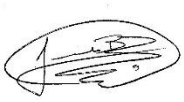
Stormwater Impact Assessment

Block 45, Section 3, Hume

Forestrack Pty Ltd

30 March 2022

Author	Leonardo Baeza	
Reviewer	Chris Gunton	
Approver	Chris Gunton	

Report Reference	P20023_SWIA_20220330
Date	30/03/2022
Revision Text	R02

REVISIONS

Revision	Date	Description	Prepared	Approved
R00	17/6/2021	Draft for Review	LB	CG
R01	11/8/2021	Revised Draft	LB	CG
R02	30/3/2022	Final	CG	CG

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Appendices

1. Introduction

Forestrack Pty Ltd (Forestrack) engaged Lanterra Consulting Pty Ltd (Lanterra) to complete a stormwater impact assessment for the proposed development located at Block 45 Section 3, Hume, ACT 2620 (herein referred to as the site) south of Sheppard Street and Lanyon Drive intersection.

Based on the ACT Territory Plan, the site is currently zoned as NUZ1: Broadacre and has an area of 35,163 square metres (m^2).

Forestrack provides airborne and ground-based services to different emergency services and strategic response operations, forestry contracting and management services.

In is understood that Forestrack proposes to establish the ACT aviation and forestry base headquarters and operations to provide support for emergency services, forestry and related services, educational institution and uses with ancillary uses supporting these functions.

- Emergency search and rescue operations;
- Strategic and tactical operational support (Police);
- Airborne surveillance and airborne operations management support;
- Firefighting and tactical support relating to this activity;
- Community education;
- Helicopter maintenance and engineering services; and
- Forestry Site Preparation Services to Government and Private Forest Owners.

According to the information provided by Forestrack, the development would include the following features:

- 4,400 m^2 of buildings for offices, training and associated uses.
- 3,600 m^2 hardstand, for vehicle parking and manoeuvring, including a helipad.
- 3,000 m^2 storage yard for Forestrack.
- 2,000 m^2 Emergency Services Training Area.
- 7,600 m^2 identified for future possible development.

These areas would be evenly distributed across the central area of the site with the helicopter pad located in the northeast corner of the development approximately 70 m from the northernmost corner of the site.

The location of the site is shown in **Figure 1** and **Figure 2** while a conceptual development plan is shown in **Figure 3** of **Appendix A.** More detailed plans are shown in **Appendix B**.

1.1 Objective

The objective of the project is to assess the potential impact (if any) stormwater discharge from the site may have on the surrounding stormwater network and the Jerrabomberra Creek catchment, particularly the Jerrabomberra Wetlands.

1.2 Scope of Work

The scope of work for the stormwater impact assessment is as follows:

- Review of the existing documentation which includes the available information in the Application for EIS Scoping Document, facility plans and site investigation reports. This would include a review of the potential contamination risks that may affect stormwater.
- Complete a visit to the site to understand the site setting and condition of the stormwater network as well as existing risks to the Jerrabomberra Wetlands.
- Prepare a stormwater impact assessment report for submission to Forestrack.

1.3 Limitations

The findings of the report will be based on the Scope of Work outlined above. Lanterra will perform services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. No warranties express or implied, are made.

Subject to the Scope of Work, the assessment will be limited strictly to identifying typical environmental conditions associated with the subject property area and does not include evaluation of any other issues.

The absence of any identified hazardous or toxic materials on the subject property should not be interpreted as a guarantee that such materials do not exist on the site. Lanterra will not investigate any waste materials from the property that may have been disposed of off the site, nor related waste management practices.

The results of this assessment will be based upon the site inspection and the sampling specified above conducted by Lanterra personnel and information from the Client or regulatory agencies. All conclusions and recommendations regarding the property area will be the professional opinions of the Lanterra personnel involved with the project, subject to the qualifications made above.

While normal assessments of data reliability will be made, Lanterra will not assume responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of Lanterra, or developments resulting from situations outside the scope of this project.

2. Background

Block 45 Section 3, Hume, is located within the Jerrabomberra Creek Catchment, 250 m east from the creek. Jerrabomberra Creek originates in NSW, between Williamsdale and Royalla and flows northwards through the ACT into Lake Burley Griffin, north of Narrabundah. The catchment encompasses rural, industrial and urban residential land uses. A map of the Catchment is shown in **Figure 4**.

According to the ACT Territory Plan, the site is currently zoned as NUZ1: Broadacre, has an area of 35,163 m^2 and is subject to the Main Avenues and Approach Routes overlay.

According to the Estate Development Plan completed by Purdon Planning for the Hume Industrial Area Extension in 2019 the infrastructure surrounding the site is shown in **Figure 5.**

Currently the site is vacant and stormwater from the investigation area drains along topographical contours to the south, southeast mostly to the stormwater tie on Sheppard Street, along the eastern boundary of the site. The water load is captured by Jerrabomberra Creek approximately 280 m northeast of the site.

A contaminated land search indicates that the site is not listed on the ACT Contaminated Site Register and a previous preliminary site investigation (PSI) found the site suitable for the proposed development (see **Section 2.2**) from a contamination perspective.

This report outlines the impact that the site is predicted to have on stormwater and the Jerrabomberra catchment area during the construction and operational phases of the aviation and forestry base, accounting for the proposed measures of managing stormwater impacts.

2.1 Surrounding Land use

A summary of the land uses that surround the site are as follows:

- **North:** Lanyon Drive and Monaro Highway. Vacant paddocks in north-west and north-east directions;
- **South:** Sheppard Street, industry buildings including manufacturers, engineering, real estate, builder and soil supplies, fabricators, etc. to the south-east and south-west of the site. Beyond the buildings is the border with New South Wales;
- **East:** Sheppard Street and vacant paddocks beyond; and
- **West:** Monaro highway, vacant paddocks and general industry sites.

2.2 Previous Investigations

Forestrack engaged Lanterra to undertake a preliminary contamination assessment which was completed in 2020. Details can be found in the document titled *'Preliminary Site Investigation - Block 45, Section 3, Hume'*.

Based on the historical use and the site setting Lanterra collected twenty-four (24) soil samples and eleven (11) stockpile samples, and the findings of the PSI are summarised as follows:

- Patches of rubbish (plastics, bricks, roof tiles, tin, wood) were found across the site.
- Potential imported materials resembling topsoil were encountered across the site. This material comprised a dark brown to brown silty clay, dry to moist and soft.

- Natural material was encountered at approximately 1.0m bgl in the cleared central area of the site. However, in the area surrounding the rocky outcrops and trees cover, natural material was found from 0.5m bgl. This soil was characterised as a brown to orange silty clay, dry to moist and soft to hard.
- Concentrations of contaminants of potential concern (COPC) were below the adopted assessment criteria for residential use (HIL A, HSL A, EIL and ESL) in all soil and stockpile samples.

Lanterra considered that, from a contamination perspective, the site was suitable for the land uses permitted under the NUZ1: Broadacre Zone which includes residential use, and therefore the proposed development.

Lanterra recommended that, before the commence of works, a Construction Environmental Management Plan (CEMP) with a suitable unexpected finds procedure was prepared by a suitably qualified environmental consultant to assist construction workers with managing soil that may exhibit visual or olfactory indications of contamination.

2.3 Site Hydrology

The nearest surface water receptors are Dog Trap Creek to the north of the site and a small tributary to the east, both within a 150 m radius from the site. These creeks are tributaries of Jerrabomberra Creek which is located approximately 230 m east of the site. Surface water on the site is expected to follow the topographic contours of the site and flow towards the east in the northernmost corner of the site and south to south-east in the rest of the site.

2.4 Site Hydrogeology

A review of the Bureau of Mineral Resources (1984) Hydrogeology of the Australian Capital Territory and Environs indicates that groundwater is hosted in fractured aquifers with high yielding zones associated with the upper and lower portions of the individual ash flow tuffs, and interbedded sediments. The quality of groundwater is expected to be variable and the general total dissolved solids (TDS) is anticipated to be between 500 – 1000 milligrams per litre (mg/l) and the yield is estimated to be less than 0.5 litres per second (l/sec).

A groundwater bore search was conducted as a part of the contamination assessment. Results of the search indicated that there were two (2) abstraction groundwater boreholes according to the ACT Government data source within 2,000 m of the site and twenty-one (21) groundwater boreholes were registered with the Bureau of Mineralogy within 2,000 m of the site. The nearest of these boreholes is located approximately 651 m to the west of the site.

3. Construction Phase

During the construction phase of the aviation and forestry base, there is a risk that without adequate sediment and erosion controls, the stormwater network quality from the site could be impacted.

