JBS&G 63888 | 154850

L008 Groundwater Management Plan Response (Rev 0)

26 September 2023

Zach Foster
CPB Contractors
Via email: Zach.Foster@cpbcon.com.au

Groundwater Management Plan Response, Royal Prince Alfred Hospital, Camperdown NSW

Dear Zach,

JBS&G Australia Pty Ltd (JBS&G) was engaged by CPB Contractors Pty Ltd (CPB, the client) to provide environmental consulting services for the Royal Prince Alfred (RPA) Hospital redevelopment located at 50 Missenden Road, Camperdown NSW (the site). It is understood that preparation of a Groundwater Management Plan (GMP) has been requested as part of the approvals process. However, based on the proposed scope of works at the site, its unlikely that groundwater will be encountered with exception to the piling process. On this basis, JBS&G present herein a discussion of the proposed scope of works with respect to groundwater and outline the reasons why a GMP is not required.

A groundwater assessment was undertaken and reported on as part of the contamination data gap investigation (DGI) (JBS&G 2023[1]). Standing groundwater levels at the site were reported at 19.55 m AHD in the northern entry and ranged between 16.53 and 14.96 m AHD in the eastern extension footprint. Proposed bulk excavation levels in the northern entry extend to a maximum depth of 22.05 m AHD, which is 2.5 m above observed groundwater levels in this part of the site. Likewise, within the eastern extension footprint, proposed bulk excavation levels extend to a maximum depth of 18.60 m AHD, which is approximately 2 m above observed groundwater levels in this part of the site.

It's understood that piling works will extend beyond the bulk excavation levels into rock of suitable strength and that the piles/concrete will be installed directly into the piled holes with no dewatering occurring. No extraction of groundwater is proposed during the piling works.

As reported in the DGI (JBS&G 2023) no groundwater contamination was identified.

On the basis that the proposed redevelopment will not result in aquifer interference requiring groundwater extraction, and that the existing groundwater at the site is not contaminated, JBS&G considers that a GMP for the site is not required.

Should the proposed redevelopment scope change such that aquifer interference occurs and groundwater extraction becomes necessary, then a GMP would be required.

---

[1] *Data Gap Investigation, East Campus, RPA Hospital, Camperdown*, 63888 | 154076, 15 September 2023, JBS&G (DGI 2023).

Should you require clarification, please contact the undersigned on 02 8245 0300 or by email mhodgins@jbsg.com.au .

Yours sincerely:

Mitchell Hodgins
Senior Associate
JBS&G Australia Pty Ltd

Reviewed/Approved by:

Matthew Bennett (CEnvP-CS)
Senior Principal
JBS&G Australia Pty Ltd

Attachments:

A) Limitations
B) Figures – Groundwater Levels and Contour Plan
C) Proposed Civil Works Diagrams

Attachment A Limitations

This report has been prepared for use by the client who has commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the client and other parties.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by JBS&G, and should not be relied upon by other parties, who should make their own enquiries.

