BUILDING AREA (WH7) (GLA)	12,148 sqm
PARKING REQUIRED (1/208sqm)	59
PARKING PROVIDED	71

—/—/ 2100 HIGH CHAINWIRE FENCE

225 sqm 4,638 sqm 225 sqm 10,613 sqm

WAREHOUSE 7A 5,525 sqm OFFICE 7A (2 LEVELS) WAREHOUSE 7B OFFICE 7B (2 LEVELS) TOTAL BUILDING AREA (WH7) (GFA) TOTAL BUILDING AREA (GFA) 42,452 sqm

—•—• 2100 HIGH PALISADE FENCE

OFFICE 5C (2 LEVELS)

WAREHOUSE 6A

WAREHOUSE 6B

OFFICE 6A (2 LEVELS)

OFFICE 6B (2 LEVELS)

TOTAL BUILDING AREA (WH5) (GFA)

TOTAL BUILDING AREA (WH6) (GFA)

Stockland

CUL-DE-SAC RL 44.18 +/- 500 mm

RL 44.40 +/- 500 mm

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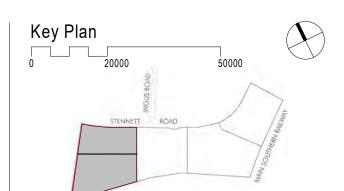
14.10.2021 05.10.2021 28.09.2021 20.09.2021 15.09.2021 31.08.2021

