CONSULTING EARTH SCIENTISTS

25 July 2023

Sydney Recycling Park Pty Ltd
16-23 Clifton Avenue
Kemps Creek, NSW 2178

CES Document Reference:
CES110507-WAE-IP Rev 3

For the attention of Mr Peter Toole.

RE: Sydney Recycling Park, 16 to 23 Clifton Avenue, Kemps Creek: Development Application DA22/0756 for the Construction of Sheds and Associated Infrastructure - Wastewater Assessment Report

Dear Sirs,

1) INTRODUCTION

Consulting Earth Scientists Pty Ltd (CES) has been requested by Sydney Recycling Park Pty Ltd (the Client) to undertake a Wastewater Assessment for the new development proposed at Sydney Recycling Park located at 16-23 Clifton Avenue, Kemps Creek NSW (the site).

The proposed development that is the subject of Development Application number DA22/0756, relates to the proposed construction of two sheds and associated earthworks, retaining walls, driveways, hardstand areas, drainage works and landscaping.

This Wastewater Assessment Report is provided in response to Penrith City Council correspondence referenced: DA22/0756 dated 23 May 2023 from Mr. Robert Walker (Senior Development Assessment Planner) and revised based on correspondence referenced DA22/0756 dated 06 July 2023 from Mr. Robert Walker (Senior Development Assessment Planner).

2) BACKGROUND

As described in CES report *Sydney Recycling Park, Clifton Avenue, Kemps Creek: Infiltration Investigation*, (CES document reference: CES110507-WAE-DI Rev 2 03 November 2017)), effluent generated and treated onsite is currently disposed of via surface irrigation within a designated Effluent Disposal Area. The current Effluent Disposal Area

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comprises an area of approximately 450 m^2 and is located to the northeast of the weighbridge at the location shown in Figure 1.

In consideration of the proposed new development and to address matters raised in Penrith City Council correspondence of 23 May 2023, it is proposed to construct a Wisconsin mound for use for effluent disposal in place of the current Effluent Disposal Area. The Wisconsin mound is proposed to be constructed in the north-east of the site at the location shown in Figure 1.

This Wastewater Assessment report has been prepared in general accordance with the procedural requirements outlined in the Australian Standard (AS/NZS 1547:2012) *On-Site Domestic Wastewater Management* (2012) and the requirements of Council's *On-site Sewage Management and Greywater Reuse Policy* (Penrith City Council, 2014).

3) SITE INFORMATION

3.1 SITE DESCRIPTION

The site is formally identified as Lot 230 in Deposited Plan (DP) 1134016. It is located at 16 to 22 Clifton Avenue Kemps Creek, New South Wales, and is situated within the Local Government Area (LGA) of the City of Penrith.

3.2 PROPOSED EFFLUENT DISPOSAL METHOD

Based on site constraints, including the available site area, the development landscape plan and in order to minimise the area required for effluent disposal, a Wisconsin mound has been proposed as a new effluent disposal solution in place of surface spray irrigation.

The new proposed Wisconsin mound is located in the north-east of the site at the location shown in Figure 1. The proposed mound footprint comprises an area of approximately 15.3 m long and 9.2 m wide (142 m^2) with a 10 % slope to the west, located to the north of the proposed development and west of a bund wall which extends along the eastern site boundary.

Table K1 of AS1547:2012 identifies that a maximum slope of 15% is suitable for Wisconsin mound effluent disposal methods.

As inferred from the available architectural plans (Annexure D), the proposed mound is at an elevation of approximately 63 m Australian Height Datum (AHD).

The proposed Wisconsin mound is outside of the landscape plan submitted as part of the development application.

3.3 HYDROGEOLOGY

Information on groundwater flow direction is not currently available for the site, however based on the surrounding topography and the site's upgradient positioning relative to Kemps Creek (located approximately 580m north-east of the site), it is likely that groundwater flow will follow a north-westerly / easternly course towards the creek.

A review of the Hydrogeology Map of Australia, Commonwealth of Australia (Geoscience Australia) indicates that the site is likely to be underlain by porous, extensive aquifers of low to moderate productivity.

3.4 GROUNDWATER BORE SEARCH

A search of the Bureau of Meteorology - Australian Department of Primary Industries Office of Water database (https://realtimedata.waternsw.com.au/ , accessed 07 June 2023) indicates that there are nine (9) registered groundwater wells located within 1000m of the site. Eight (8) of the registered wells are used for environmental monitoring purposes, the closest registered well is for commercial/industrial purposes, located approximately 158 m west of the western site boundary.

3.5 GROUNDWATER DEPTH

CES undertakes routine quarterly groundwater monitoring of seven (7) groundwater monitoring wells located within the boundary of the site, as part of the requirements of Environmental Protection License (EPL) No. 12901. As recorded during the most recent monitoring event conducted in May 2023, standing groundwater levels were measured to be between 9.82m Below Top of Casing (BTOC) and 19.50m BTOC at the site. Assuming a typical well top of casing height of 1 m, groundwater is understood to be between 8.2 and 18.5 m below ground level.

4) WASTEWATER MANAGEMENT SYSTEM

4.1 EFFLUENT PRODUCTION

The existing wastewater system collects and processes effluent produced onsite from the use of toilets and hand basins in the absence of a connection to a sewer main. CES has been informed by the Client that the landfill facility normally operates with a staff of ten (10) persons.

4.2 EFFLUENT STORAGE, TREATMENT AND DISPOSAL

Effluent generated onsite is collected by a BioSeptic Performa 2000 (or similar) Aerated Wastewater Treatment System (AWTS); a two-tank concrete wastewater system comprising a septic collection tank and accompanying treatment tank. Based on a review of available service records and information listed on the BioSeptic manufacturers website, the septic tank system has the capacity to hold approximately 3750 litres of liquid and can treat up to 1500 litres per day. As advised by the Client, the system is serviced on a quarterly basis and no issues with the system have been reported.

Effluent is treated by means of settling, chlorination, and aeration before being disposed of at the designated effluent disposal area via four surface irrigation sprayers.

As such the effluent for disposal is considered to represent system disinfected, secondary treated effluent.

5) GROUND INVESTIGATION

5.1 FIELDWORK

The ground investigation for the proposed location was conducted on 30 May 2023. The fieldwork comprised infiltration testing in three (3) hand augured boreholes and the undertaking of constant head permeability tests in each borehole. The infiltration rate of the soil was evaluated over zones ranging from 0.3 m to 0.4 m depth.

The boreholes were drilled by an experienced Associate Environmental Engineer who located the boreholes, logged, and assessed the soil conditions encountered and conducted the permeability testing.

5.2 SUBSURFACE CONDITIONS

The subsurface conditions encountered in the boreholes comprised:

- Ground level to termination depth of the boreholes 0.3m to 0.4m: FILL consisting of Sandy Clay: medium plasticity, brown, with trace amounts of subrounded to subangular gravel. The fill was assessed to be in a moist condition at the time of the fieldwork.

5.3 PERMEABILITY TESTING

Constant head permeability testing was conducted in all three boreholes (BH1 to BH3). A permeameter assembled in accordance with the requirements of Section G3 of the AS/NZS 1547:2012, was used to undertake the testing at each of the borehole locations. Following the completion of testing the boreholes were backfilled with borehole arisings.

The soil permeability was calculated from each test result using the equation provided in Section G6 of the AS/NZS 1547:2012.