The following risks were recognized by Forestrack in the document prepared by Canberra Town Planning (CTP, 2020):

- Use of pollutants during construction.
- Erosion releasing sediment into the stormwater network.
- Significant rainfall events during construction could release uncontrolled stormwater from the site.
- Surface water quality impacts downstream.

Regarding these risks, Forestrack has provided the following comments and information:

- *Construction will not require the use of any known (or otherwise significant) potential pollutants during construction*.
- *Given the relatively flat nature of the site and minimal earthworks requirements, as well as low overall block ratio of impermeable to permeable surface areas, the volumes and quality of stormwater (due to erosion and sediment migration) that could leave the site are not expected to be large and present any notable concerns*.
- *The site contains only gentle slopes where development will occur, limiting the potential for substantial erosion to occur*.
- *The site does not drain directly to any natural waterway, with surface drainage intercepted by the existing road drainage systems, limiting the potential for run-ff to impact on downstream waterways*.

The mitigation actions associated with stormwater risks assessed by Forestrack during the construction phase are as follow:

Stormwater pollution

- *The works will be undertaken under the controls of a sediment and erosion control plan in accordance with industry best practice.*
- *A sediment and erosion control plan will be endorsed by the EPA prior to construction commencing.*
- *Ongoing management requirements for sediment and erosion control will be documented in Construction and Operational Environmental Management Plans that will be endorsed by the EPA.*

Pollutants used during construction

- *The works will be undertaken under the controls of a construction and environmental management plan which will details measures to prevent spills or mishandling, and emergency response procedures in the event of an incident.*
- *Ongoing management requirements for the control of toxic or hazardous substances will be documented in Construction and Operational Environmental Management Plans that is commonly required as a condition of approval in DA and for endorsement by the EPA.*

Details of the activities and aspects of the construction works that could potentially lead to erosion, sediment transport, siltation and contamination at the site and the stormwater network may include the following:

- Earthworks undertaken immediately prior to rainfall periods.
- Work areas that have not been stabilised, sealed, or covered.
- Bulk earthworks may expose erosive soils which may lead to sediment/contaminant runoff.
- Maintenance of construction equipment.
- Dirt from vehicle tyres may lead to sedimentation of street stormwater systems.
- Inadequate maintenance of environmental control measures.
- Inappropriate location of stockpiles.

The erosion and sediment control plan and corresponding management strategies to minimise the risk of contaminated runoff escaping from the site and adversely affecting the stormwater network and river catchment should, at least, include the following during construction works:

- Installation of silt fence barriers.
- The placement of crushed aggregate at the site entry.
- A sediment control basin that is appropriately sized for the site.
- The construction and placement of stockpiles to reduce the chances of sediment migration occurring.

Lanterra considers that, if the mitigation measures are implemented during construction works, there is a low risk of the site adversely impacting the stormwater network during the construction phase of the facility.

4. Operation Phase and Ongoing Potential Contamination Risks

The proposed development is intended to be used for:

- Emergency search and rescue operations;
- Strategic and tactical operational support (Police);
- Airborne surveillance and airborne operations management support;
- Firefighting and tactical support relating to this activity;
- Community education;
- Helicopter maintenance and engineering services; and
- Forestry Site Preparation Services to Government and Private Forest Owners

The design of the proposed facility is detailed in **Figure 5** (**Appendix A**) and **Appendix B**.

According to the design details and information from the EIS Application, prepared by Forestrack (2020) the two key activities that have the potential to contaminate stormwater during the operation of the facility are outlined below.

Use of Fuel on Site

It is understood that aviation or other fuels will not be stored on the site and that any refueling activities will be conducted by mobile fuel trucks. All refueling activities would be conducted within bunded areas to prevent the uncontrolled migration of fuel from the area.

Should a fuel leak occur, then spill kits maintained onsite would be used to remove the leak, or should a serious spill occur, then it is anticipated that emergency services would be contacted to managed the spill.

Runoff from storage area

Stormwater that accumulates on the sealed areas of the site will be diverted to stormwater retention tanks where any overflow would be discharged in the Hume stormwater system.

If the storage area is used to store chemicals and if these products were to enter the surrounding stormwater network, then this could provide a contamination risk to the stormwater network.

It is understood that truck wash chemicals and degreasers would be stored within enclosed bunded sealed containers. Therefore, potential contamination due to spills and/or runoff off these chemicals to the stormwater system is unlikely to occur.

Lanterra considers that if this controls (or similar ones) is implemented across the site, the risk of contamination to the human health and environment through the stormwater network is low.

5. Summary of Risk to Jerrabomberra Creek

Based on the information provided by the client and previous investigations, the likelihood of contaminated material leaving the site, entering the stormwater system and ultimately Jerrabomberra Creek is minimal thereby resulting in a low risk that the proposed development will adversely impact the Jerrabomberra Creek. The mitigating factors are summarised below:

- The mitigation measures proposed to be implemented during construction works, would minimize the risk of the site adversely impacting the stormwater network.
- If applicable, runoff water / chemicals collected from truck washing activities must be treated prior to off-site disposal.

Lanterra considers that if the listed onsite stormwater management controls are implemented, they would be sufficient to not adversely impact Jerrabomberra Creek.

Lanterra concludes that if Forestrack's proposed management practices and Lanterra's recommendations are implemented during the construction and operation phases of the proposed emergency services, maintenance and training facility, there is a low risk of the site's development adversely impacting the stormwater network.

6. References

ACT Government (2018) Flood Information for Jerrabomberra Creek. *Riverine Flood Maps.* Environment, Planning and Sustainable Development Directorate - Environment. Accessed on 16 July 2019 via https://www.environment.act.gov.au/__data/assets/pdf_file/0006/1286907/ACT-Flood-Maps-Jerrabomberra-Creek-ACCESS.pdf

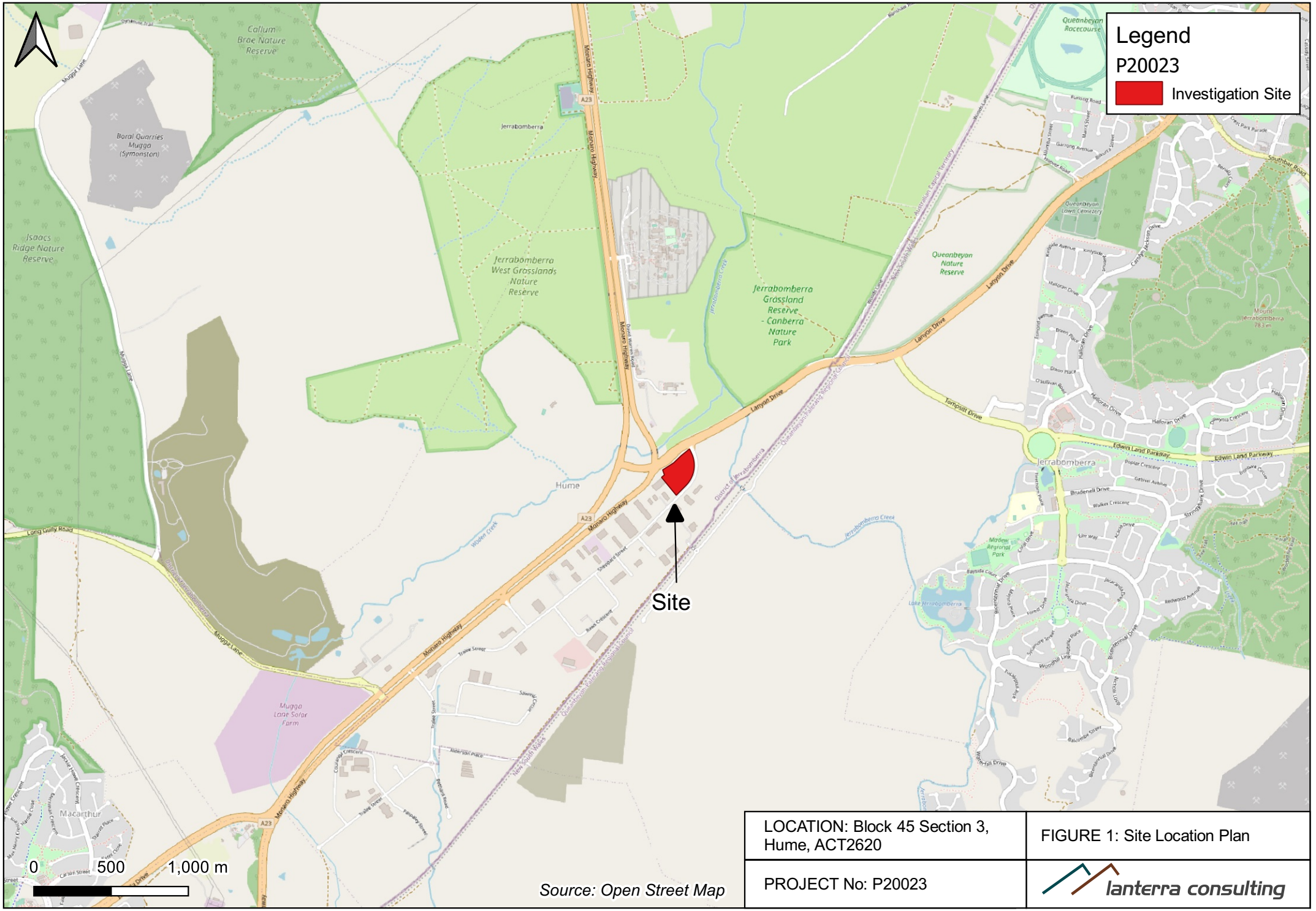
ACT Government, Environment Planning and Sustainable Development (2019) Hume Precinct Map and Code