23.08.3021

STOCKLAND INGLEBURN LOGISTICS PARK - STAGE 3

Project Address

35-47 Stennett Road, Ingleburn, NSW, Australia





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215 sqm

17,956 sqm

7,691 sqm

225 sqm

5,742 sqm

13,883 sqm

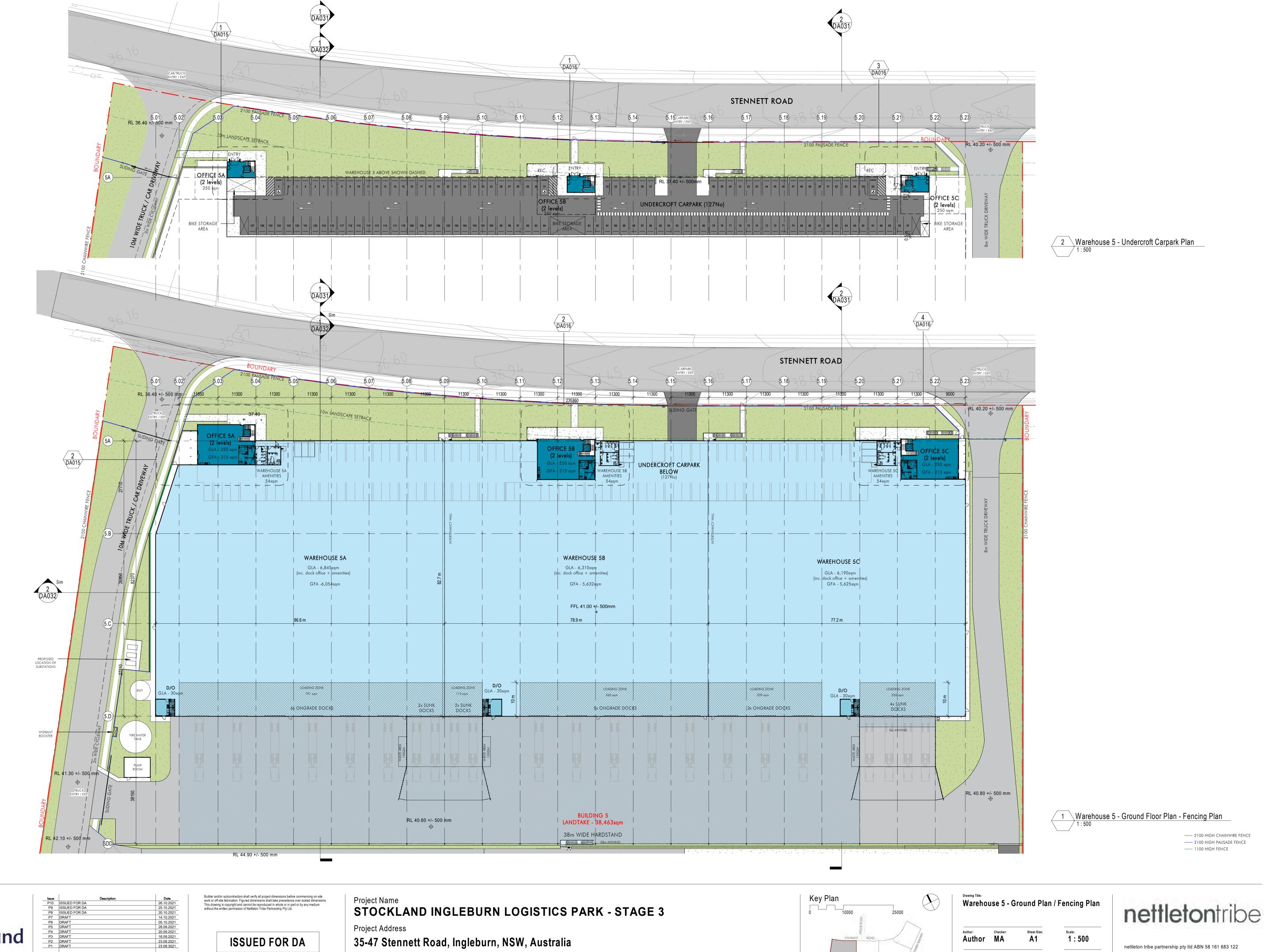
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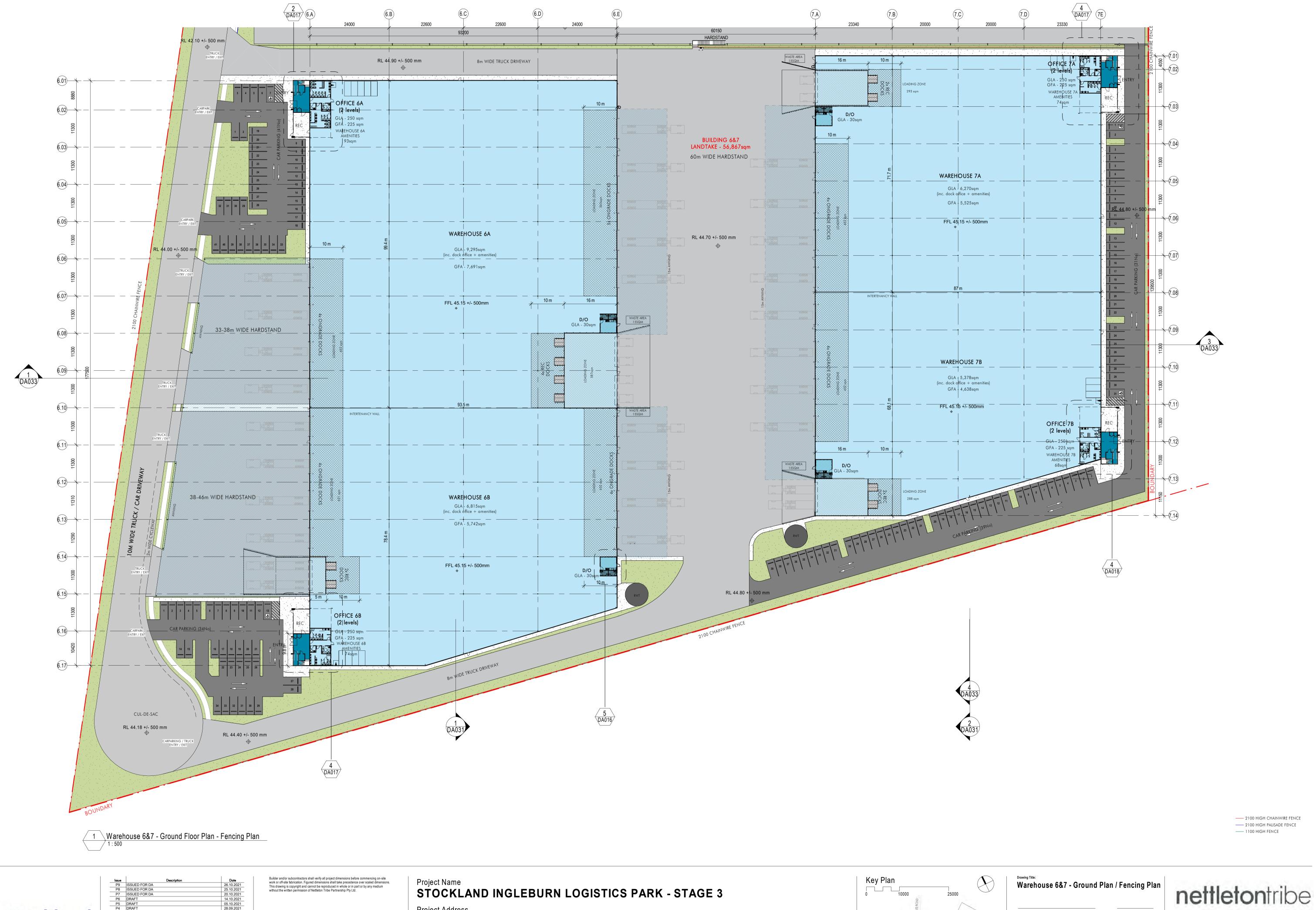
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Stockland Author: Checker: MA 1:500 35-47 Stennett Road, Ingleburn, NSW, Australia **A1** ISSUED FOR DA nettleton tribe partnership pty ltd ABN 58 161 683 122 12112\_DA011 117 Willoughby Road, Crows Nest, NSW 2065 P10 t +61 2 9431 6431 e: sydney@nettletontribe.com.au w: nettletontribe.com.au