5.3.1 Permeability Test Results

The results of the permeability test are summarised as follows; the test results are enclosed in Annexure B to this report:

- BH1: 2.83×10^{-6} metres/second (m/s)
- BH2: 3.57×10^{-6} m/s.
- BH3: Result discounted due to failure to achieve adequate test seal.

In order to provide a conservative estimate, a factor of safety of 2 has been applied to the meanvalue of the accepted soil permeability test results, a saturated permeability of 1.6×10^{-6} m/s has been adopted.

5.4 SOIL ASSESSMENT

In consideration of the soil conditions observed and logged, assessment of soil structure and texture and in consideration of the soil permeability test results, the proposed mound is assessed to be underlain by soil of Category 4 (Clay loams) as defined in AS/NZS 1547:2012.

6) WISCONSIN MOUND DESIGN

The following guideline documents and references have been used to evaluate the requirements for the proposed Wisconsin mound:

- Australian Standard AS1547-2012, *On-site Domestic Wastewater Management* (AS1547-2012)
- Penrith City Council's *On-site Sewage Management and Greywater Reuse Policy* (Penrith City Council, 2014)
- *Environment & Health Protection Guidelines: On-site Sewage Management for Single Households* (Department of Local Government 1998)

- *Designing and Installing On-Site Wastewater Systems A WaterNSW Current Recommended Practice* (Catchment Protection, WaterNSW 2019).
- *Wisconsin Mound Soil Adsorption System Sitting Design and Construction Manual* (Converse and Tyler, 2000)

Based on Table B1 of Penrith City Council (2014), the on-site effluent source and distribution type has been categorised as 'Rural factories' and 'reticulated community', respectively. Under this classification, a typical wastewater flow allowance of 50 Litres/person/day is provided. Based on the assumption that the 10 staff members present on-site use approximately 50 litres of water per person per day, and assuming that 100% of this water becomes irrigated effluent, a value of 500 L/day has been adopted as the design flow rate.

Based on Appendix N of AS1547-2012 the following design parameters were adopted:

- Maximum Aggregate Loading Rate – 40 mm/day [Section N2.2]
- Maximum Linear Loading Rate – 50 L/m/day [Section N2.2]
- Basal Area Loading Rate – 8 mm/day [Table N1]

6.1 MOUND DESIGN REQUIREMENTS

The calculated Wisconsin mound design dimensions are presented on Figure 2 and Table 1.

The calculations are presented in Annexure C.

Design Dimension	Source
A = 1.25 m	Calculated in Annexure C.
B = 10 m	Calculated in Annexure C.
I = 2.6 m	Calculated in Annexure C.
J = 5.4 m	Calculated in Annexure C.
D = 600 mm	AS1547-2012 Figure N1
F = 225 mm	AS1547-2012 Figure N1
G = 300 mm	AS1547-2012 Figure N1
H = 450 mm	AS1547-2012 Figure N1
E = 725 mm	Calculated in Annexure C.
K = 2.7 m	Calculated in Annexure C.
Overall Mound Width = 9.2 m	Calculated in Annexure C.
Overall Mound Length = 15.3 m	Calculated in Annexure C.

The design dimensions presented in Table 1 require a total mound footprint of 142 m^2, as presented on Figure 1.

As required by AS1547-2012 and EH002 Section 2.1.3 a reserve area of 100% of the designed disposal area is required to be reserved for the resting of the disposal area, or for the duplication or upgrade of the disposal area if it is required at some future time. The reserve area shall be protected from any development that would prevent it being used in the future.

Based on the requirements a reserved area of 142 m^2 is required. The proposed reserved area is also presented on Figure 1.

6.2 WISCONSIN MOUND CONSTRUCTION

The Wisconsin mound should be constructed in accordance with Appendix N of AS1547-2012 based on the design dimensions on Figure 2 and presented in Table 2.

Once constructed the mound should be finished with a minimum of 150 mm of topsoil and planted with grasses adapted to the local area. Moisture tolerant species should be planted near the base of the mound, and drought tolerant species on top of the mound.

6.3 BUFFER DISTANCES

The location of the new proposed Wisconsin mound for effluent disposal is show in Figure 1. The proposed mound and reserve area is located:

- Greater than 1km from the nearest domestic groundwater well.
- The closest permanent surface water body, Kemps Creek is located approximately 580 m north-east of the site.
- Greater than 40 m from the nearest stormwater drain.
- Greater than 1 m from the dripline of native trees and shrubs
- Approximately 65 m from the closest dwelling.
- Approximately 24 m north-east of the proposed new shed (Shed 3).
- Greater than 24 m to the west of the eastern site boundary fence.
- Approximately 75 m south of the northern site boundary fence
- More than 110 m and 180 m north of the landfill staff car park and site offices, respectively.
- The proposed mound is not in an area of site normally accessed by site staff.

As such the proposed mound location complies with the buffer distances stated in Table 3 of Penrith City Council (2014) and is not in a location frequented by site staff.

7) SUMMARY & RECOMMENDATIONS

This Wastewater Assessment included undertaking a desktop review of the wastewater management system used on-site and completing a ground investigation at a proposed new effluent disposal location evaluate the infiltration conditions and determine suitable design considerations for the Wisconsin mound.

Based on the results of the assessment, the following is summarised:

- Assumed irrigation effluent volume is 500 L/day.
- A Wisconsin mound with a total footprint of 142 m^2 is required.
- The Wisconsin mound should be constructed in accordance with Appendix N of AS1547-2012 based on the design dimensions on Figure 2 and presented in Table 2.
- The proposed mound is not within any buffer constraints and is not in an area of site normally accessed by site staff.
- Once constructed the mound should be finished with a minimum of 150 mm of topsoil and planted with grasses.

Notwithstanding the above, it is recommended that signage and fencing be established in accordance with AS1547-2012 to prevent inadvertent access to the effluent disposal mound.

8) LIMITATIONS OF THIS REPORT

This report has been prepared for use by the client who commissioned the works in accordance with the project brief and based on information provided by the client. The advice contained in this report relates only to the current project and all results, conclusions and recommendations should be reviewed by a competent person with experience in geotechnical and environmental investigations before being used for any other purpose.

Consulting Earth Scientists Pty Ltd (CES) accepts no liability for use or interpretation by any person or body other than the client. This report must not be reproduced except in full and must not be amended in any way without prior approval by the client and CES.

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

For and on behalf of Consulting Earth Scientists Pty Ltd

Duncan Lowe
Principal

Tristan Goodbody
Associate Environmental Engineer

Enclosed:

- Annexure A: Figure 1: Proposed Irrigation Area
- Annexure B: Constant Head Permeability Test Results
- Annexure C: Wisconsin Mound Design Calculations
- Annexure D: Architectural Plans of Proposed Development
- Annexure E: Permeability Test Field Data Sheets