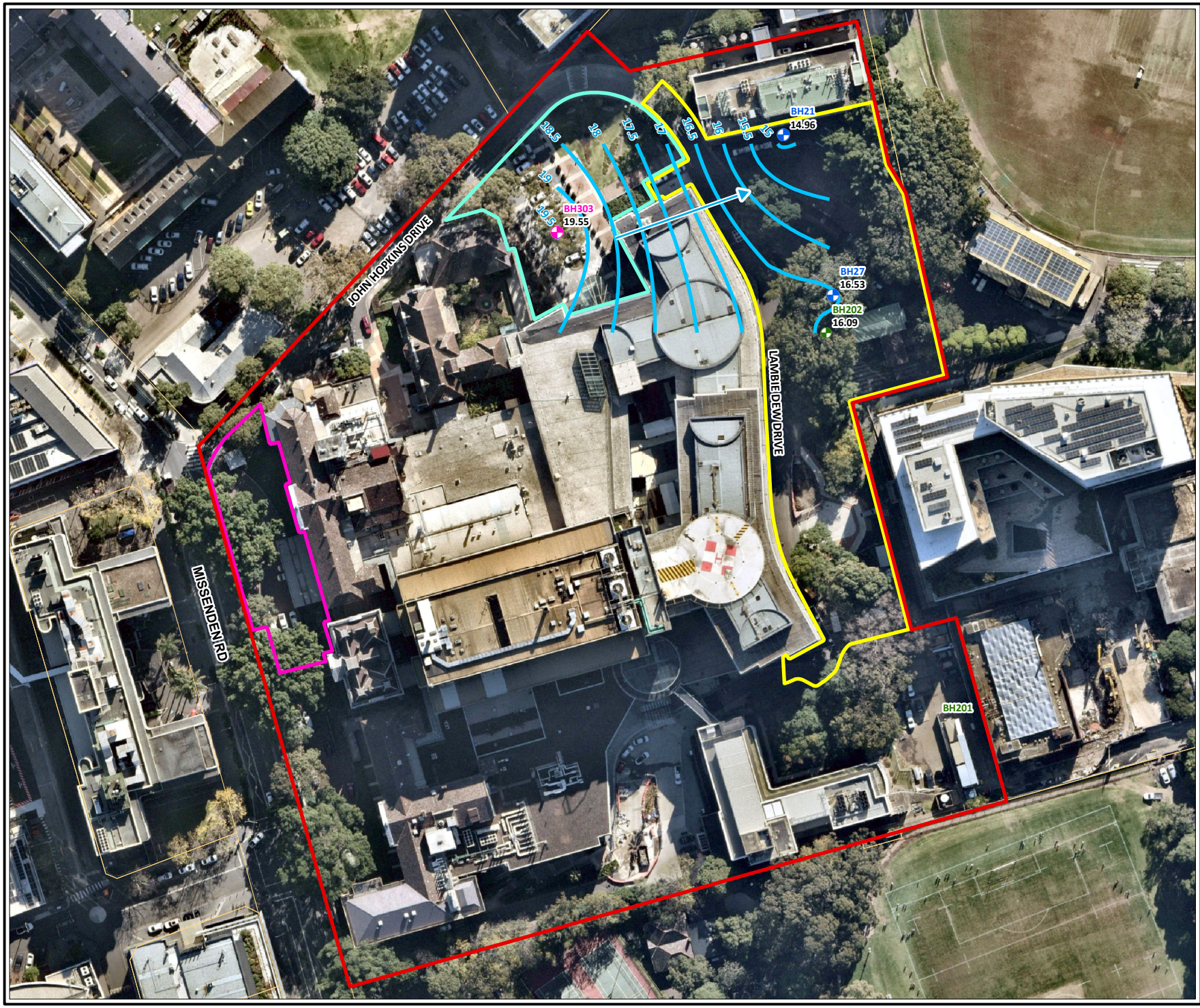
Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements.

Limited sampling and laboratory analyses were undertaken as part of the investigations undertaken, as described herein. Ground conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history and which may not be expected at the site.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

This report does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, JBS&G reserves the right to review the report in the context of the additional information.

Attachment B - Figures



Legend:

Approximate Site Boundaries
- East Campus Boundary
- East Campus
- Ambulance Bay
- Whale Garden & Northern Entry
- NSW Cadastre

Approximate Groundwater Features
- Groundwater Contour
- Inferred Groundwater Flow

Historical Sample Locations
- Groundwater Well (DP, 2020)
- Groundwater Well (Cardno, 2022b)

Sample Locations (JBS&G, 2023)
- Borehole/Monitoring Well

NOTE: 00.00 - RWL (mAHD)