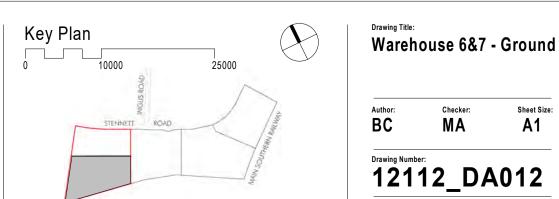


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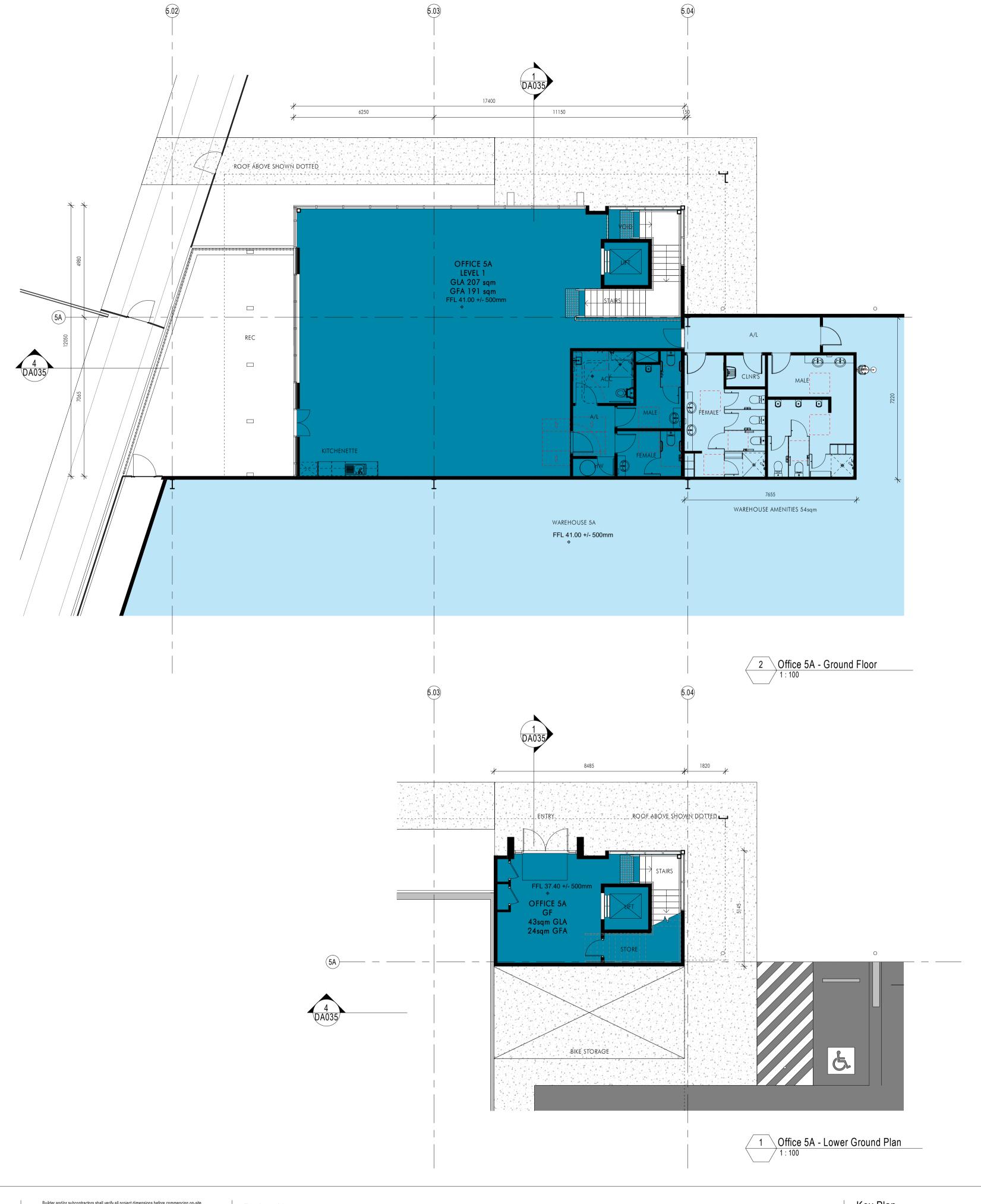


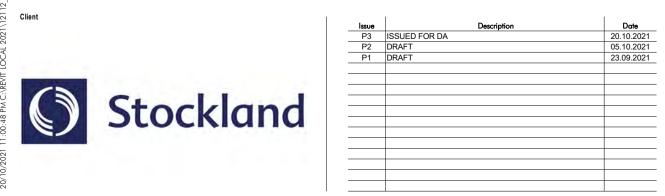
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Office 5A - Floor Plans