Canberra Town Planning (2020) Application for Environmental Impact Statement Scoping Document

Lanterra (2020) Preliminary Site Investigation - Block 45, Section 3, Hume

Appendix A

Figures


Legend
P20023
Investigation Site
Site
Callum Brae Nature Reserve
Boral Quarries Mugga (Symonston)
Isaacs Ridge Nature Reserve
Jerrabomberra West Grasslands Nature Reserve
Jerrabomberra Grassland Reserve - Canberra Nature Park
Queanbeyan Nature Reserve
Queanbeyan Racecourse
Queanbeyan Lawn Cemetery
Mugga Lane Solar Farm
Molonglo Reach
Jerrabomberra
Hume
Macarthur
Monaro Highway
Lanyon Drive
Tompsitt Drive
Edwin Land Parkway
Long Gully Road
Mugga Lane
Jerrabomberra Creek
Woden Creek
Lake Jerrabomberra
Madew Regional Park
Mount Jerrabomberra 783 m
0
500
1,000 m
Source: Open Street Map
LOCATION: Block 45 Section 3, Hume, ACT2620
FIGURE 1: Site Location Plan
PROJECT No: P20023
lanterra consulting

LOCATION: Block 45 Section 3, Hume, ACT2620	FIGURE 2: Detailed Site Location Plan and Layout
PROJECT No: P20023	lanterra consulting

Figure 3: Concept Plan of proposed development across the site. Modified from Application for EIS Scoping Document (November, 2020).

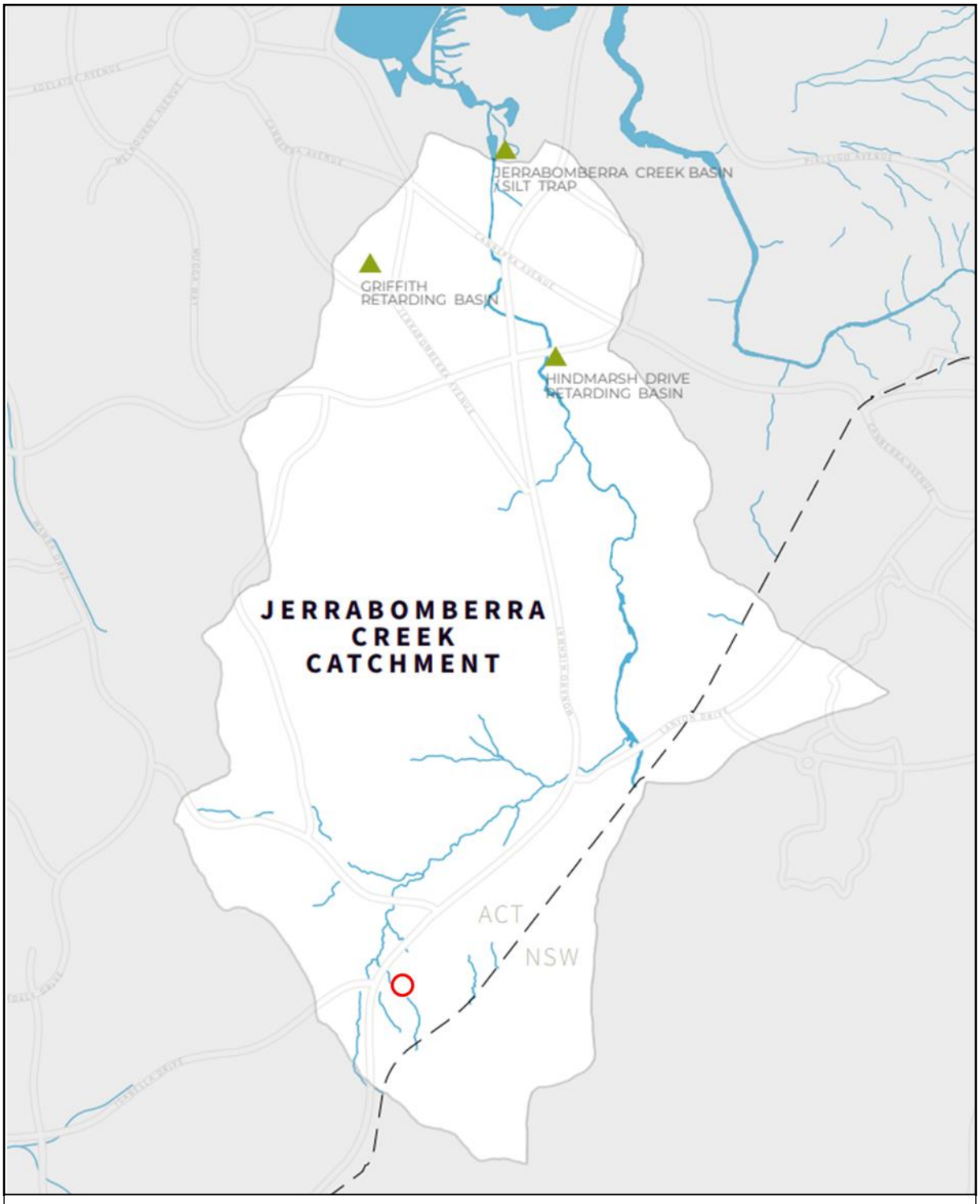


Figure 4: Jerrabomberra Creek Catchment, the red circle indicates the approximate location of the site. Modified from ACT Government (2018) *Flood Information for Jerrabomberra Creek.*