JBS&G

Job No: 63888

Client: CPB Contracting

Version: R04 Rev A	Date 13/09/2023
Drawn By: EP	Checked By: AS

Scale 1:1,500

0 10 20
metres

Coord. Sys. GDA 1994 MGA Zone 56

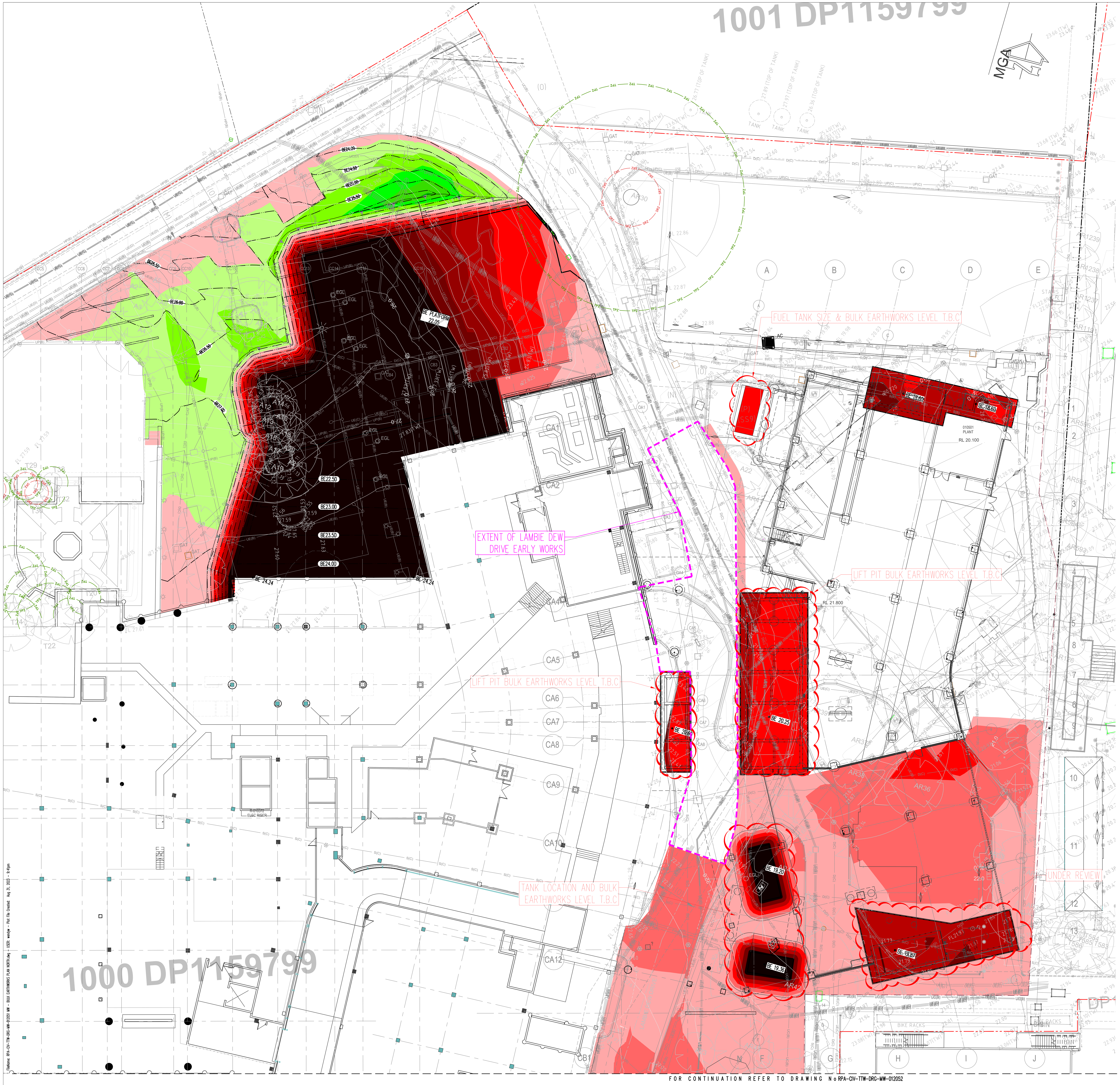
RPA Hospital
John Hopkins Drive,
Camperdown, NSW

GROUNDWATER CONTOURS

FIGURE 5

File Name: 63888_RPACamperdown_R04_RevA
Reference: Nearmap www.nearmap.com (Capture Date: 20/06/2023)

Attachment C - Civil Works Diagrams



Cut/Fill Summary

Name	2d Area	Cut	Fill	Net
cut and fill_Northern Arrival	2460sq.m	4690 Cu. M.	270 Cu. M.	4420 Cu. M.<Cut>
cut and fill_LDD	4000sq.m	3700 Cu. M.	0 Cu. M.	3700 Cu. M.<Cut>
Totals	6460sq.m	8390 Cu. M.	270 Cu. M.	8120 Cu. M.<Cut>