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Annexure A
Figures 1 and 2

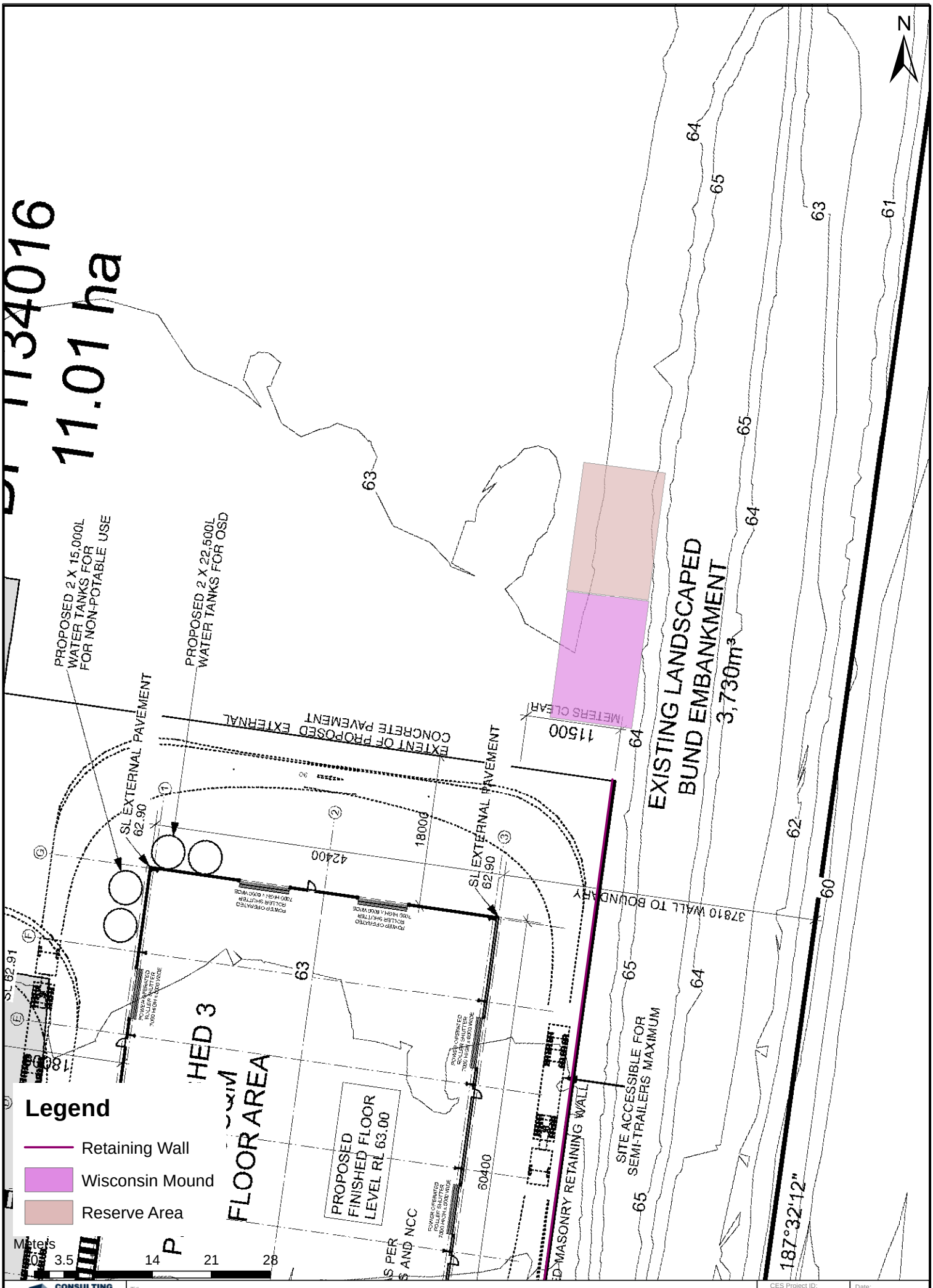

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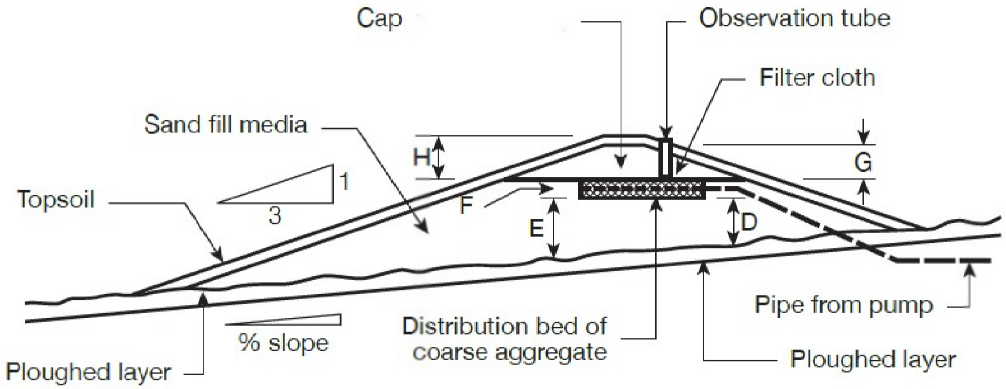
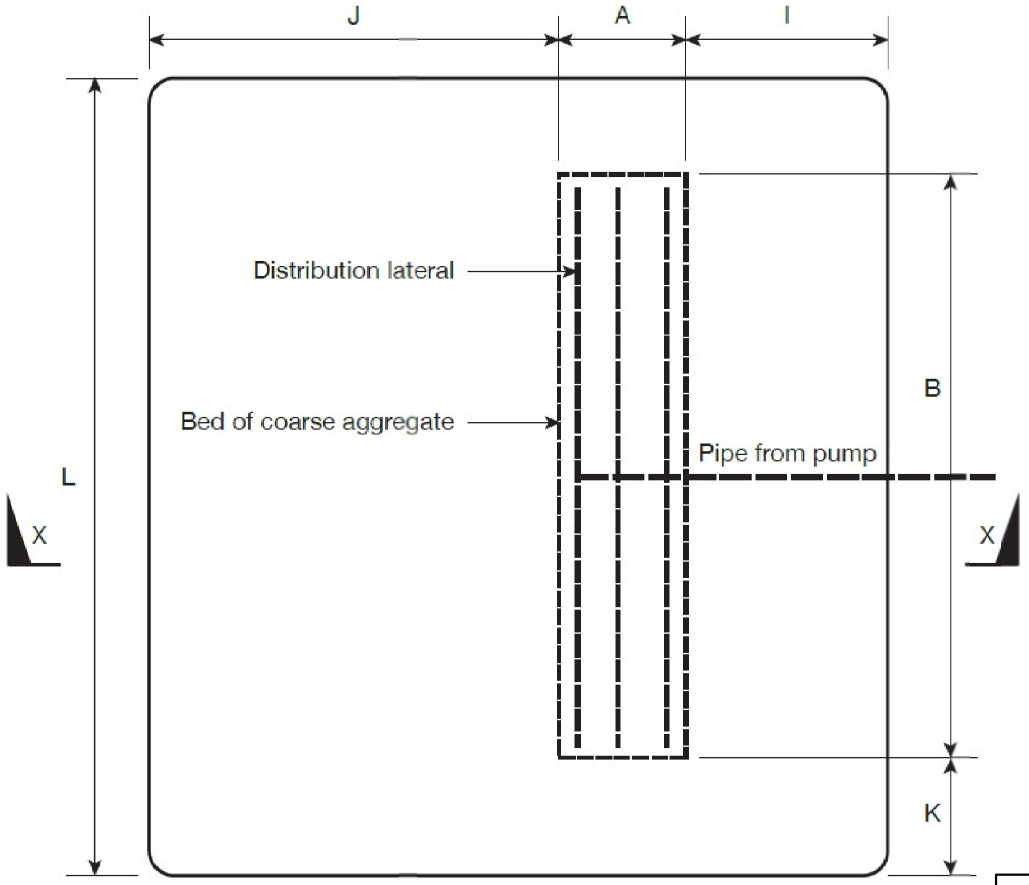
Figure 1: Proposed Wisconsin Mound Location

