WSA Northern Gateway
Sydney Science Park
LUD3 Interim Intersection

Risks and Hazards Report

Prepared for Celestino Developments
SSP Pty Ltd

14 June 2024

Document Information

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Document Title	**WSA Northern Gateway Sydney Science Park LUD3 Interim Intersection**
Document Subject	Risks and Hazards Report
Prepared For	Celestino Developments SSP Pty Ltd
Project Name	Sydney Science Park
Project Number	180001
File Name	rept003-180001-01-enspire-r01-240614-sydneysciencepark-lud3risk&hazardreport.docx

Transmittal

Revision	Date	Prepared by	Checked by	Approved by
1	14/06/2024	S. Hotong		S. Hotong
		Issue for Information		

Contents

List of Figures

List of Appendices

1 Introduction

This Risks and Hazards Assessment report has been prepared to support a Development Application (**DA**) for a new interim signalised intersection along existing Luddenham Road that will facilitate primary access to the Sydney Science Park precinct (**SSP**).

The site encompasses a section of the existing road reserve on Luddenham Road (approximately 650m) and land within properties on either side of this section as noted below:

- Lot 204 DP 1280188 (Celestino) known as 581 Luddenham Road, Luddenham
- Lot 206 DP 1280188 (Celestino) known as 599 Luddenham Road, Luddenham
- Lot 205 DP 1280188 (Metro)
- Lot 24 DP1277418 (Metro)
- Lot 26 DP1277418 (Metro)
- Road reserve (Penrith City Council)

The proposal is generally referred as 'LUD3 Intersection'.

A general arrangement plan of the Subject Site is shown in **Figure 1**.