CUT AND FILL DEPTH

Number	Minimum Elevation	Maximum Elevation	Color
1	-5.500	-5.000	
2	-5.000	-4.500	
3	-4.500	-4.000	
4	-4.000	-3.500	
5	-3.500	-3.000	
6	-3.000	-2.500	
7	-2.500	-2.000	
8	-2.000	-1.500	
9	-1.500	-1.000	
10	-1.000	-0.500	
11	-0.500	0.000	
12	0.000	0.500	
13	0.500	1.000	
14	1.000	1.500	
15	1.500	2.000	
16	2.000	2.500	
17	2.500	3.000	
18	3.000	3.500	
19	3.500	4.000	
20	4.000	4.500	
21	4.500	5.000	
22	5.000	5.500	

BULK EARTHWORKS LEGEND

- BE22.00 — Bulk earthworks contour level
- Early works stormwater
- Retaining wall
- TPZ — Tree protection zone

BULK EARTHWORKS NOTES

1. All bulk earthworks setout from grid lines U.N.O.
2. Temporary batters at a slope of 2(H):1(V) U.N.O.
3. Excavated material may be used as structural fill provided,
   (i) it complies with the specification requirements for fill material,
   (ii) the placement moisture content complies with the Geotechnical Consultants requirements, and allows filling to be placed and proofrolled in accordance with the specification. Where necessary the Contractor must moisture condition the excavated material to meet these requirements.
4. Compact fill areas and subgrade to not less than:

Location	Standard dry density (AS 1289 5.1.1.)	Moisture (OMC)
Under building slabs on ground:	98%	±2%
Under roads and carparks:	98%	±2%
Landscaped areas:	95%	±2%

5. Before placing fill, proof roll exposed subgrade with a 10 tonne minimum roller to test subgrade and then remove soft spots (areas with more than 3mm movement under roller). Soft spots to be replaced with **select** fill U.N.O.
6. Contractor shall place safety barriers around excavations in accordance with relevant safety regulations.
7. For interpretation of bulk earthworks foot print line shown on the bulk earthworks drawings refer to the bulk earthworks construction legend.
8. Bulk earthwork drawings are not to be used for detailed excavation.
9. Refer to Geotechnical Report prepared by – Douglas Partners
   Project 99709.00 dated August 2020

NOTE:

1. Refer architectural and structural drawing for detail excavation for pad footings.
2. Depth of lift should be confirmed with supplier.
3. Bulk quantities represent difference between existing ground levels and bulk earthworks levels. No adjustment factors have been included.
4. Bulk earthworks does not included detailed excavation for lift pits, footings, services, etc.
5. Set down: 600mm for Lambie Dew Drive asphalt road,
   400mm for Northern arrival access road and car park,
   350mm for Lambie Dew Drive concrete road,
   225mm for Lambie Dew Drive concrete footpath
   150mm for landscape area.

THIS DRAWING MUST BE PRINTED IN COLOUR

SCALE 1:200 AT ORIGINAL SIZE 0 2 4 6 8 10 m

FOR CONTINUATION REFER TO DRAWING No RPA-CIV-TTW-DRG-MW-012052

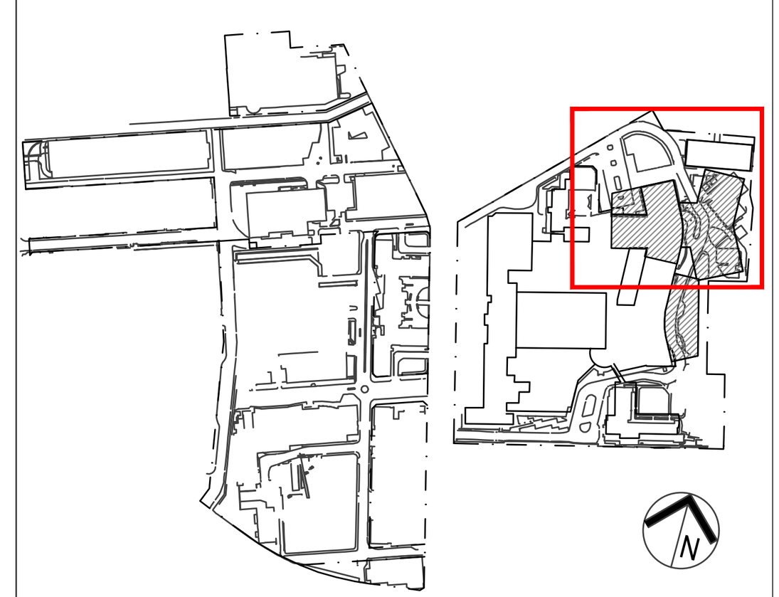
NOTES

This drawing to be read in conjunction with all relevant notes on drawing RPA-CIV-TTW-DRG-MW-012001