CES Project ID:	Date:
CES220320-WAE	25/07/2023
Prepared By: T.Goodbody	Checked By: D. Lowe



CROSS SECTION VIEW OF MOUND ON SLOPING LAND



PLAN VIEW OF DISTRIBUTION BED

Source: Department of Lands

Where:

A = 1.25 m
B = 10 m
I = 2.6 m
J = 5.4 m
K = 2.7 m
L = 15.3 m

D = 600 mm
F = 225 mm
G = 300 mm
H = 450 mm
E = 725 mm

Site Slope = 10H:1V
Design Mound Slope = 3H:1V

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Figure 2. Wisconsin Mound Design

CES Project ID:	Date:
CES110507-WAE	25/07/2023
Prepared By: T. Goodbody	Checked By: D. Lowe

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Annexure B
Constant Head Permeability Test Results

BH1 - Soil Permeability Calculations

Q Value

R	100	cm	Radius of Permeameter
Δh	0.4	cm	Steadystate drop in water height in permeameter
t	25	min	Time of steady state drops
Q	**5.026548246**	**cm3/min**	Volumetric flow rate to borehole

$$Q = \frac{\pi R^2 \Delta h}{t}$$

Ksat Value

a	30	cm	Borehole drilled depth	
b	10	cm	Depth of outlet	
r	4.5	cm	Radius of borehole	
H	20	cm	Depth of water in test hole	a-b
Q	5.026548246	cm3/min		
Ksat	**0.016954729**	**cm/min**	Saturated hydraulic conductivity of the soil	
Ksat	**2.82579E-06**	**m/s**		

$$K_{sat} = \frac{4.4Q\left[0.5\sinh^{-1}\left(\frac{H}{2r}\right) - \sqrt{\left\{\left(\frac{r}{H}\right)^2 + 0.25\right\}} + \frac{r}{H}\right]}{2\pi H^2} \quad \text{..... Eq. G1}$$

where:

K_{sat} = saturated hydraulic conductivity of the soil in cm/min

4.4 = correction factor for a systematic under-estimate of soil permeability in the mathematical derivation of the equation

Q = rate of loss of water from the reservoir in cm^3/min

H = depth of water in the test hole in cm

r = radius of the test hole in cm

BH2 - Soil Permeability Calculations

Q Value

R	100	cm	Radius of Permeameter
Δh	0.5	cm	Steadystate drop in water height in permeameter
t	10	min	Time of steady state drops
Q	**15.70796327**	**cm3/min**	Volumetric flow rate to borehole

$$Q = \frac{\pi R^2 \Delta h}{t}$$

Ksat Value

a	43	cm	Borehole drilled depth	
b	10	cm	Depth of outlet	
r	4.5	cm	Radius of borehole	
H	33	cm	Depth of water in test hole	a-b
Q	**15.70796327**	**cm3/min**		

Ksat	**0.021398154**	**cm/min**	Saturated hydraulic conductivity of the soil
Ksat	**3.56636E-06**	**m/s**	

$$K_{sat} = \frac{4.4Q\left[0.5\sinh^{-1}\left(\frac{H}{2r}\right) - \sqrt{\left[\left(\frac{r}{H}\right)^2 + 0.25\right]} + \frac{r}{H}\right]}{2\pi H^2} \quad \text{..... Eq. G1}$$

where:

K_{sat} = saturated hydraulic conductivity of the soil in cm/min

4.4 = correction factor for a systematic under-estimate of soil permeability in the mathematical derivation of the equation

Q = rate of loss of water from the reservoir in cm^3/min

H = depth of water in the test hole in cm

r = radius of the test hole in cm

BH3 - Soil Permeability Calculations

Q Value

R	100	cm	Radius of Permeameter
Δh	0.1	cm	Steadystate drop in water height in permeameter*
t	10	min	time of steady state drops
Q	**3.141592654**	**cm3/min**	Volumetric flow rate to borehole

$$Q = \frac{\pi R^2 \Delta h}{t}$$

Ksat

a	40	cm	Borehole drilled depth	
b	10	cm	depth of outlet	
r	4.5	cm	Radius of borehole	
H	30	cm	depth of water in test hole	a-b
Q	3.141592654	cm3/min		
Ksat	**0.005086032**	**cm/min**	Saturated hydraulic conductivity of the soil	
Ksat	**8.47672E-07**	**m/s**		

$$K_{sat} = \frac{4.4Q\left[0.5\sinh^{-1}\left(\frac{H}{2r}\right) - \sqrt{\left[\left(\frac{r}{H}\right)^2 + 0.25\right]} + \frac{r}{H}\right]}{2\pi H^2} \quad \text{..... Eq. G1}$$

where:

K_{sat}	=	saturated hydraulic conductivity of the soil in cm/min
4.4	=	correction factor for a systematic under-estimate of soil permeability in the mathematical derivation of the equation
Q	=	rate of loss of water from the reservoir in cm^3/min
H	=	depth of water in the test hole in cm
r	=	radius of the test hole in cm

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Annexure C
Wisconsin Mound Design

Wisconsin Mound Design Calculations

Design Flow Rate	500	L/day		Site Infromation
Maximum Linear Loading Rate	50	L/m/day		AS1547-2012
Agregate Loading Rate	40	mm/day		AS1547-2012
Basal Area Loading Rate	8	mm/day		AS1547-2012
Upslope Slope Correction Factor	0.77			(Converse and Tyler 2000)
Downslope Slope Correction Factor	1.44			(Converse and Tyler 2000)
Slope Grade	0.1			Site Information

Adsorpton Area Width	A	= (Maximum Linear Loading Rate/Agregate Loading Rate)			
	A	**1.25**	**m**		
Adsorption Area Length	B	=(Design Flow Rate/Maximum Linear Loading Rate)			
	B	**10**	**m**		
Basal Width	= A + J			for sloping sites (>3% slope)	
Basal Width	=A + J	= (Maximum Linear Loading Rate/Basal Loading Rate)			
		6.25	m		
	J	(Basal Width - A)			
	J	5	m	Basal Width J Calcualtion	
	D	600	mm	Figure N1	
	F	225	mm	Figure N1	
	G	300	mm	Figure N1	
	H	450	mm	Figure N1	
	E	= D + A*Slope Grade			
		725	mm		
Upslope Width	I	=3*(D + F + G)* Upslope Correction Factor			
	I	**2598.75**	**mm**	**2.6 m**	
Slope Length	K	=3*((D+E)/2 + F + H)			
	K	**2662.5**	**mm**	**2.7 m**	
Check Basal Width	J	=3(E + F +G)*Downslope Correction Factor			
	J	**5400**	**mm**	**5.4 m**	Slope Length J Calculation (adoped J value)
Overall Length	L	= B + 2K			
	L	**15.3**	**m**		
Overall Width	W	=I + A + J			
	W	**9.2**	**m**		
Overall Area		=W*L			
		141.7	**m^2**		