Author: Checker: Sheet Size: BC MA A1

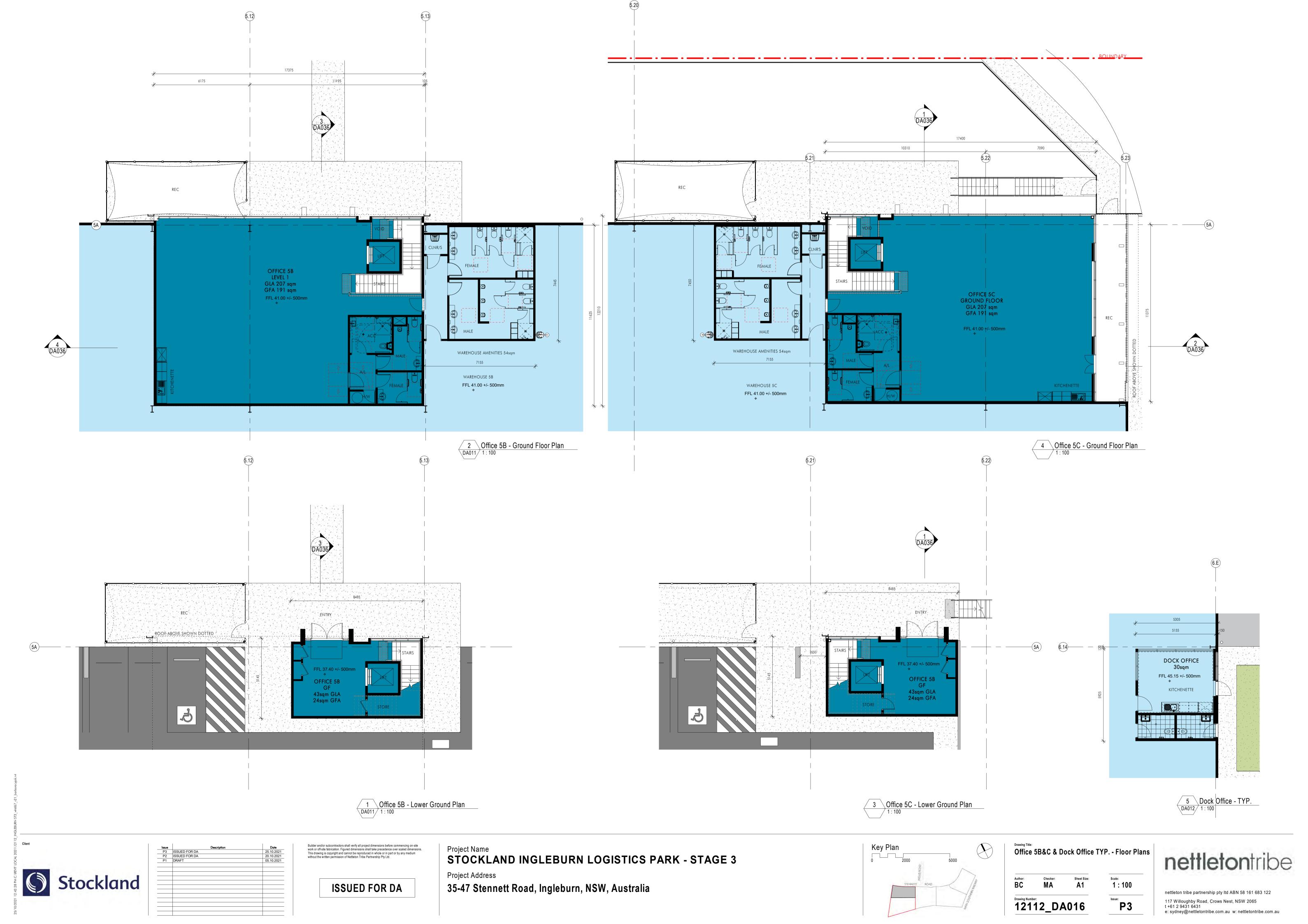
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