REVISION P1 UNDER DRAWING NUMBER RPA-CIV-TTW-DRG-MW-XX-2051

REV	DATE	AMENDMENT
G	31.08.23	50% DD
F	15.08.23	50% DD
E	09.08.23	50% DD
D	04.08.23	50% DD
C	03.07.23	50% DD
B	29.05.23	50% DD
A	15.05.23	SSDA RESPONSE TO SUBMISSON ISSUE
P2	02.05.23	SCHEMATIC DESIGN
P1	10.02.23	SCHEMATIC DESIGN

KEY PLAN



PROJECT MANAGER
TSA

CLIENT
NSW Health Sydney Local Health District
NSW Health Infrastructure
CPB CONTRACTORS

ARCHITECT
Jacobs
BATESSMART
NEESON MURCUTT + NEILLE

TTW Structural Civil Traffic Façade
612 9439 7288 | Level 6, 73 Miller Street, North Sydney, NSW 2060

PROJECT
ROYAL PRINCE ALFRED HOSPITAL REDEVELOPMENT

TTW JOB NO.
201957

DRAWING TITLE
MW - BULK EARTHWORKS PLAN NORTH

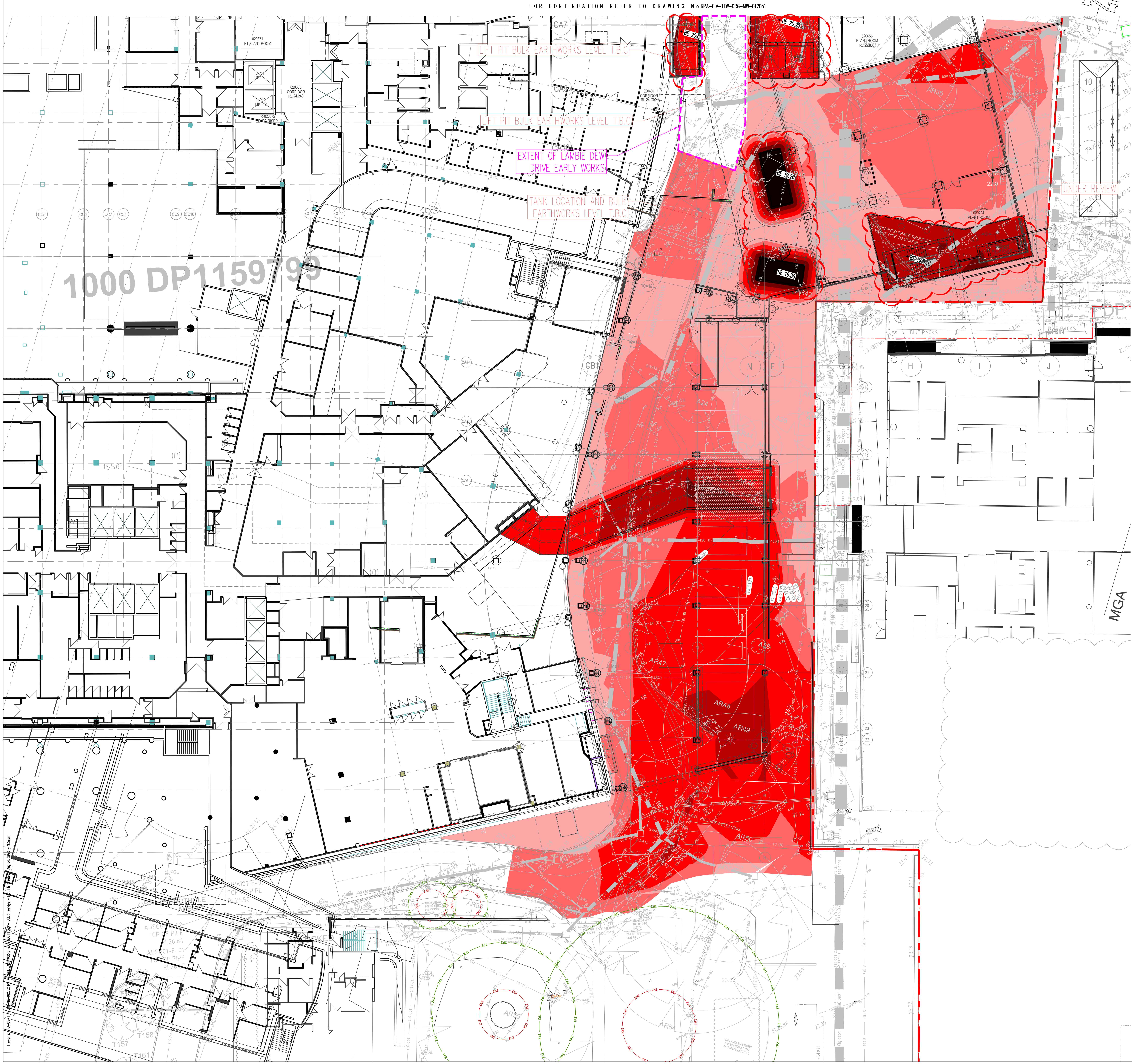
STATUS
50%DD
NOT TO BE USED FOR CONSTRUCTION