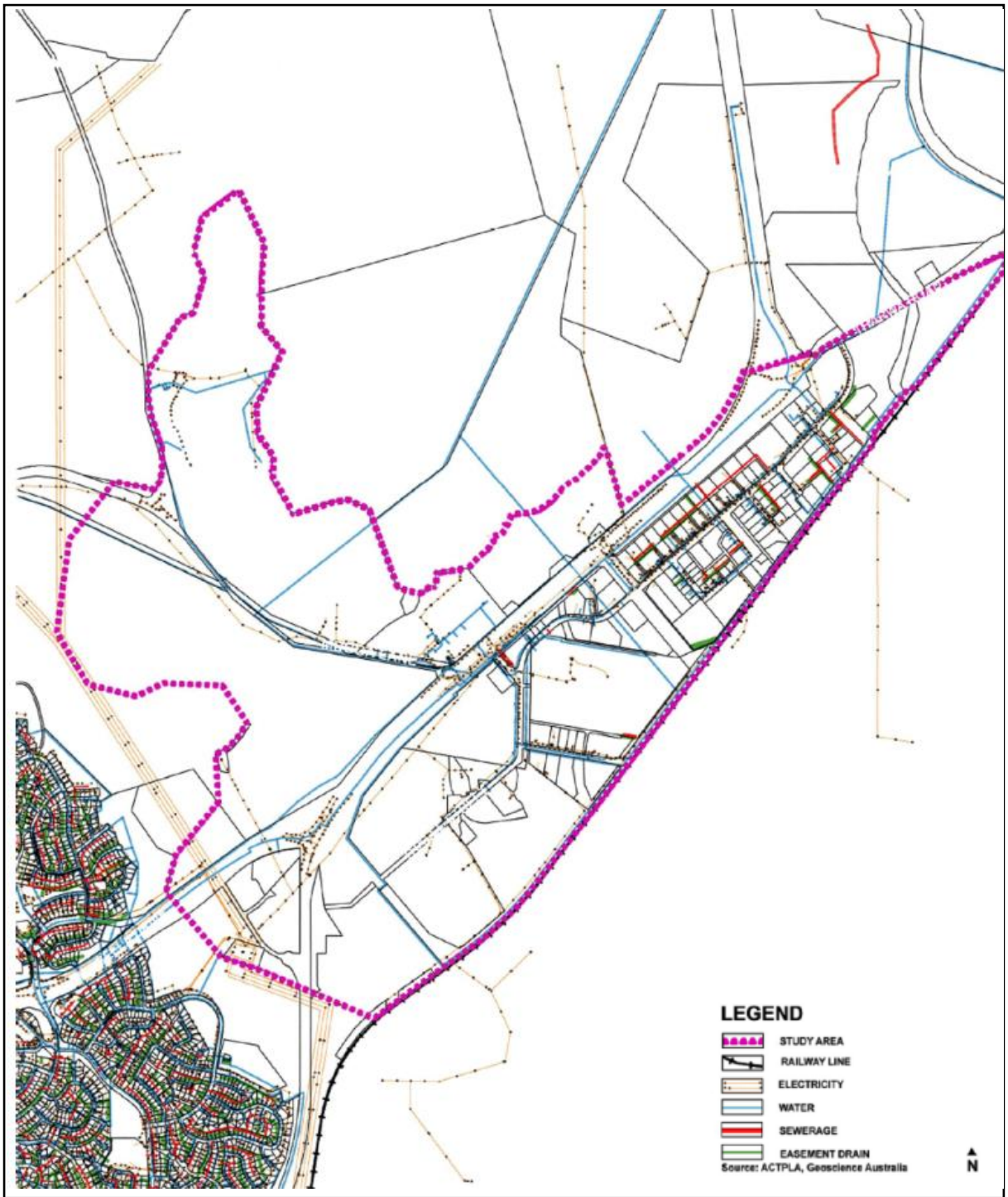
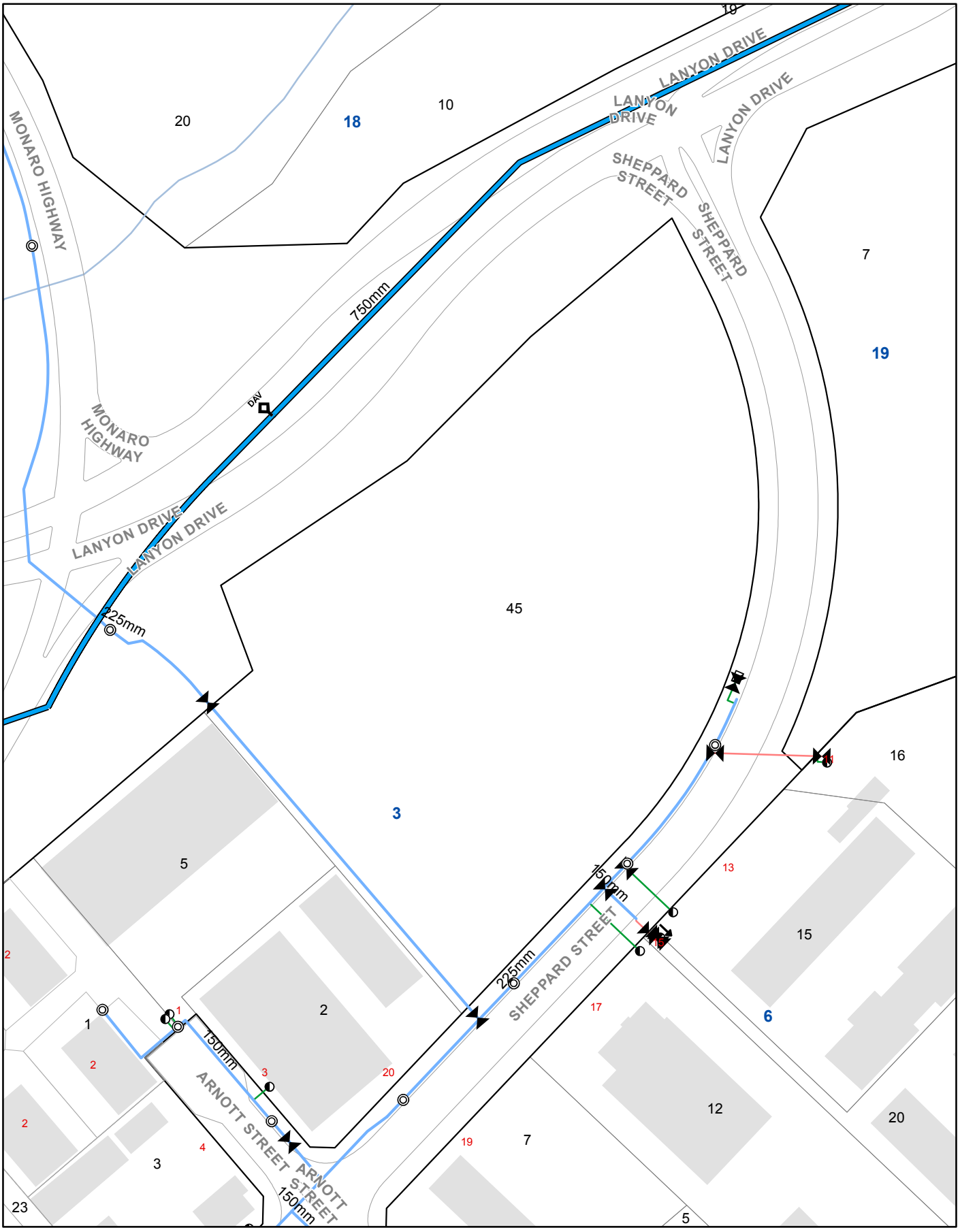


Figure 5a: Infrastructure on the Hume industrial estate, modified from the ''Hume Industrial Planning Study 2007'' undertaken by GHD.



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Seq #: 96812518

Sheppard Street, Hume

Water Network

icon WATER

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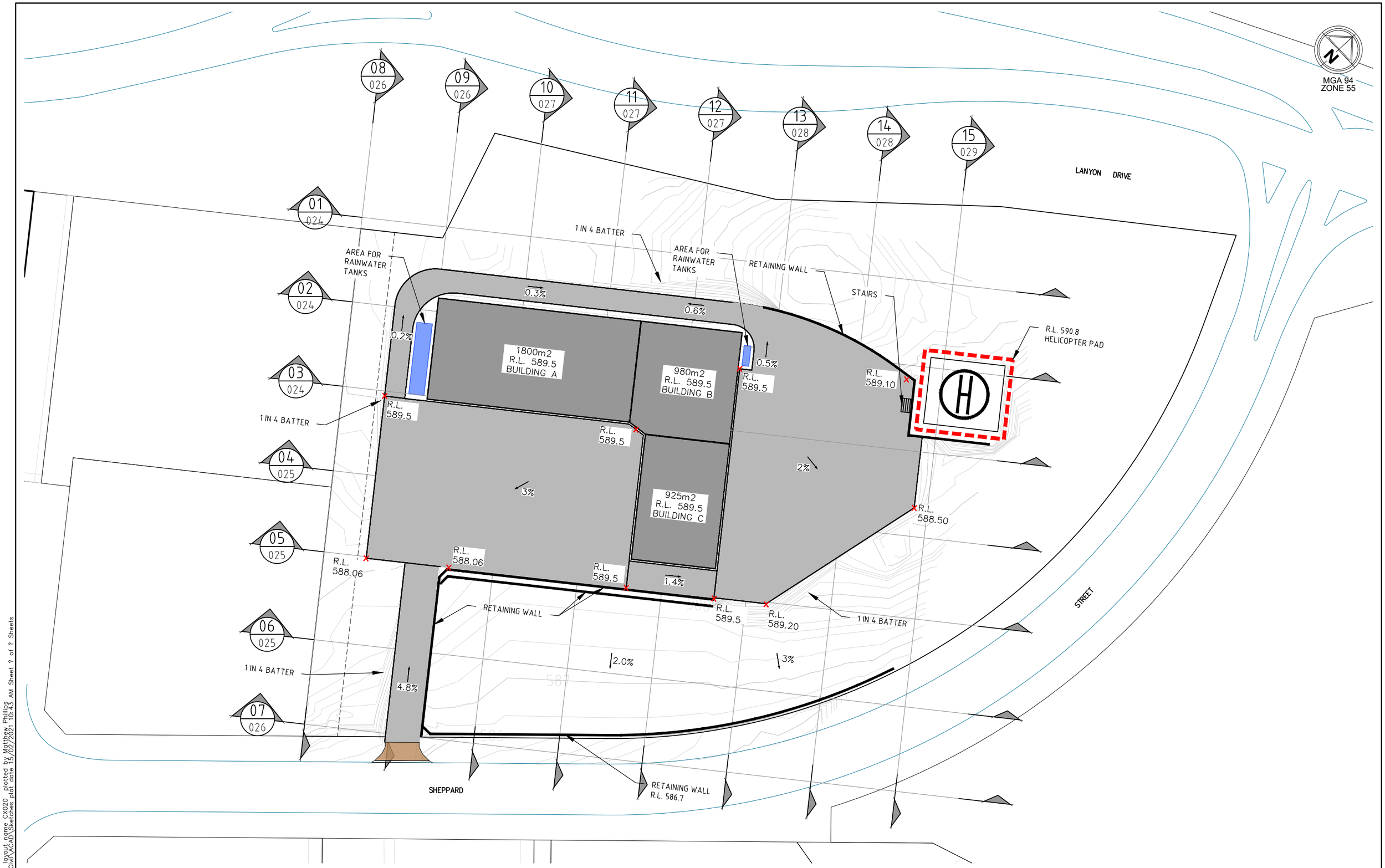
DIAL BEFORE YOU DIG www.1100.com.au The Essential First Step