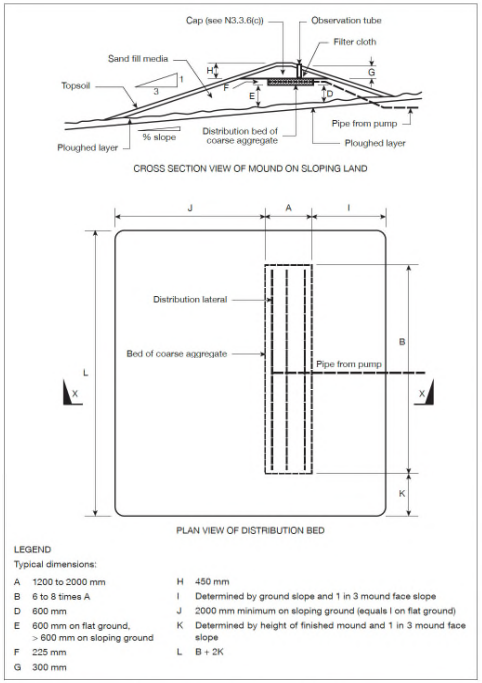

FIGURE N1 WISCONSIN MOUND SYSTEM

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Annexure D
Architectural Plans of Proposed Development

NORTH

RESTRICTION ON THE USE OF LAND 10 WIDE

BDY 217.854m 187°33'39"

7°33'39" 105.463

10.0

277°33'39"

LOT 16
SEC A
DP
2566

LOT 1
DP
1O9O754

LOT 14
SEC A
DP
2566

LOT 13
SEC A
DP
2566

LOT 230
DP 1134016
11.01 ha

SEDIMENT DAM

EXISTING SEDIMENT DAM

SEDIMENT DAM

BUND WALL
6.203m³

EXISTING CONCRETE DRIVEWAY

EXISTING HALAVAY

EXISTING LANDSCAPED BUND EMBANKMENT

EXISTING WEIGHBRIDGE

EXISTING WEIGHBRIDGE

WHEEL WASH

EXISTING DRAIN

EXISTING OFFICE

EXISTING OFFICE

EXISTING OFFICE

EXISTING COVERED AREA

EXISTING COVERED AREA

CONCRETE

GATE

SETOUT POINT IN LINE WITH EXISTING

RL 61.40

RL 61.40

SITE ACCESSIBLE FOR SEMI-TRAILERS MAXIMUM

PROPOSED LINEMARKING

RAMP DOWN

SL 59.97

SL 59.75

SL 61.50

SL 62.91

PROPOSED 2 X 15,000L WATER TANKS FOR NON-POTABLE USE

PROPOSED 2 X 22,500L WATER TANKS FOR OSD

EXISTING SHED TO BE DEMOLISHED

EXISTING SHED TO BE DEMOLISHED

EXISTING HARDSTAND AREA

EXISTING CARPARK

WALL TO BDY 47.85

WALL TO BDY 47.87

WALL TO BDY 149.76

LOAD BEARING TRAFFICABLE HARDSTAND SURFACE

100880 EXISTING SHED

SL 61.34

SL 63.19

EXISTING SHED (SHED 1)

RIDGE LINE OVER

UNOBSTRUCTED OPEN SPACE

EXTENT OF EXISTING PAVEMENT

EXTENT OF EXISTING PAVEMENT

EXTENT OF EXISTING PAVEMENT

PROPOSED SHED 2
2100 SQM
FLOOR AREA

PROPOSED SHED 3
2520 SQM
FLOOR AREA

PROPOSED FINISHED FLOOR LEVEL RL 61.50

PROPOSED FINISHED FLOOR LEVEL RL 63.00

DRAINAGE CHANNEL BALUSTRADE AS REQUIRED

EXTENT OF PROPOSED EXTERNAL CONCRETE PAVEMENT

EXTENT OF PROPOSED EXTERNAL CONCRETE PAVEMENT

HANDRAILS TO STAIRS AS PER AUSTRALIAN STANDARDS AND NCC

SL EXTERNAL PAVEMENT 62.90

SL EXTERNAL PAVEMENT 62.90

PROPOSED 2 X 15,000L WATER TANKS FOR FOR NON-POTABLE USE

PROPOSED 2 X 22,500L WATER TANKS FOR OSD

PROPOSED MASONRY RETAINING WALL

PROPOSED MASONRY RETAINING WALL

PROPOSED MASONRY RETAINING WALL

LANDSCAPED BUND EMBANKMENT

SITE ACCESSIBLE FOR SEMI-TRAILERS MAXIMUM

EXISTING LANDSCAPED BUND EMBANKMENT
3,730m³

37810 WALL TO BOUNDARY

1500 METERS CLEAR

60400

60400

12000

42400

18000

47850

51334

LOT 230
DP 1134016
11.01 ha

BDY 197.378m

98°01'22"

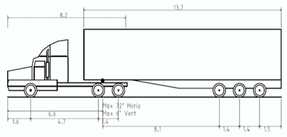
561.903m TOTAL BDY 187°32'12"

EDGE OF BIT

BIT

CLIFTON AVENUE

TEL



AV - Articulated Vehicle	
Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.301m
Min Body Ground Clearance	0.418m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

BUSHFIRE ATTACK LEVEL NOTES

A BAL ASSESSMENT WAS PREPARED FOR BUILDING SHED 1, AND CONCLUDED THE FOLLOWING;

The closest section of bushfire hazardous vegetation is noted to be offsite to the northwest of the proposed building location. This vegetation is considered to be a Woodland formation with a separation distance of not less than 157 metres.

On that basis there is no appreciable level of exposure to the mechanisms of bushfire attack and i would not recommend that any bushfire resistant construction techniques are required.

The document AS 3959 Construction of buildings in bushfire prone areas is the document specified by the National Construction Code to be referenced when bushfire protection is required. In this document it clearly states within the assessment methodologies , that buildings located at distances greater than 100 metres from a Woodland or Forest vegetation or greater than 50 metres from a Grassland hazard do not require consideration for bushfire exposure or require bushfire resistant construction techniques.

PROPOSED SHEDS 2 AND 3 ARE OF THE SAME CONSTRUCTION DESIGN AS BUILDING SHED 1 AND ARE FARTHER FROM THE FIRE SOURCE THAN THE BUILDING SHED 1. PROPOSED SHEDS 2 AND 3 SHOULD BE OF THE SAME CONSTRUCTION REQUIREMENTS AS BUILDING SHED 1.

DATE	BY	REVISION	ISSUE
23/8/21	BF	SHED No.2 EAVE EXTENSIONS ADDED	A
11/4/22	BF	GENERAL AMENDMENTS	B
31/5/22	BF	PROPOSED SHED SPLIT INTO 2 SHEDS	C
6/6/22	BF	TRUCK TURNING PATHS ADDED	D
20/7/22	CD	EXISTING SHED SIZE AND LOCATION CORRECTED	E
11/8/22	CD	AMENDMENTS IN ACCORDANCE WITH CIVIL DESIGN	F
15/2/23	CD	AMENDED FOR DA	G

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Excellence in Industrial Developments