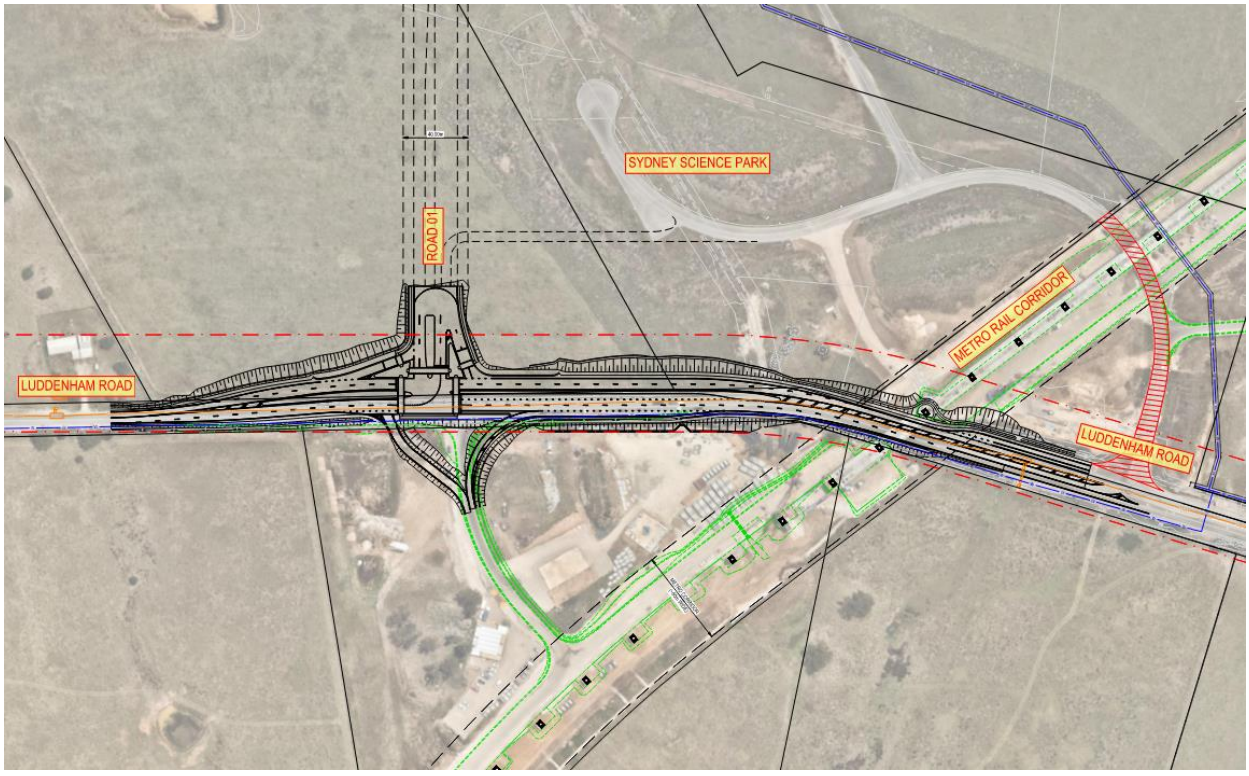

Figure 1 – Subject Site

2 Risks and Hazards Assessment Framework

This report assesses the potential impacts of design, construction, maintenance and demolition works proposed within the Sydney Metro rail corridor that bisects part of the proposed development works as depicted in **Figure 2**.

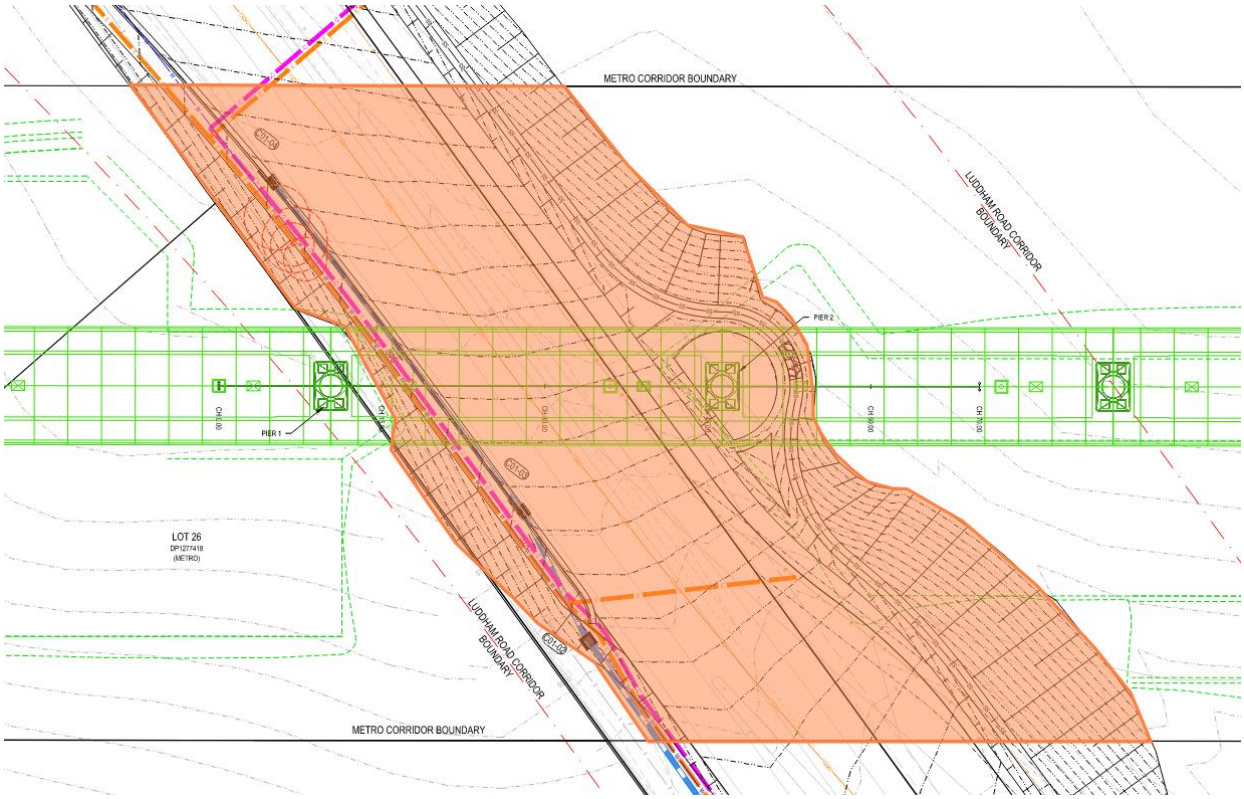

Figure 2 – General Area of Risk and Hazards Assessment

Identification of risks and hazards has been informed by the *Sydney Metro – Technical Services – Sydney Metro At Grade and Elevated Sections Corridor Protection Guidelines*, Prepared by Sydney Metro, dated September 2018 and the following methodology:

1. Identification of risks and hazards.
2. Assessment of initial consequences and likelihood with no action.
3. Identification of potential risk and hazard reduction options adopting a hierarchy of control framework (e.g. eliminate, replace, reduce etc.).
4. Reassessment of residual consequences and likelihood with adoption of risk and hazard reduction options.
5. Status of identified risks and hazards.

The risks and hazards assessment is provided in **Appendix A** with supplementary plans provided in **Appendix B**.

3 Risks and Hazards Assessment Key Outcomes

As part of the risks and hazard assessment construction activities have been identified as having the highest potential to impact the viaduct and viaduct piers. These risks and hazards are to be carefully considered by the contractor as part of their Construction Environment Management Plan (CEMP) and consider Sydney Metro guidelines for construction activities within the rail corridor.

Risks and hazards associated with operational phase of the proposed development have been considered in the design with residual risk levels generally low based on design actions being implemented in the design.

This risks and hazards assessment is to be revisited and updated at future milestone of the development such as but not limited to:

- Pre-construction approval
- Pre-construction commencement
- During works within the corridor and/or as additional information arises from these works.

Appendix A Risks and Hazard Assessment

Risks and Hazards Assessment

Prepared For:	Celestino Developments SSP Pty Ltd
Project Name:	Sydney Science Park
Project Number:	180001
Date:	14/06/2024
Prepared by:	S. Hotong
Reviewed by:	

V	Very High	Consider alternative option or modify design to reduce risk level. Only accept design if justifiable on other grounds.
H	High	Consider alternative option or modify design to reduce risk level. Only accept design if justifiable on other grounds.
M	Moderate	Review risks to determine if they can be further reduced by simple design changes
L	Low	Review risks to determine if they can be further reduced by simple design changes

Item	Activity	Risk / Hazard	Stage	Initial Risk			Design Action	Residual Risk			Person Responsible for Controls	Status
				Likelihood	Consequence	Risk Level		Likelihood	Consequence	Risk Level		
1	Excavation and trenching	Impact on structural integrity of existing viaduct piers during construction of road pavements, stormwater pipes and utility trenches.	Construction	3	4	Very High	Minimise depth and extent of excavation within the First Reserve surrounding viaduct columns in accordance with Section 3.3 of Sydney Metro corridor protection guidelines. Limit batter slopes to maximum 1 in 4 to ensure long term and robust stability of slopes. Contractor to include details of construction methodology as part of a CEMP inclusive of requirements as per Section 7.6 of Sydney Metro corridor protection guidelines.	1	3	Moderate	Designer	Implemented
2	Landscaping & tree planting works	Reduced capability to undertake maintenance work on the viaduct and viaduct piers. Reduced access capability.	Maintenance	3	2	Moderate	Eliminate tree planting within clearance zones defined in Section 3.4 of Sydney Metro corridor protection guidelines. Adopt turf only for surface stabilisation within these zones. Eliminate structural elements within the rail corridor (e.g. retaining walls) that generate physical barriers to access.	1	1	Low	Designer	Implemented
3	Road works	Stormwater flow regime changes having impact on viaduct or viaduct piers.	Post Construction	3	3	High	Design adequate drainage paths to minimise potential ponding of water and ensure safe overland flow paths. Contractor to include details of construction methodology as part of a CEMP and detail staged stormwater management techniques to avoid ponding around existing viaduct piers.	1	1	Low	Designer	Implemented
4	General construction works within vicinity of viaduct and viaduct piers	Risks and hazards associated with construction activities that have potential to generate cascading impact on viaduct operation and safety.	Construction	3	4	Very High	Contractor to include details of construction methodology as part of a CEMP and nominate plant and equipment exclusion zones in accordance with Section 7.10 of Sydney Metro corridor protection guidelines. Design works to not rely on plant and equipment that would conflict with requirements of Section 7.10 of Sydney Metro corridor protection guidelines.	2	2	Low	Contractor	In Progress