Template: WaterA4Portrait

Creation Date: 19-Apr-2020

Appendix B



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JOHN RANDALL CONSULTING JRC

Designed | Checked

Authorised | Date

BLOCK 45 SECTION 3
HUME
PROPOSED SITE LEVELS
SITE LAYOUT
TCCS

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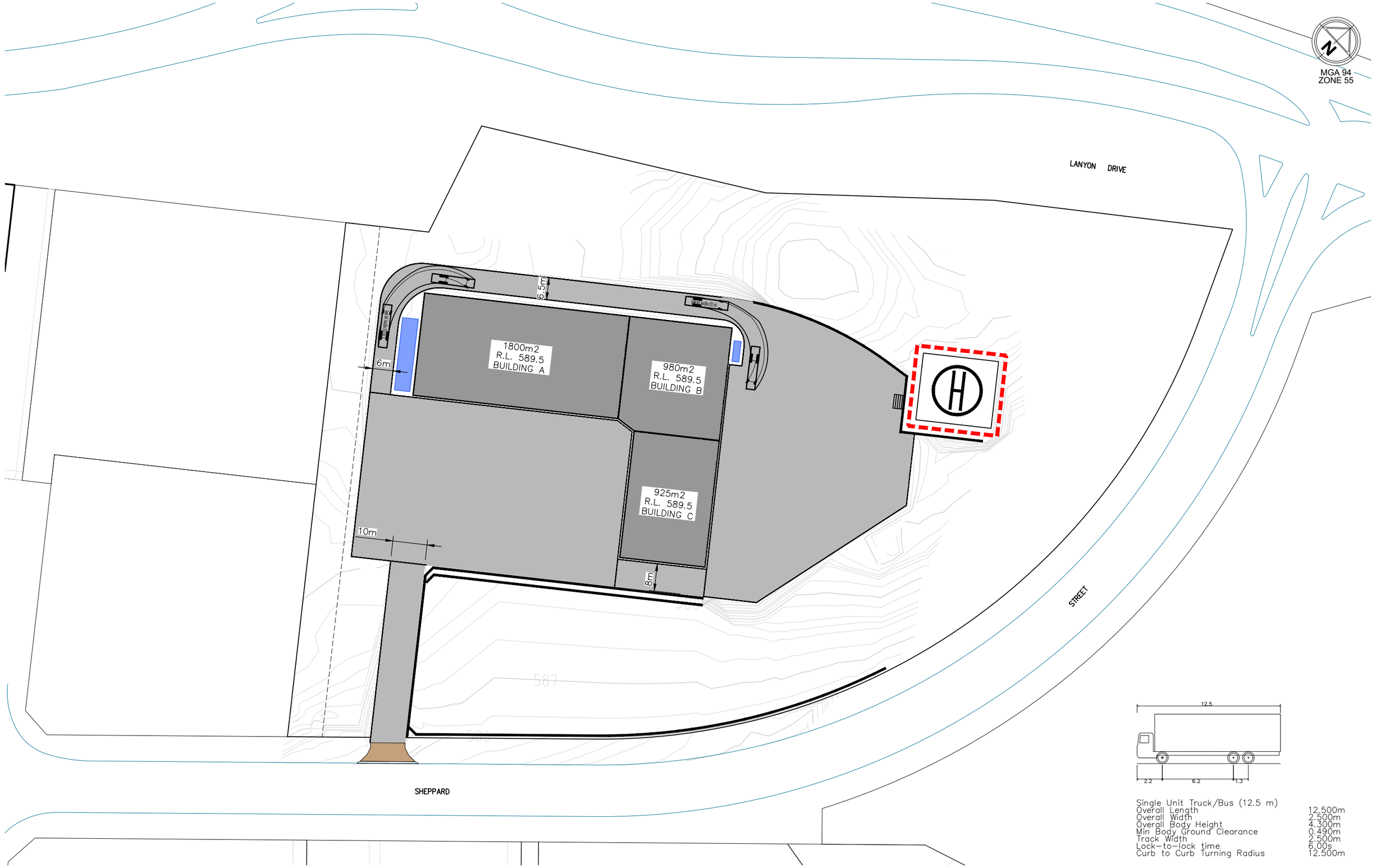

Single Unit Truck/Bus (12.5 m)	
Overall Length	12.500m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.490m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

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Authorised | Date

BLOCK 45 SECTION 3
HUME
PROPOSED SITE LEVELS
TURNING MOVEMENTS - SINGLE UNIT TRUCK
TCCS

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MGA 94
ZONE 55

LANYON DRIVE

1800m2
R.L. 589.5
BUILDING A

980m2
R.L. 589.5
BUILDING B

925m2
R.L. 589.5
BUILDING C

6.5m

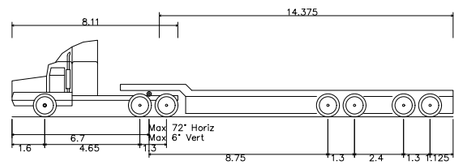
6m

10m

8m

STREET

SHEPPARD



Prime mover and low loader

Overall Length	21.575m
Overall Width	2.500m
Overall Body Height	3.749m
Min Body Ground Clearance	0.170m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

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Designed | Checked

Authorised | Date

BLOCK 45 SECTION 3
HUME
PROPOSED SITE LEVELS
TURNING MOVEMENTS - LOW LOADER AND PRIME MOVER
TCCS

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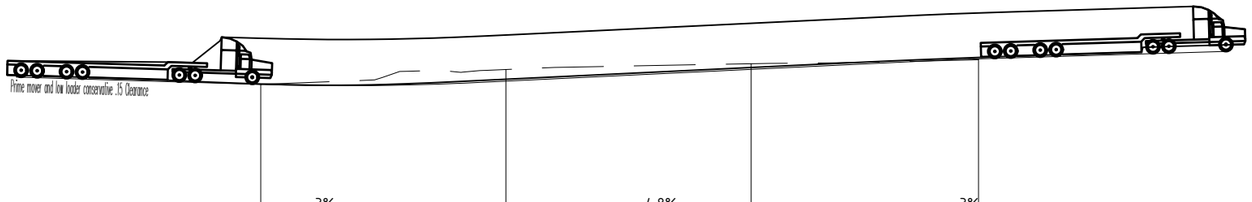

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EXISTING SURFACE	585.980	587.193	587.664	587.980	
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CHAINAGE	0.000	20.000	40.000	58.542	

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JOHN RANDALL CONSULTING JRC

Designed | Checked

Authorised | Date

BLOCK 45 SECTION 3
HUME
PROPOSED SITE LEVELS
DRIVEWAY LONGSECTION
TCCS

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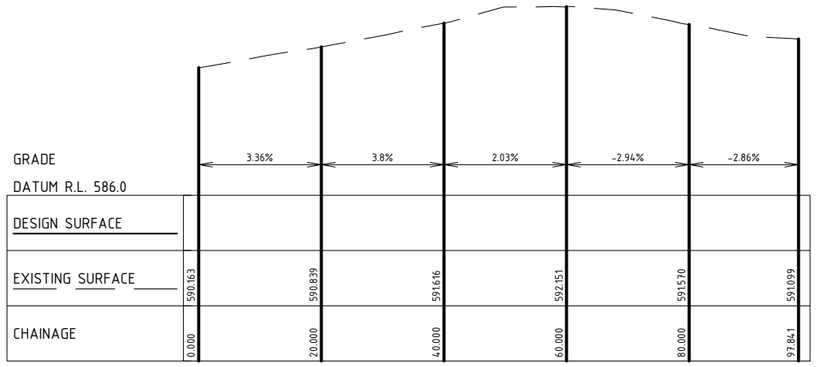