SITE DESCRIPTION:
16 - 23 CLIFTON AVENUE
KEMPS CREEK
LOT 230 DP 1134016

LOCAL GOVERNMENT AREA:
PENRITH CITY COUNCIL

DRAWN
BAILEY FRANKS
6/4/21

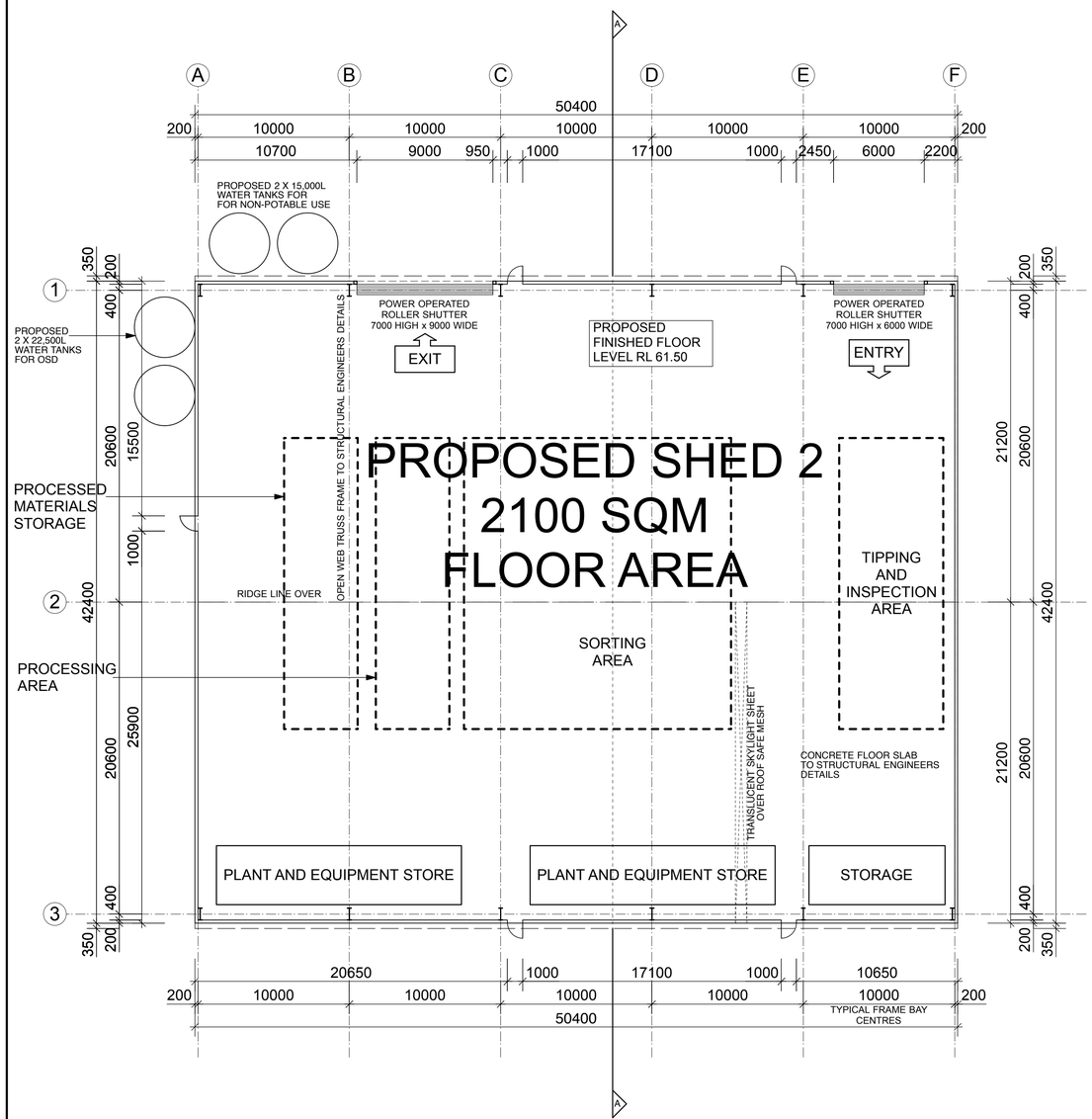
CHECKED

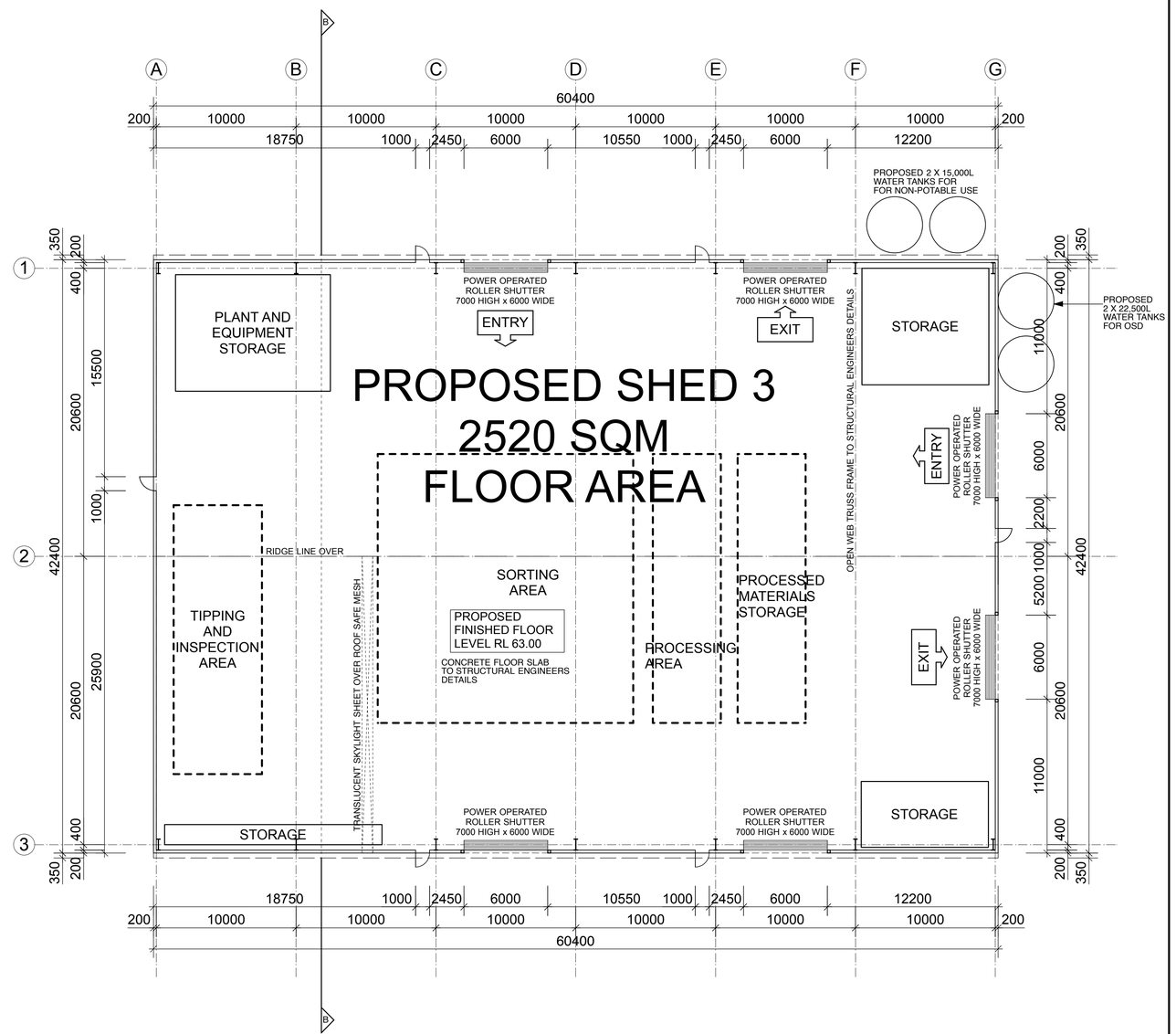
PROPOSED SITE PLAN

CLIENT :
SYDNEY RECYCLING PARK

SCALE
1 : 500
@ A0

DRAWING No.
2064 / 001G





DATE	BY	REVISION	ISSUE
23/8/21	BF	SHED No.2 EAVE EXTENSIONS ADDED	A
11/4/22	BF	RELOCATE DOOR LOCATIONS ON GRID J	B
31/5/22	BF	PROPOSED SHED SPLIT INTO 2 SHEDS	C
11/8/22	CD	AMENDMENTS IN ACCORDANCE WITH CIVIL DESIGN	D
13/2/23	CD	INTERNAL LAYOUT DETAILS	E
15/2/23	CD	AMENDMENTS IN ACCORDANCE WITH CIVIL DESIGN	F