DRAWN	DESIGNED
WW	WW
CHECKED	APPROVED
TM	TM

SCALE @ B1
1:200

DRAWING NO.
RPA-CIV-TTW-DRG-MW-012051

REVISION
G



Cut/Fill Summary

Name	2d Area	Cut	Fill	Net
cut and fill_Northern Arrival	2460sq.m	4690 Cu. M.	270 Cu. M.	4420 Cu. M.<Cut>
cut and fill_LDD	4000sq.m	3700 Cu. M.	0 Cu. M.	3700 Cu. M.<Cut>
Totals	6460sq.m	8390 Cu. M.	270 Cu. M.	8120 Cu. M.<Cut>

CUT AND FILL DEPTH

Number	Minimum Elevation	Maximum Elevation	Color
1	-5.500	-5.000	
2	-5.000	-4.500	
3	-4.500	-4.000	
4	-4.000	-3.500	
5	-3.500	-3.000	
6	-3.000	-2.500	
7	-2.500	-2.000	
8	-2.000	-1.500	
9	-1.500	-1.000	
10	-1.000	-0.500	
11	-0.500	0.000	
12	0.000	0.500	
13	0.500	1.000	
14	1.000	1.500	
15	1.500	2.000	
16	2.000	2.500	
17	2.500	3.000	
18	3.000	3.500	
19	3.500	4.000	
20	4.000	4.500	
21	4.500	5.000	
22	5.000	5.500	

BULK EARTHWORKS LEGEND

BE22.00 — Bulk earthworks contour level

Early works stormwater pipe

Retaining wall

TPZ — Tree protection zone

BULK EARTHWORKS NOTES

1. All bulk earthworks setout from grid lines U.N.O.
2. Temporary batters at a slope of 2(H):1(V) U.N.O.
3. Excavated material may be used as structural fill provided,
   (i) it complies with the specification requirements for fill material,
   (ii) the placement moisture content complies with the Geotechnical Consultants requirements, and allows filling to be placed and proofrolled in accordance with the specification. Where necessary the Contractor must moisture condition the excavated material to meet these requirements.
4. Compact fill areas and subgrade to not less than:

Location	Standard dry density (AS 1289 5.1.1.)	Moisture (OMC)
Under building slabs on ground:	98%	±2%
Under roads and carparks:	98%	±2%
Landscaped areas:	95%	±2%

5. Before placing fill, proof roll exposed subgrade with a 10 tonne minimum roller to test subgrade and then remove soft spots (areas with more than 3mm movement under roller). Soft spots to be replaced with **select** fill U.N.O.
6. Contractor shall place safety barriers around excavations in accordance with relevant safety regulations.
7. For interpretation of bulk earthworks foot print line shown on the bulk earthworks drawings refer to the bulk earthworks construction legend.
8. Bulk earthwork drawings are not to be used for detailed excavation.
9. Refer to Geotechnical Report prepared by – Douglas Partners
   Project 99709.00 dated August 2020