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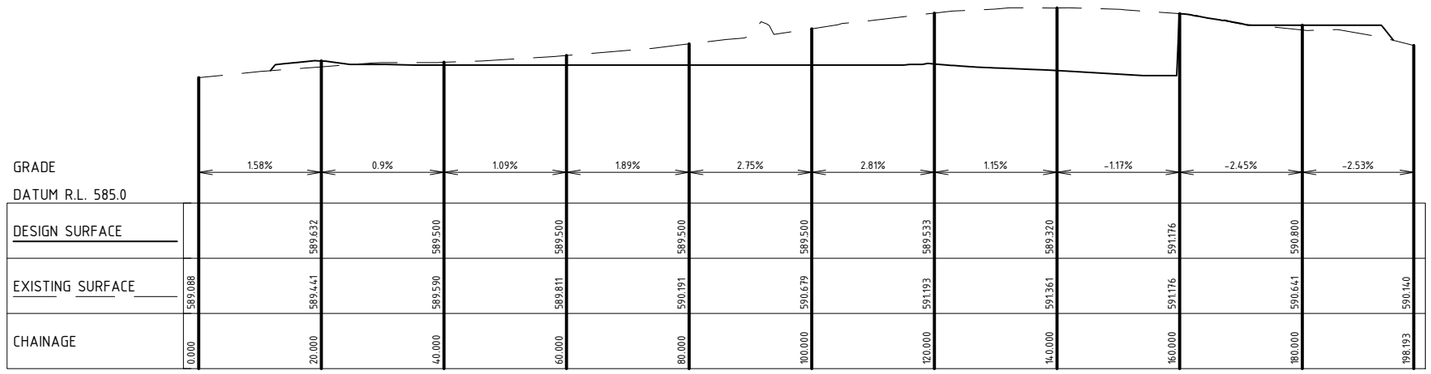

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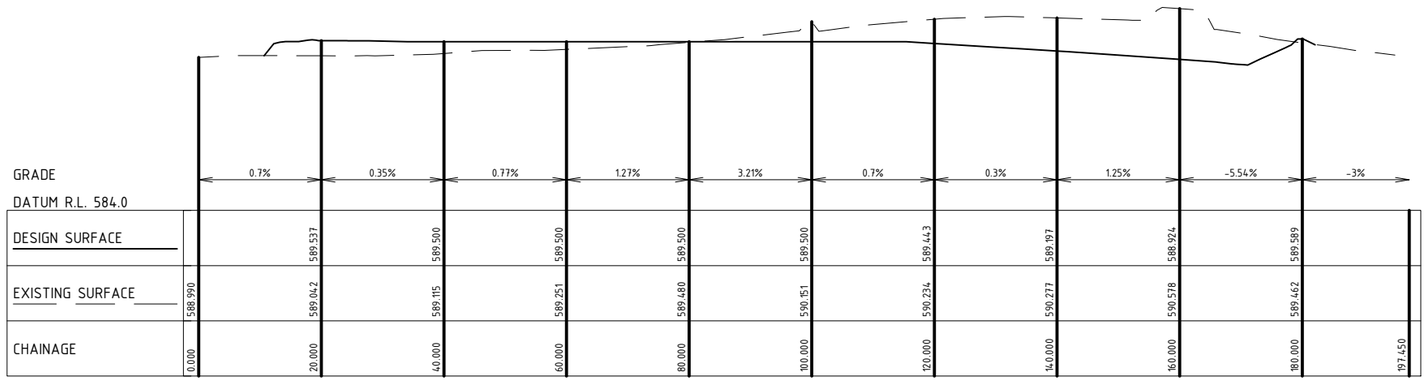

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JOHN RANDALL CONSULTING

Designed | Checked
Authorised | Date

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SITE LONGSECTION - SHEET 1
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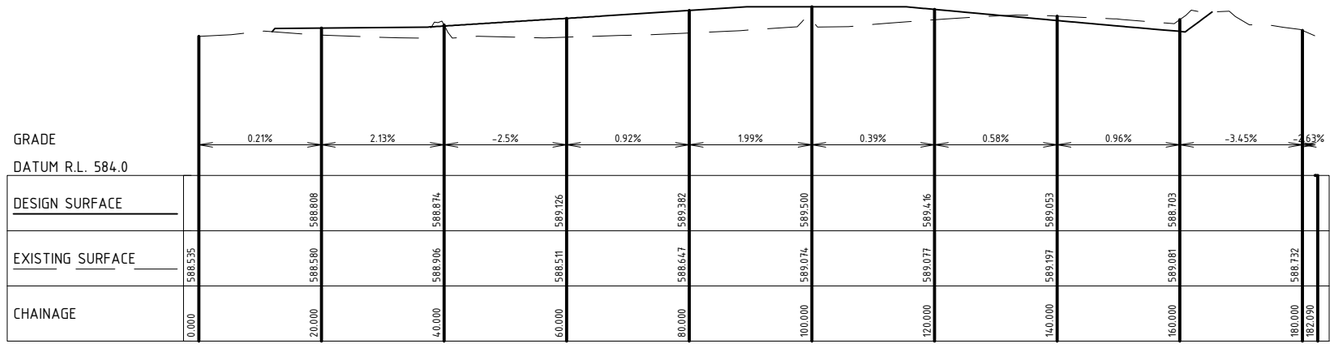
Rev: **----**



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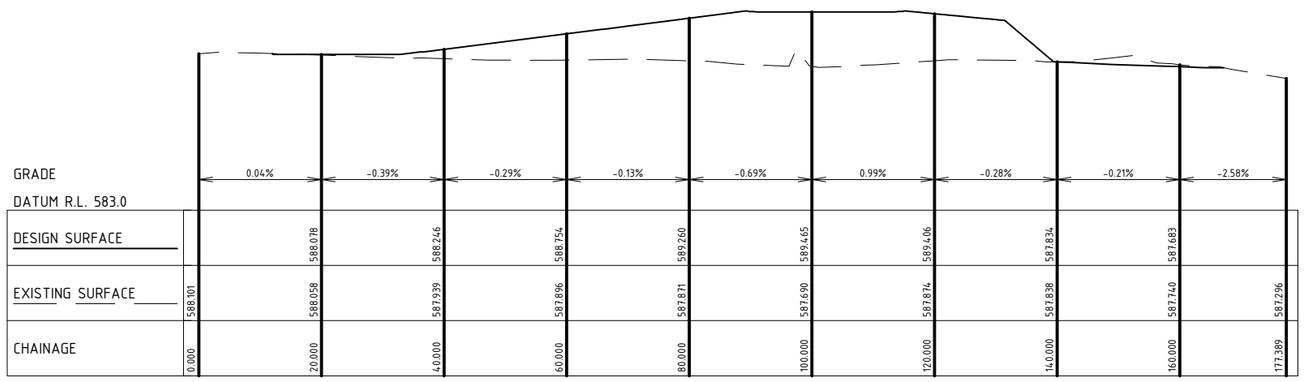

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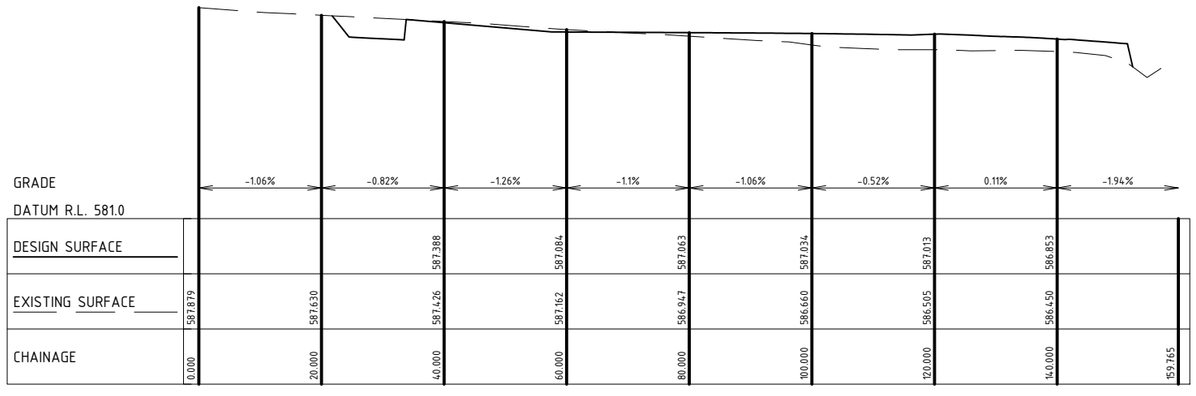