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KEMPS CREEK
LOT 230 DP 1134016

LOCAL GOVERNMENT AREA:
PENRITH CITY COUNCIL

DRAWN: BAILEY FRANKS 29/7/21

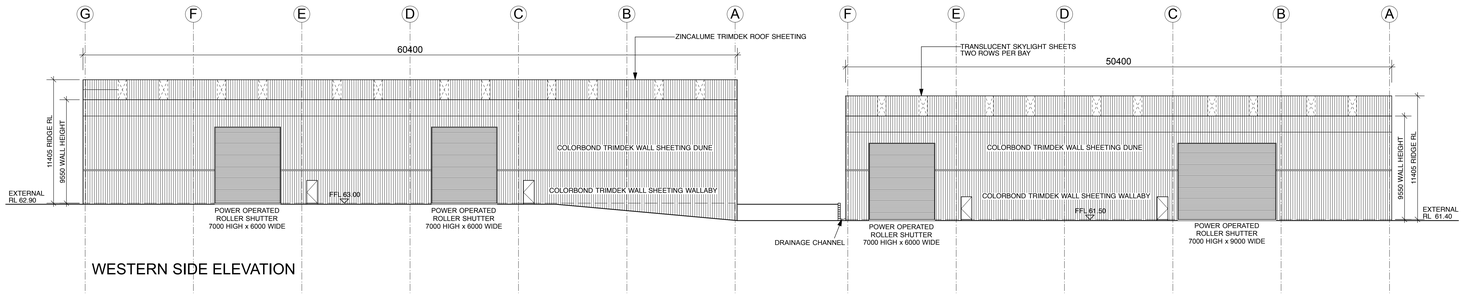
CHECKED:

PROPOSED FLOOR PLANS

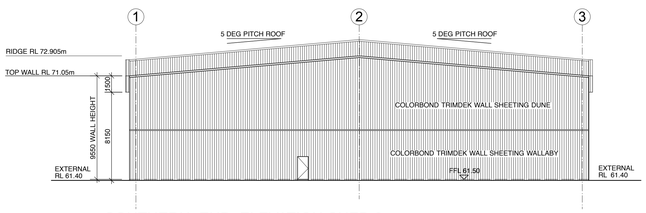
CLIENT :
SYDNEY RECYCLING PARK

SCALE: 1 : 200 @ A1

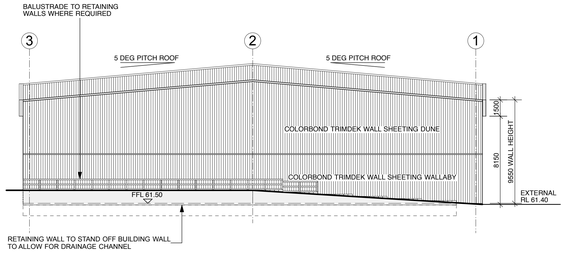
DRAWING No.: 2064 / 002F



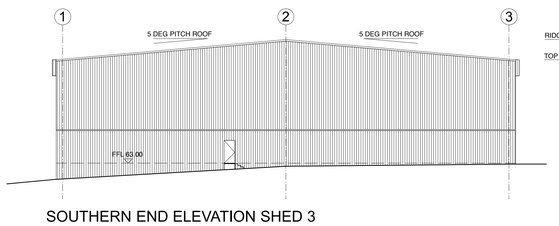
WESTERN SIDE ELEVATION



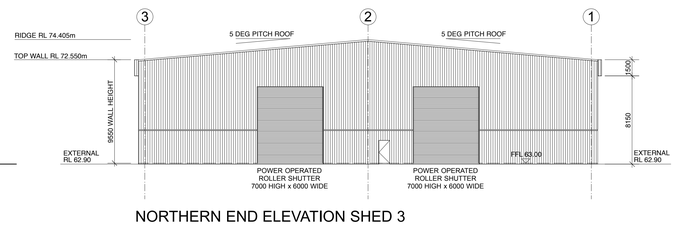
SOUTHERN END ELEVATION SHED 2



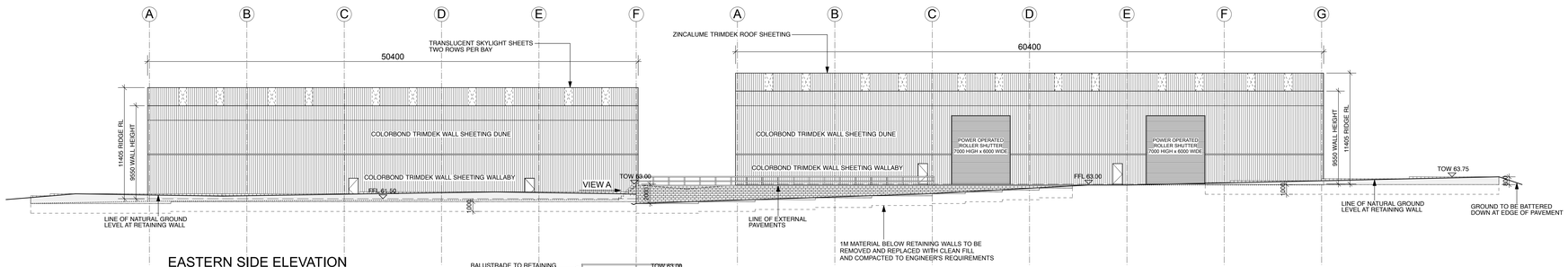
NORTHERN END ELEVATION SHED 2



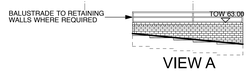
SOUTHERN END ELEVATION SHED 3



NORTHERN END ELEVATION SHED 3



EASTERN SIDE ELEVATION



VIEW A

SCHEDULE OF FINISHES

BULDING ELEMENT	MATERIAL	COLOUR
ROOF CLADDING	COLORBOND TRIMDEK STEEL	SURFMIST
LOWER WALL CLADDING	COLORBOND TRIMDEK STEEL	WALLABY
HIGHER WALL CLADDING	COLORBOND TRIMDEK STEEL	DUNE
GUTTERS & TRIMS	POWDERCOAT STEEL	WOODLAND GREY
ROLLER SHUTTERS	POWDERCOAT STEEL	DUNE MATCH
EGRESS DOORS	POWDERCOAT STEEL	DUNE MATCH

DATE	BY	REVISION	ISSUE
23/8/21	BF	SHED No.2 EAVE EXTENSIONS ADDED	A
11/4/22	BF	ROOF SPLIT AND SCHEDULE OF FINISHES ADDED	B
1/6/22	BF	PROPOSED SHED SPLIT INTO 2 SHEDS	C
15/2/23	CD	AMENDED FOR DA	D