Risks and Hazards Assessment

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Item	Activity	Risk / Hazard	Stage	Initial Risk			Design Action	Residual Risk			Person Responsible for Controls	Status
				Likelihood	Consequence	Risk Level		Likelihood	Consequence	Risk Level		
5	General construction works within vicinity of viaduct and viaduct piers	Physical impact between construction vehicles and bottom of viaduct.	Construction	3	4	Very High	Contractor to include details of construction methodology as part of a CEMP and define protocols to minimise potential for physical impact between plant/equipment and viaduct (e.g. protocols to eliminate hydraulic lifts directly under the viaduct during pavement construction). Design works to not rely on plant and equipment that would conflict with requirements of Section 7.10 of Sydney Metro corridor protection guidelines.	2	2	Low	Contractor	In Progress
6	Operation of a road within vicinity of viaduct piers	Vehicle impact with piers.	Operation	3	4	Very High	Designer to undertake clearzone check in accordance with Austroads guidelines and determine if vehicle barrier is suitable for the site context (e.g. road levels are lower than existing pier ground levels, minimising potential for impact in a vehicle run off scenario).	2	2	Low	Designer	Implemented
7	Operation of a road under viaduct	Vehicle impact with viaduct.	Operation	3	4	Very High	Designer to undertake vertical clearance check in accordance with AS5100 and ensure minimum 5.4m vertical clearance to roadway.	2	2	Low	Designer	Implemented