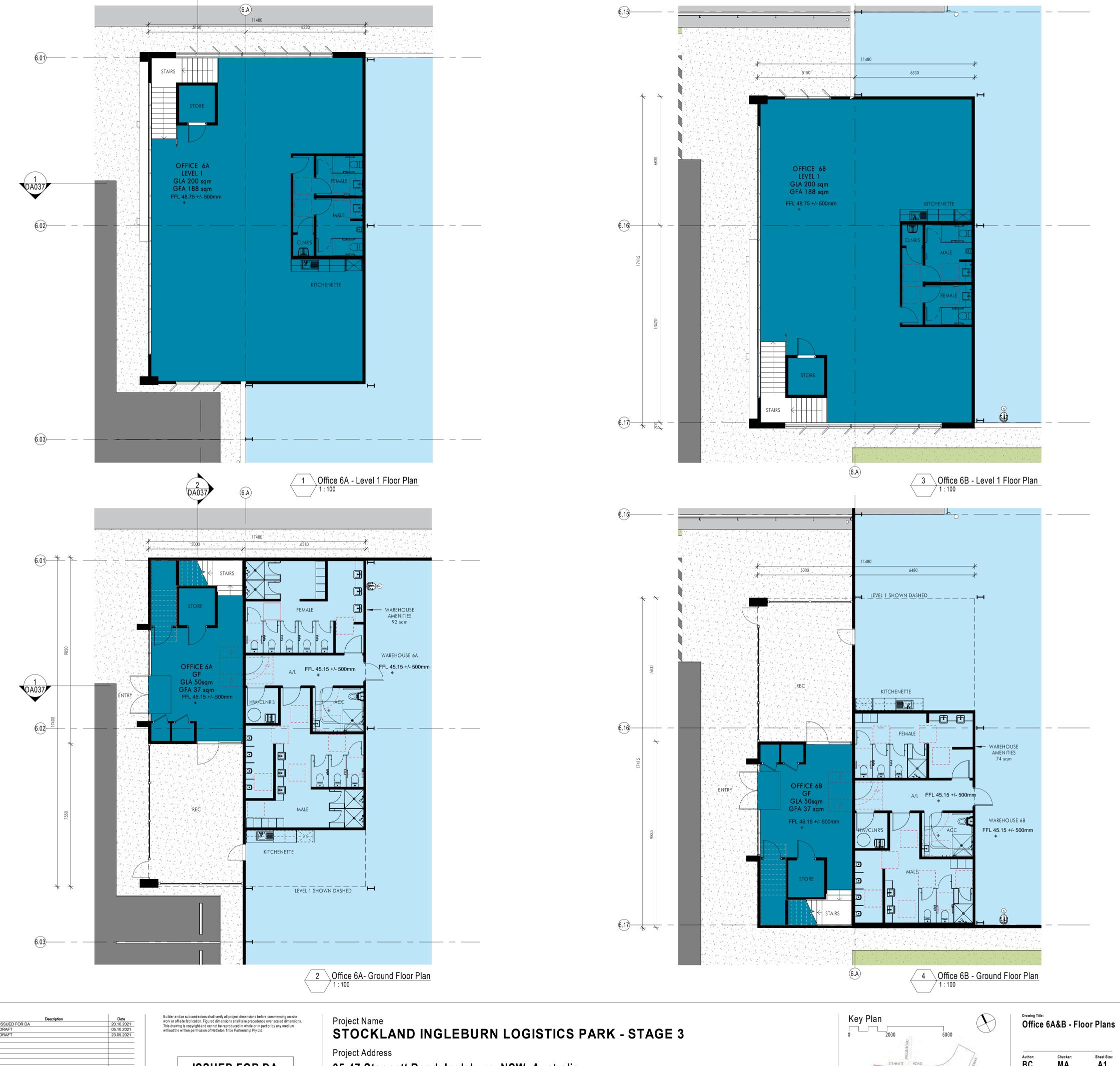
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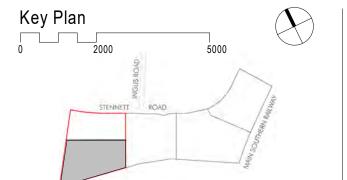