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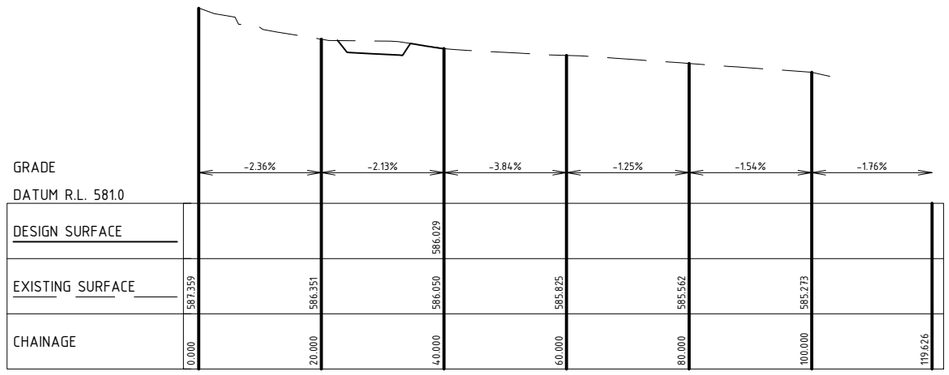
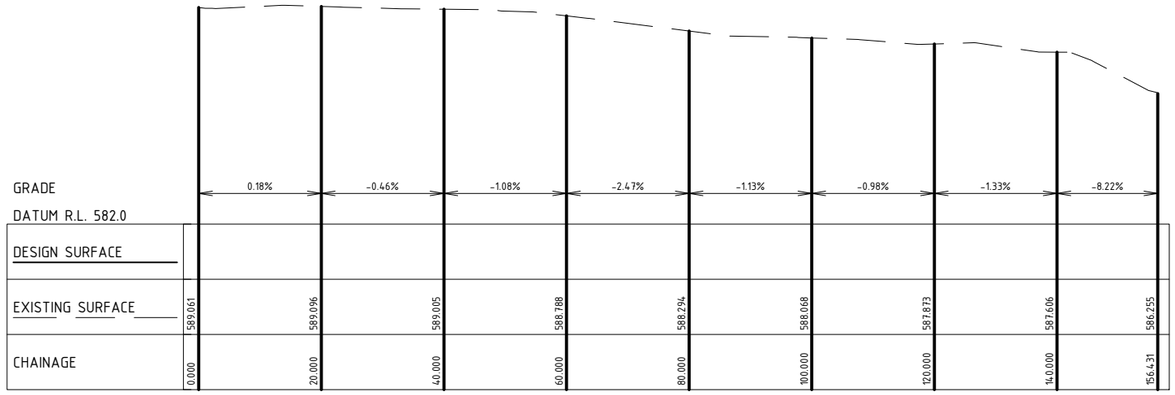
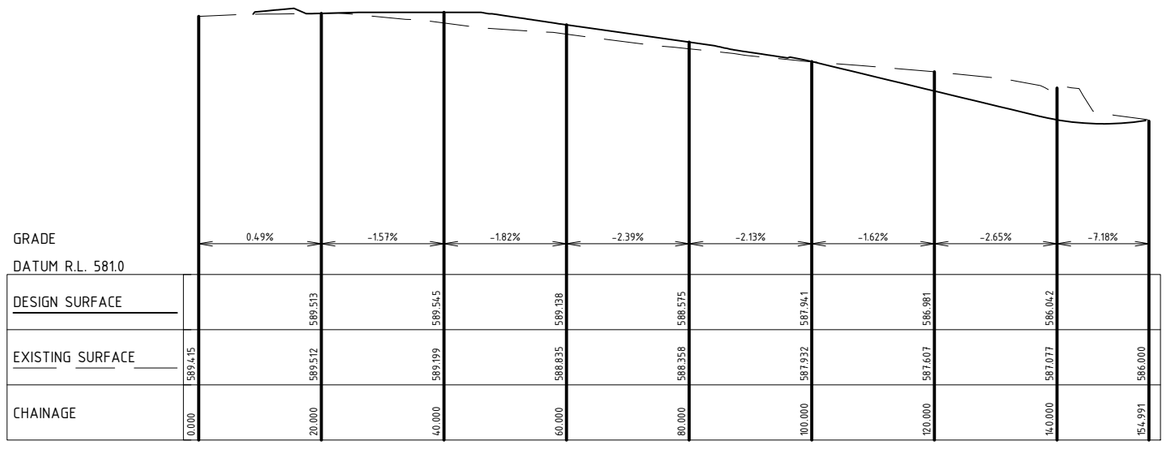


SECTION 07



SECTION 08



SECTION 09

DRAFT

Rev	Amendments	Approved	Date

H 1:1000 @ A3
H 1:500 @ A1
SCALE
V 1:200 @ A3
V 1:100 @ A1
0 5 10 15 20 25
0 1 2 3 4 5

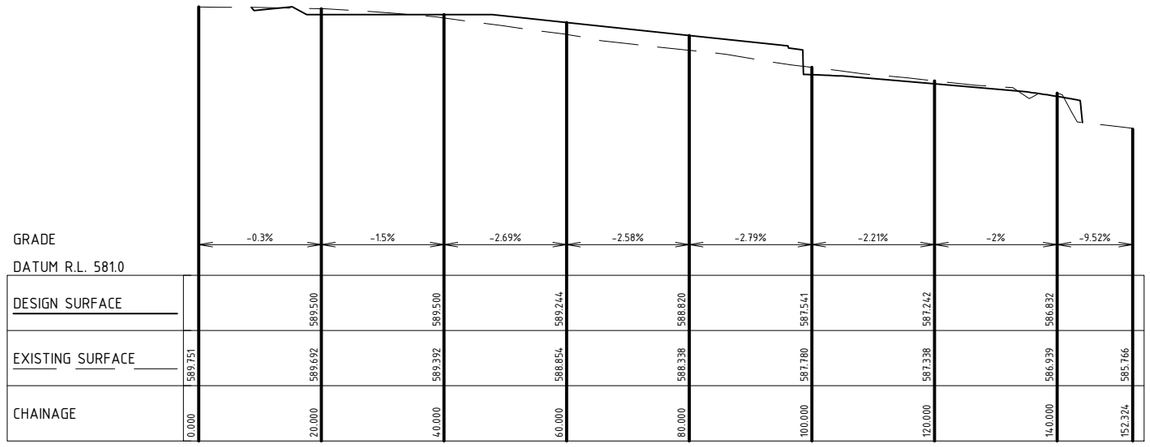
JOHN RANDALL CONSULTING

Designed
Checked
Authorised
Date

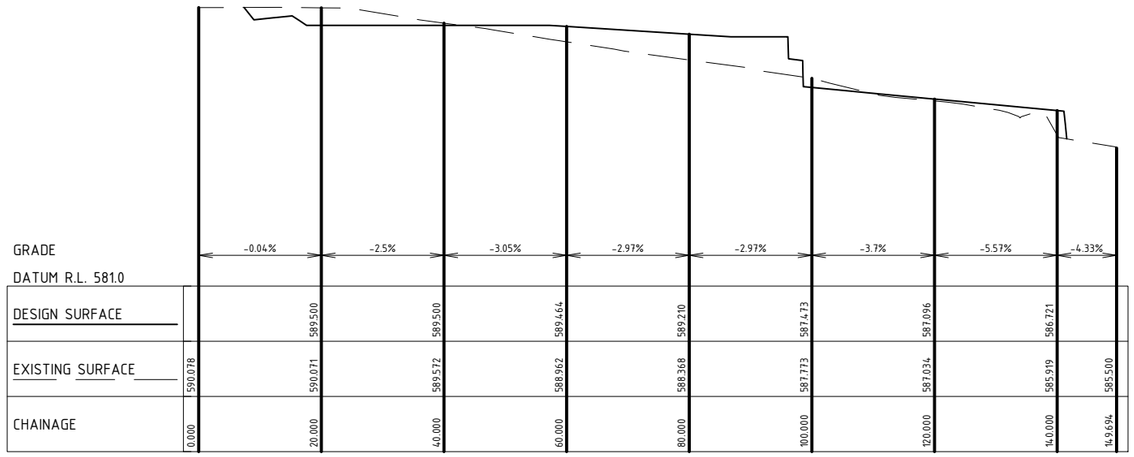
BLOCK 45 SECTION 3
HUME
PROPOSED SITE LEVELS
SITE LONGSECTION - SHEET 3
TCCS