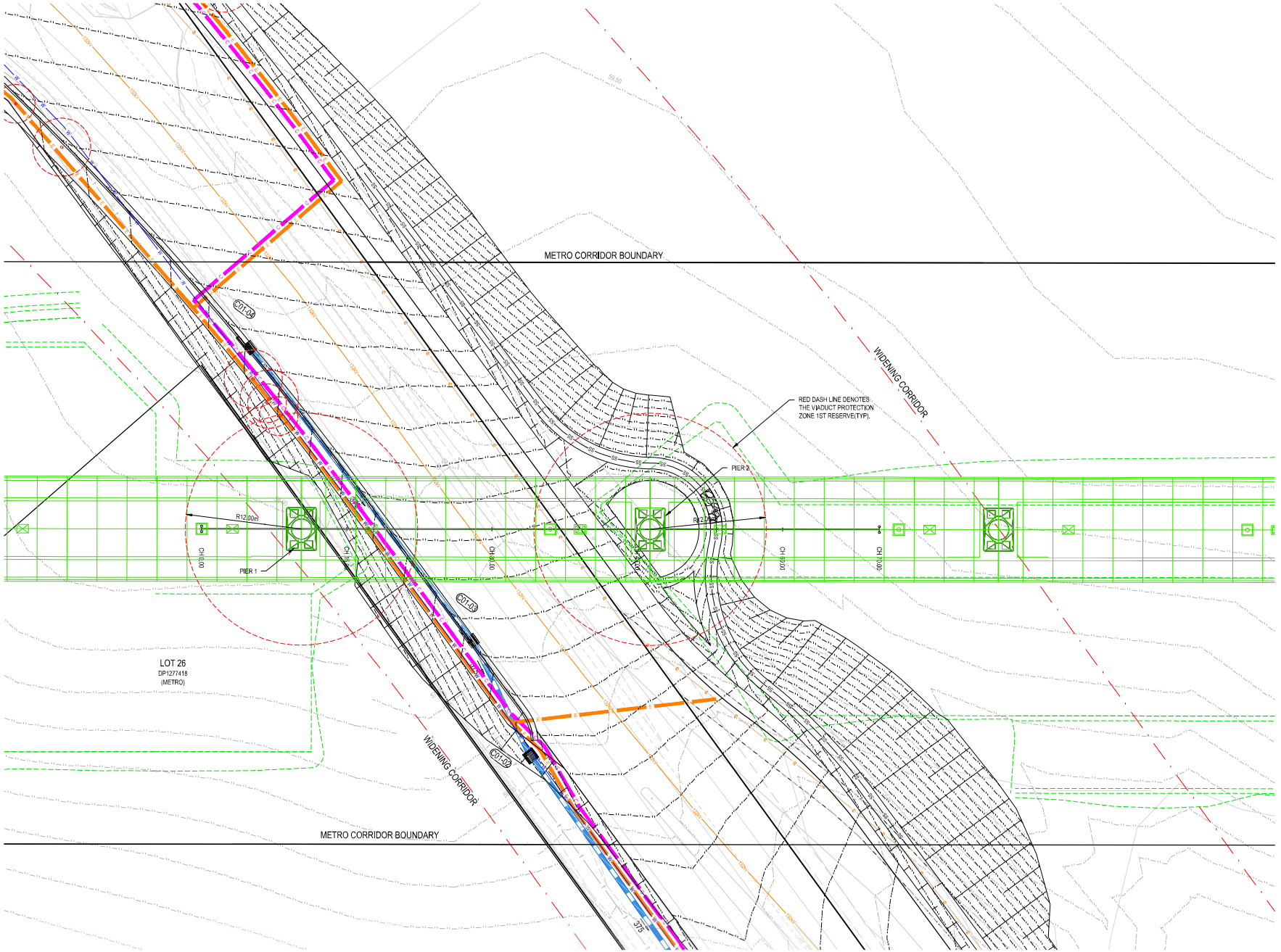
Appendix B Supplementary Plans

LEGEND

- PROPERTY BOUNDARY
- 100.00 — CONTOUR
- BATTER 1IN 4 U.N.O
- SA — BARRIER KERB AND CHANNEL REFER TINSW STANDARD DRG: R0300-01 FOR DETAIL
- SE — RAISED MEDIAN KERB WITH DRAINAGE REFER TINSW STANDARD DRG: R0300-01 FOR DETAIL
- SF — RAISED MEDIAN KERB REFER TINSW STANDARD DRG: R0300-01 FOR DETAIL
- PI — PAVEMENT INTERFACE
- EOB — EDGE OF BITUMEN
- RW01 — RETAINING WALL REFER DRG: C15.01 FOR ELEVATION
- F 100.00 — FINISHED LEVEL
- GL 100.00 — GRATE LEVEL
- IL 100.00 — INVERT LEVEL
- GRASS LINED SWALE REFER DRG: C14.01 FOR DETAIL
- SCOUR PROTECTION
- 375 — PIPE SIZE STORMWATER DRAINAGE LINE FLOW DIRECTION
- A01/01 — STORMWATER LINE/PIT NUMBER
- KERB INLET PIT
- SURFACE INLET PIT/JUNCTION PIT
- HEADWALL
- E — INDICATIVE INTERIM ELECTRICAL REFER NOTE 4
- C — INDICATIVE INTERIM TELECOMMUNICATIONS REFER NOTE 4

NOTES:

1. CONSTRUCTION OF THE SYDNEY METRO - WESTERN SYDNEY AIRPORT PROJECT IS IN PROGRESS ACROSS SYDNEY METRO LAND PARCELS AND THE SITE CONDITIONS DEPICTED ON PARCELS DENOTED AS (METRO) ARE IN A STATE OF RAPID CHANGE. SITE FEATURES SUCH AS EXITING TREES, FARM DAMS, ACCESS DRIVEWAYS AND THE LIKE SHOWN ON METRO LANDS ARE LIKELY TO HAVE BEEN REMOVED OR MODIFIED AS PART OF WORKS FOR THE RAIL LINE AND THE PROPOSED DESIGN HAS BEEN COORDINATED WITH THE SYDNEY METRO RAIL DESIGN. THE UNDERLYING SURVEY SHOWN IS BASED ON CONDITIONS PRIOR TO COMMENCEMENT OF THE SYDNEY METRO -WESTERN SYDNEY AIRPORT PROJECT AND GENERALLY DEPICT CURRENT SITE CONDITIONS OUTSIDE OF METRO LANDS.
2. ALL INTERFACE BATTERS ARE TO BE STABILISED WITH SEEDED HYDROMULCH.
3. ALL VERGES TO BE STABILISED WITH TURF.
4. INDICATIVE INTERIM ELECTRICAL AND TELECOMMUNICATIONS ALLOCATIONS SHOWN ARE TO FACILITATE ADEQUATE SERVICING OF THE INTERIM SIGNALISED INTERSECTION AND DOES NOT REPRESENT ULTIMATE SERVICE ALLOCATIONS,(E.G. PROVISION OF STREET LIGHTING, UNDERGROUNDING OF EXISTING OVERHEAD, SERVICING INTERIM SIGNALS EQUIPMENT). ULTIMATE SERVICING IS TO BE PROVIDED AS PART OF PLANNED FUTURE LUDDENHAM ROAD WIDENING. INTERIM SERVICING SHOWN IS INDICATIVE ONLY AND SUBJECT TO CHANGE AS PART OF DETAIL DESIGN.



REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF	APPD.
1	13/06/2024	AMENDED TO SMWSA COMMENTS	HJ	HJ	-	SH

Client: CELESTINO

Scale: 0 5 10 15 20m — SCALE 1:200 @A1

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Project: SYDNEY SCIENCE PARK
LUDDENHAM ROAD LUD3
CIVIL ENGINEERING WORKS

Title: METRO RAILWAY CORRIDOR PLAN

Scale: 1:200

Date: 13/06/2024

Size: A1

Datum: MGA2020

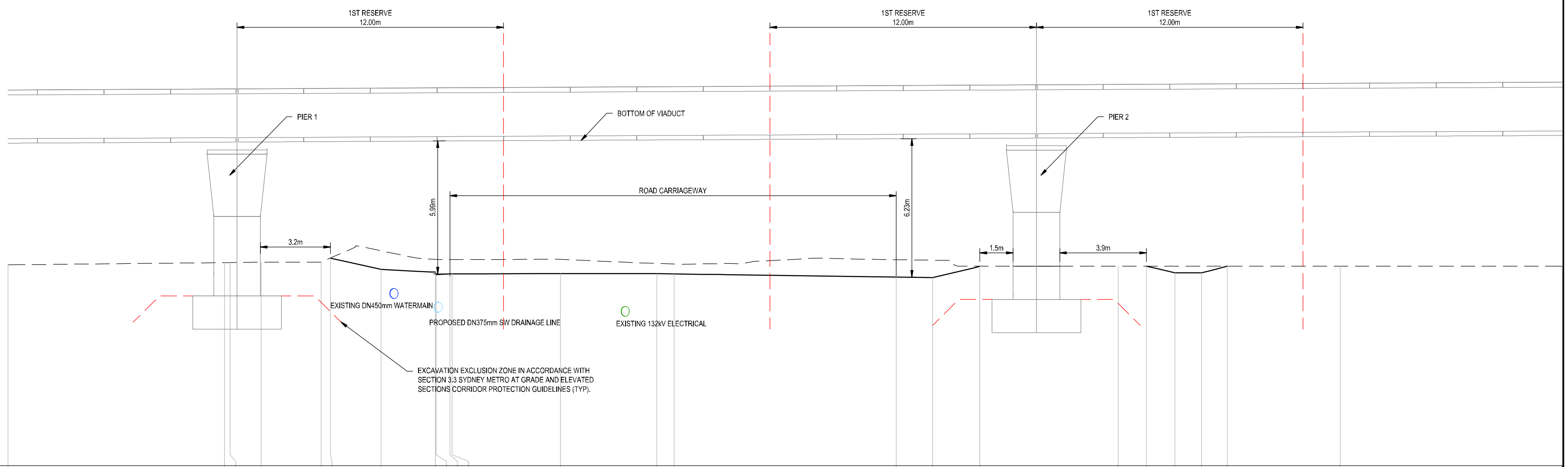
Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