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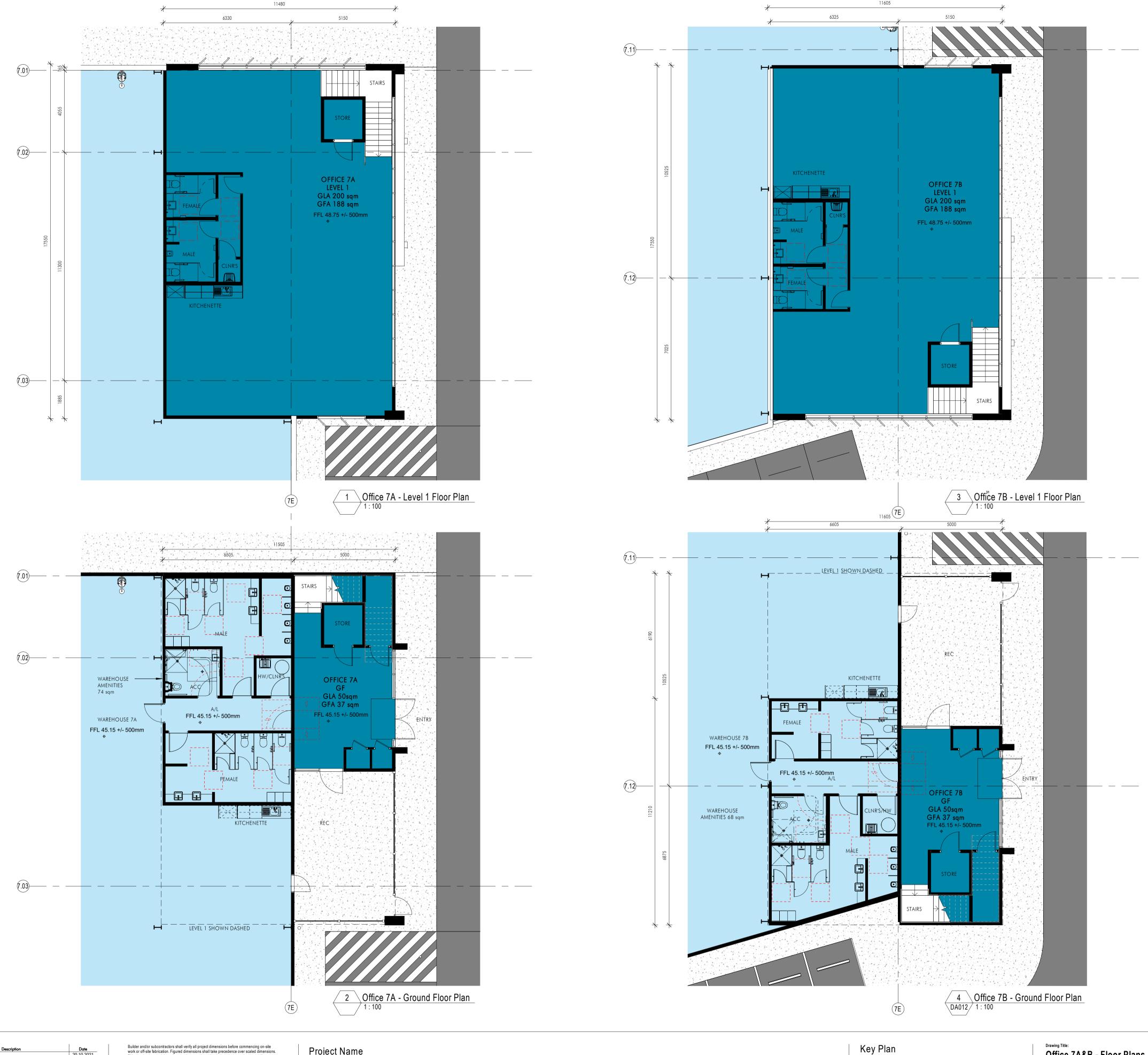
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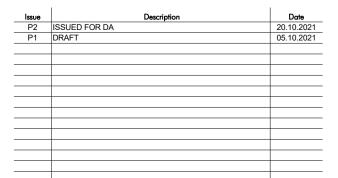
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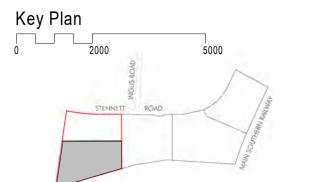


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Office 7A&B - Floor Plans

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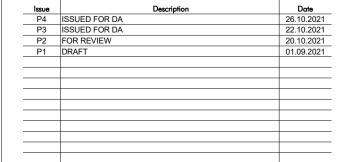
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e: sydney@nettletontribe.com.au w: nettletontribe.com.au

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Project Name
STOCKLAND INGLEBURN LOGISTICS PARK - STAGE 3

Project Address

35-47 Stennett Road, Ingleburn, NSW, Australia











## **Appendix B: AHIMS Search Results**

Your Ref/PO Number: 2207 Ingleburn

Client Service ID: 669996

Katrina Greville Date: 23 March 2022

21 Costata Crescent

Adamstown New South Wales 2289

Attention: Katrina Greville

Email: klmukevski@bigpond.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot: 1, DP:DP1092198, Section: - with a Buffer of 50 meters, conducted by Katrina Greville on 23 March 2022.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0 Aboriginal places have been declared in or near the above location. \*

## If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it.
   Aboriginal places gazetted after 2001 are available on the NSW Government Gazette
   (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

## Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.

ABN 34 945 244 274

Email: ahims@environment.nsw.gov.au

Web: www.heritage.nsw.gov.au

• This search can form part of your due diligence and remains valid for 12 months.