Drg No **307927CX026**
Rev **----**

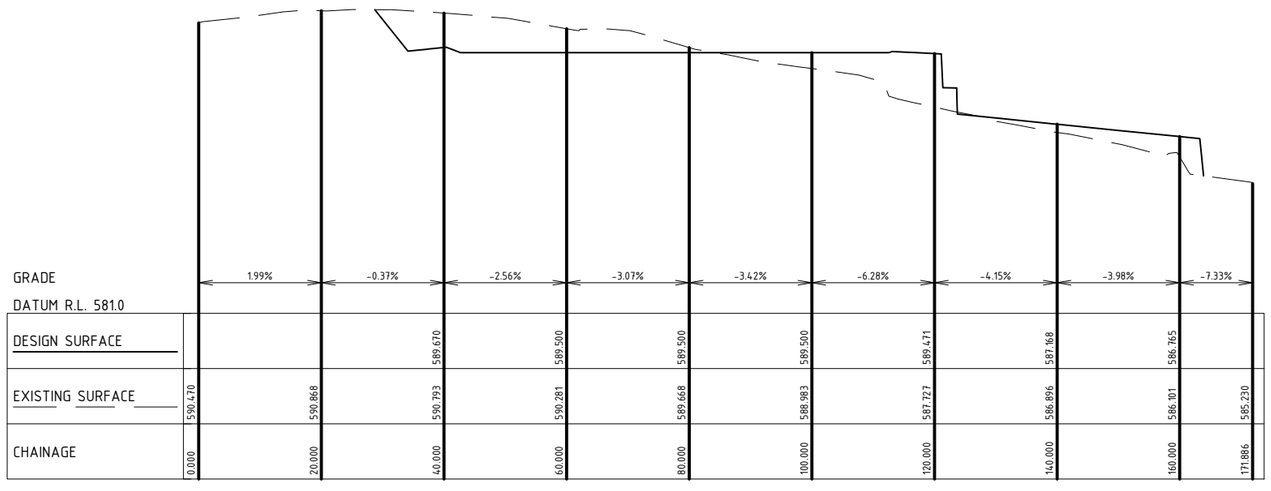
file name 307927CX020.dwg layout name CX026 plotted by Matthew Phillips
file location G:\30\307927\Civil\ACAD\Sketches plot date 15/02/2021 10:43 AM Sheet ? of ? Sheets



SECTION 10



SECTION 11



SECTION 12

DRAFT

Rev	Amendments	Approved	Date

H 1:1000 @ A3
H 1:500 @ A1
SCALE
V 1:200 @ A3
V 1:100 @ A1

0 5 10 15 20 25
0 1 2 3 4 5

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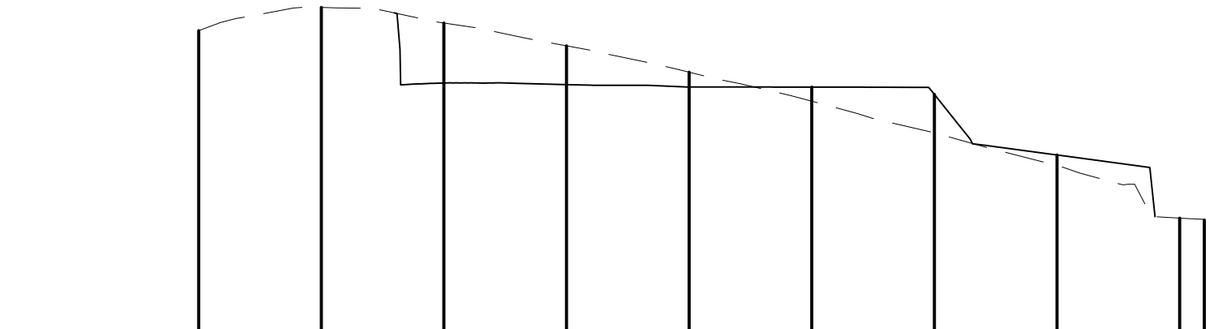
Designed | Checked
Authorised | Date

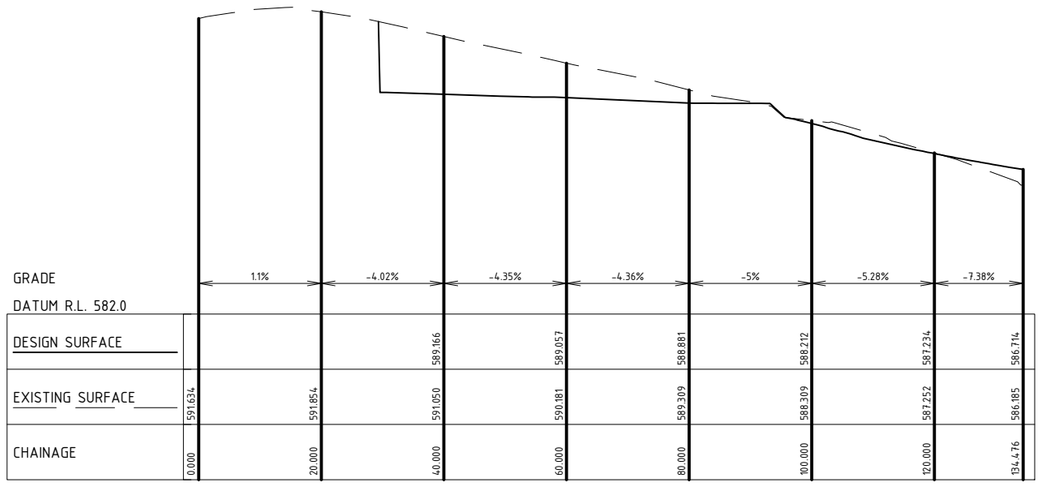
BLOCK 45 SECTION 3
HUME
PROPOSED SITE LEVELS
SITE LONGSECTION - SHEET 4
TCCS

Drg No **307927CX027** Rev **----**



GRADE		3.79%	-2.54%	-3.72%	-4.3%	-4.73%	-5.16%	-5.34%	-8.56%	1.53%
DATUM R.L. 580.0										
DESIGN SURFACE			589.454	589.404	589.326	589.323	589.085	587.109		
EXISTING SURFACE	591.163	591.922	591.413	590.669	589.809	588.862	587.830	586.763	585.051	584.989
CHAINAGE	0.000	20.000	40.000	60.000	80.000	100.000	120.000	140.000	160.000	164.032

SECTION 13



GRADE	1.1%	-4.02%	-4.35%	-4.36%	-5%	-5.28%	-7.38%
DATUM R.L. 582.0							
DESIGN SURFACE		589.166	589.057	588.881	588.212	587.234	586.714
EXISTING SURFACE	591.634	591.854	591.050	590.181	589.309	588.309	587.252	586.185
CHAINAGE	0.000	20.000	40.000	60.000	80.000	100.000	120.000	134.476

SECTION 14

DRAFT

Rev	Amendments	Approved	Date

H 1:1000 @ A3
H 1:500 @ A1
SCALE
V 1:200 @ A3
V 1:100 @ A1

0 5 10 15 20 25
0 1 2 3 4 5

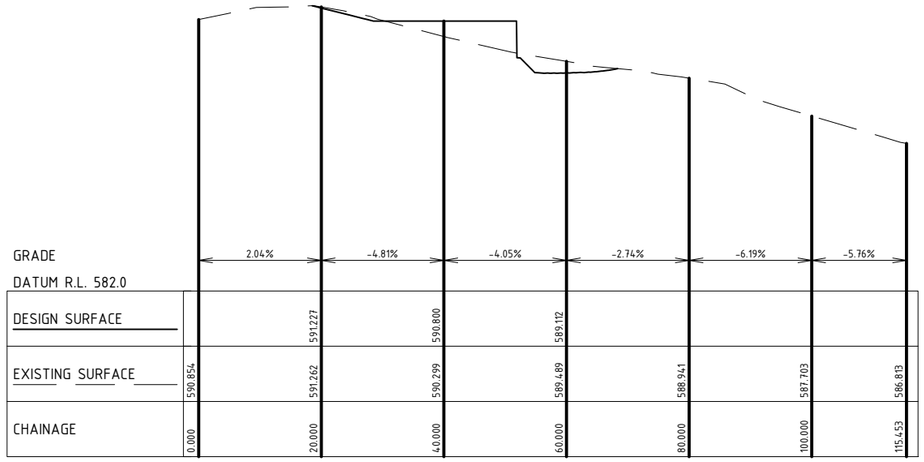
JOHN RANDALL CONSULTING

Designed | Checked

Authorised | Date

BLOCK 45 SECTION 3
HUME
PROPOSED SITE LEVELS
SITE LONGSECTION - SHEET 5
TCCS

Drg No **307927CX028** Rev **----**



GRADE							
DATUM R.L. 582.0							
DESIGN SURFACE		591.227	590.800	589.112			
EXISTING SURFACE	590.854	591.262	590.299	589.489	588.941	587.703	586.813
CHAINAGE	0.000	20.000	40.000	60.000	80.000	100.000	115.453

SECTION 15

DRAFT

Rev	Amendments	Approved	Date

H 1:1000 @ A3
H 1:500 @ A1
SCALE
V 1:200 @ A3
V 1:100 @ A1

0 5 10 15 20 25
0 1 2 3 4 5

JOHN RANDALL CONSULTING JRC

Designed | Checked

Authorised | Date

BLOCK 45 SECTION 3
HUME
PROPOSED SITE LEVELS
SITE LONGSECTION - SHEET 6
TCCS

Drg No **307927CX029** Rev **----**