Project Number/Drawing Number: 180001-01-DA-C16.01

Revision: 1

DATE PLOTTED: 14 June 2024 2:26 PM BY : HAN JIANG

CAD File: P:\180001 SSP\D-Civil\01-LUD3 Signals\Drawings\6-DACC\01-DA\180001-01-DA-C16.01-C16.21- DETAILED RAILWAY CORRIDOR PLAN AND SECTIONS.dwg



DATUM RL 48.0

CHAINAGE	BOTTOM OF VIADUCT LEVEL	EXISTING SURFACE	DESIGN SURFACE
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9.75	62.59	57.15	
10.00	62.59	57.04	
11.40	62.60	57.17	
14.10	62.61	57.17	
14.52	62.61	57.36	57.36
16.80	62.62	57.69	56.85
19.24	62.64	57.31	56.73
19.28	62.64	57.30	56.61
19.90	62.64	57.30	56.65
20.00	62.64	57.30	56.65
24.88	62.66	57.30	56.66
29.22	62.69	57.12	56.66
30.00	62.69	57.09	56.65
40.00	62.74	57.29	56.51
41.64	62.75	57.27	56.48
43.77	62.76	57.00	57.00
50.00	62.79	57.00	
51.28	62.80	57.00	57.00
52.56	62.80	57.00	56.69
53.75	62.81	57.00	56.69
54.91	62.81	57.00	57.00
60.00	62.84	57.00	
70.00	62.89	57.00	

LONGITUDINAL SECTION ALONG METRO VIADUCT(SECTION A)

HORIZONTAL SCALE 1:100@A1
VERTICAL SCALE 1:100@A1

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Client: CELESTINO

Scale: 0 1 2 4 6 8 10m — SCALE 1:100 @A1

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CIVIL ENGINEERING WORKS

Title: RAILWAY CORRIDOR LONG SECTION

Scale: 1:100
Date: 13/06/2024
Size: A1
Datum: MGA2020

Status: FOR INFORMATION ONLY
NOT TO BE USED FOR CONSTRUCTION

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Revision: 1

DATE PLOTTED: 14 June 2024 2:28 PM BY : HAN JIANG

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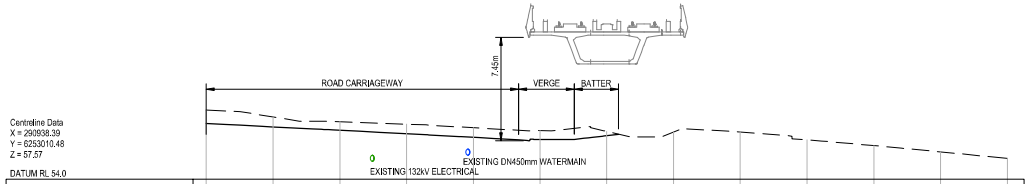

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DESIGN SURFACE	59.17	57.91	57.66	57.40	57.13	56.97	57.25						
OFFSET	-30.00	-25.00	-20.00	-15.00	-10.00	-5.00	0.00	5.00	10.00	15.00	20.00	25.00	30.00

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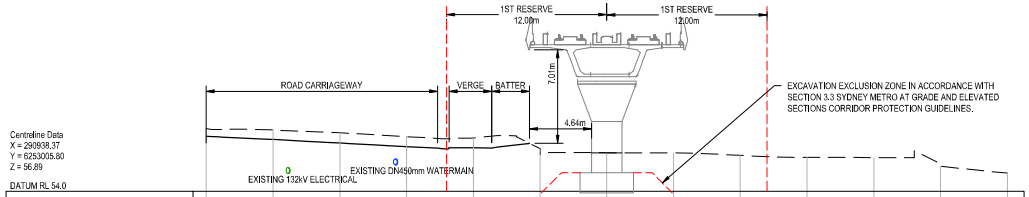