NOTE:

1. Refer architectural and structural drawing for detail excavation for pad footings.
2. Depth of lift should be confirmed with supplier.
3. Bulk quantities represent difference between existing ground levels and bulk earthworks levels. No adjustment factors have been included.
4. Bulk earthworks does not included detailed excavation for lift pits, footings, services, etc.
5. Set down: 600mm for Lambie Dew Drive asphalt road,
   400mm for Northern arrival access road and car park,
   350mm for Lambie Dew Drive concrete road,
   225mm for Lambie Dew Drive concrete footpath
   150mm for landscape area.

THIS DRAWING MUST BE PRINTED IN COLOUR

SCALE 1:200 AT ORIGINAL SIZE 0 2 4 6 8 10 m

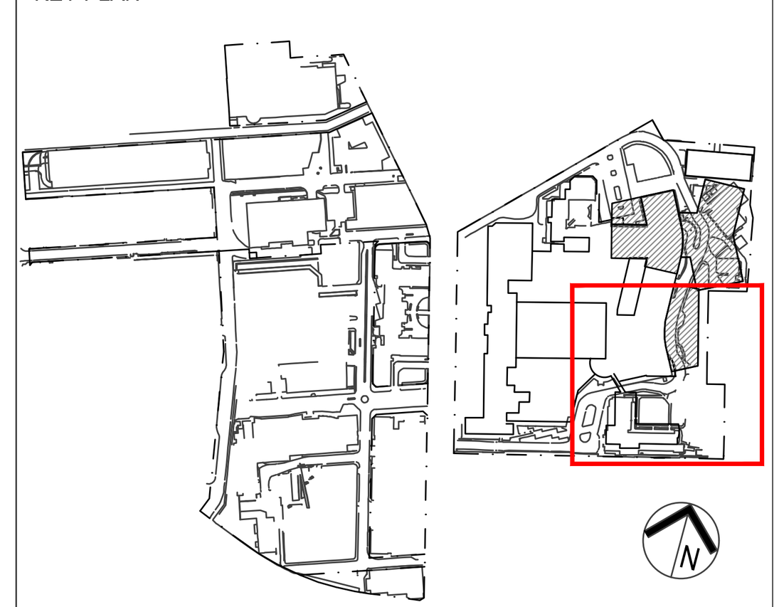
NOTES

This drawing to be read in conjunction with all relevant notes on drawing RPA-CIV-TTW-DRG-MW-012001

REVISION P1 UNDER DRAWING NUMBER RPA-CIV-TTW-DRG-MW-XX-2052

REV	DATE	AMENDMENT
G	31.08.23	50% DD
F	15.08.23	50% DD
E	09.08.23	50% DD
D	04.08.23	50% DD
C	03.07.23	50% DD
B	29.05.23	50% DD
A	15.05.23	SSDA RESPONSE TO SUBMISSON ISSUE
P2	02.05.23	SCHEMATIC DESIGN
P1	10.02.23	SCHEMATIC DESIGN

KEY PLAN



PROJECT MANAGER
TSA

CLIENT
NSW Health Sydney Local Health District
NSW Health Infrastructure
CPB CONTRACTORS

ARCHITECT
Jacobs
BATESSMART
NEESON MURCUTT + NEILLE
Level 7, 177 Pacific Highway, North Sydney, NSW, 2060
Tel: +61 2 9928 2100
Fax: +61 2 9928 2510
Web: jacobs.com

TTW Structural Civil Traffic Façade
612 9439 7288 | Level 6, 73 Miller Street, North Sydney, NSW 2060

PROJECT
ROYAL PRINCE ALFRED HOSPITAL REDEVELOPMENT

TTW JOB NO.
201957

DRAWING TITLE
MW - BULK EARTHWORKS PLAN SOUTH

STATUS
50%DD
NOT TO BE USED FOR CONSTRUCTION

DRAWN	DESIGNED
WW	WW

CHECKED	APPROVED
TM	TM

SCALE @ B1
1:200

DRAWING NO. RPA-CIV-TTW-DRG-MW-012052
REVISION G