EXISTING SURFACE	58.70	58.59	58.39	58.09	58.00	57.20	56.89	56.87	56.69	56.55	56.53	55.87	55.36
DESIGN SURFACE	58.13	57.88	57.62	57.35	57.26								
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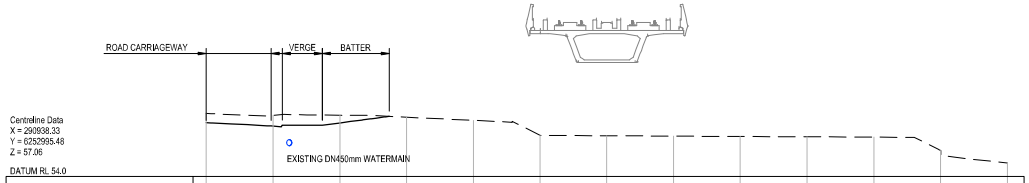

EXISTING SURFACE	58.74	58.66	58.60	58.45	58.21	57.09	57.06	57.03	57.01	56.98	56.96	55.96	55.02
DESIGN SURFACE	58.04	57.78	58.02										
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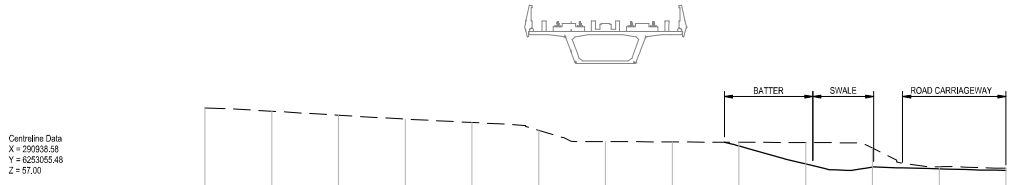

EXISTING SURFACE	59.51	59.27	58.97	58.69	58.43	57.84	57.00	56.97	56.95	56.92	56.51	55.12	54.99
DESIGN SURFACE									56.67	55.32	55.09	54.96	54.84
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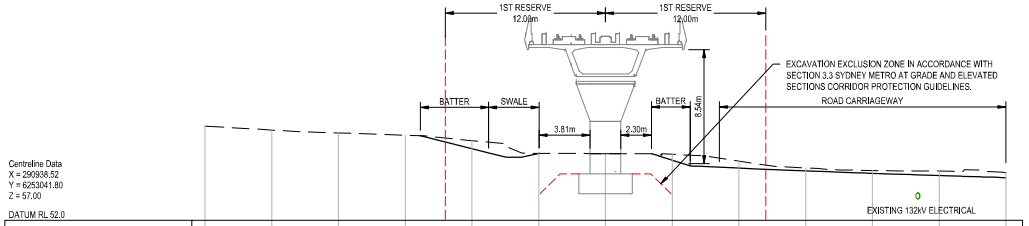

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DESIGN SURFACE					57.37	57.01		56.51	55.91	55.71	55.52	55.35	55.19
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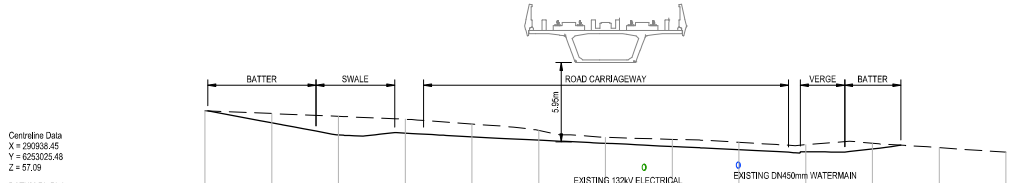

EXISTING SURFACE	59.08	58.87	58.86	58.45	58.09	57.81	57.09	56.94	56.72	56.54	56.54	56.32	55.98
DESIGN SURFACE		58.18	57.26	57.40	57.13	56.86	56.85	56.41	56.16	56.01	56.23		
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Scale: 1:200
Date: 13/06/2024
Size: A1
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Status: FOR INFORMATION ONLY
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Project Number/Drawing Number: 180001-01-DA-C16.21

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