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LOT 230 DP 1134016

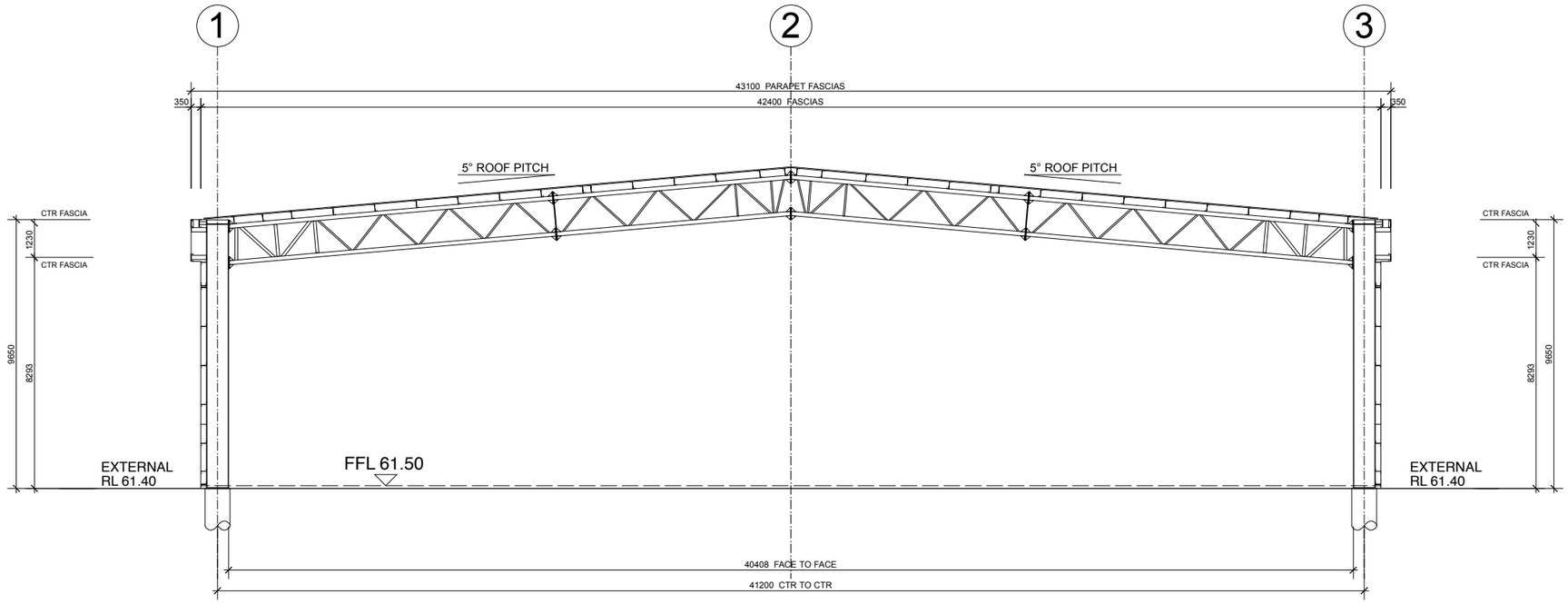
LOCAL GOVERNMENT AREA:
PENRITH CITY COUNCIL

DRAWN: BAILEY FRANKS 10/8/21
CHECKED:

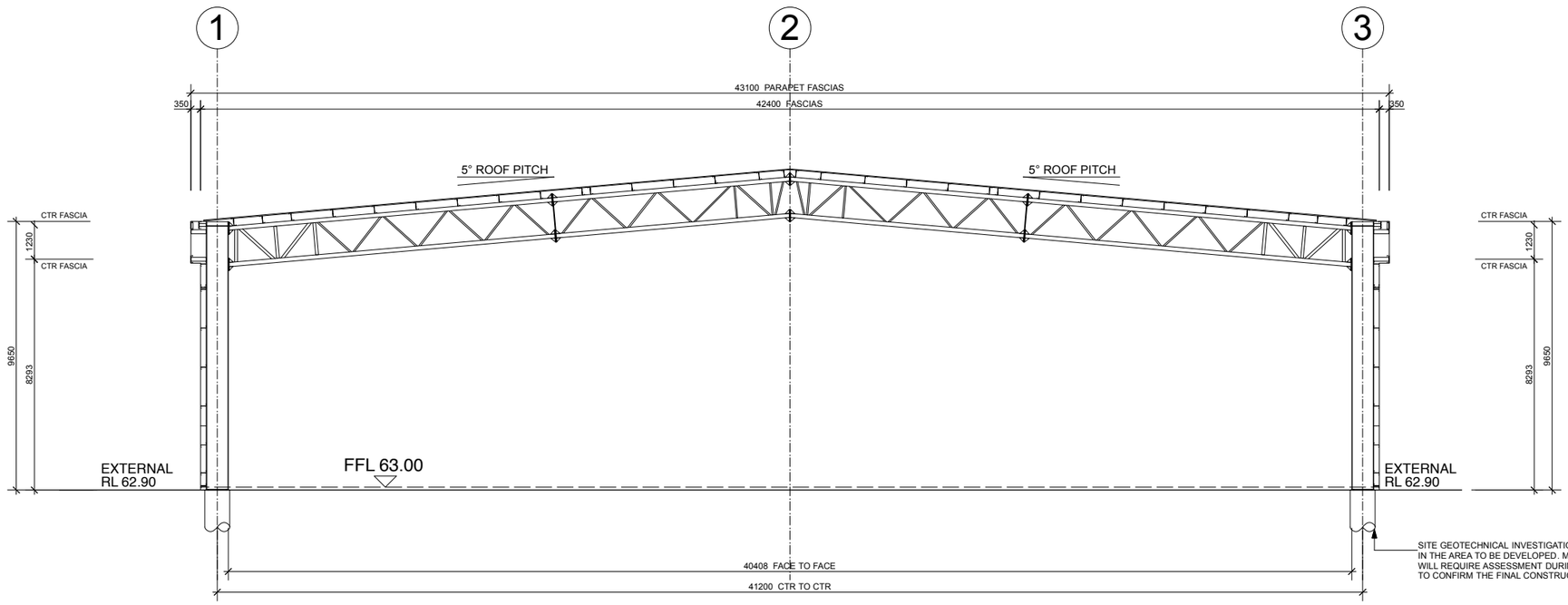
PROPOSED ELEVATIONS

CLIENT :
SYDNEY RECYCLING PARK

SCALE: 1 : 200 @ A0
DRAWING No.: 2064 / 003D



SECTION A - A (LOOKING NORTH)



SITE GEOTECHNICAL INVESTIGATION FOUND AN INFORMAL CAPPING LAYER OF VARYING DEPTHS IN THE AREA TO BE DEVELOPED. MATERIAL BELOW BUILDING AND RETAINING WALL FOUNDATIONS WILL REQUIRE ASSESSMENT DURING EXCAVATION BY A QUALIFIED GEOTECHNICAL SPECIALIST TO CONFIRM THE FINAL CONSTRUCTION ENGINEERING REQUIREMENTS.

SECTION B - B (LOOKING NORTH)

DATE	BY	REVISION	ISSUE
1/6/22	BF	PROPOSED SHED SPLIT INTO 2 SHEDS	A
15/2/23	CD	AMENDED FOR DA	B

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LOT 230 DP 1134016

LOCAL GOVERNMENT AREA:
PENRITH CITY COUNCIL

DRAWN
BAILEY FRANKS
23/8/21

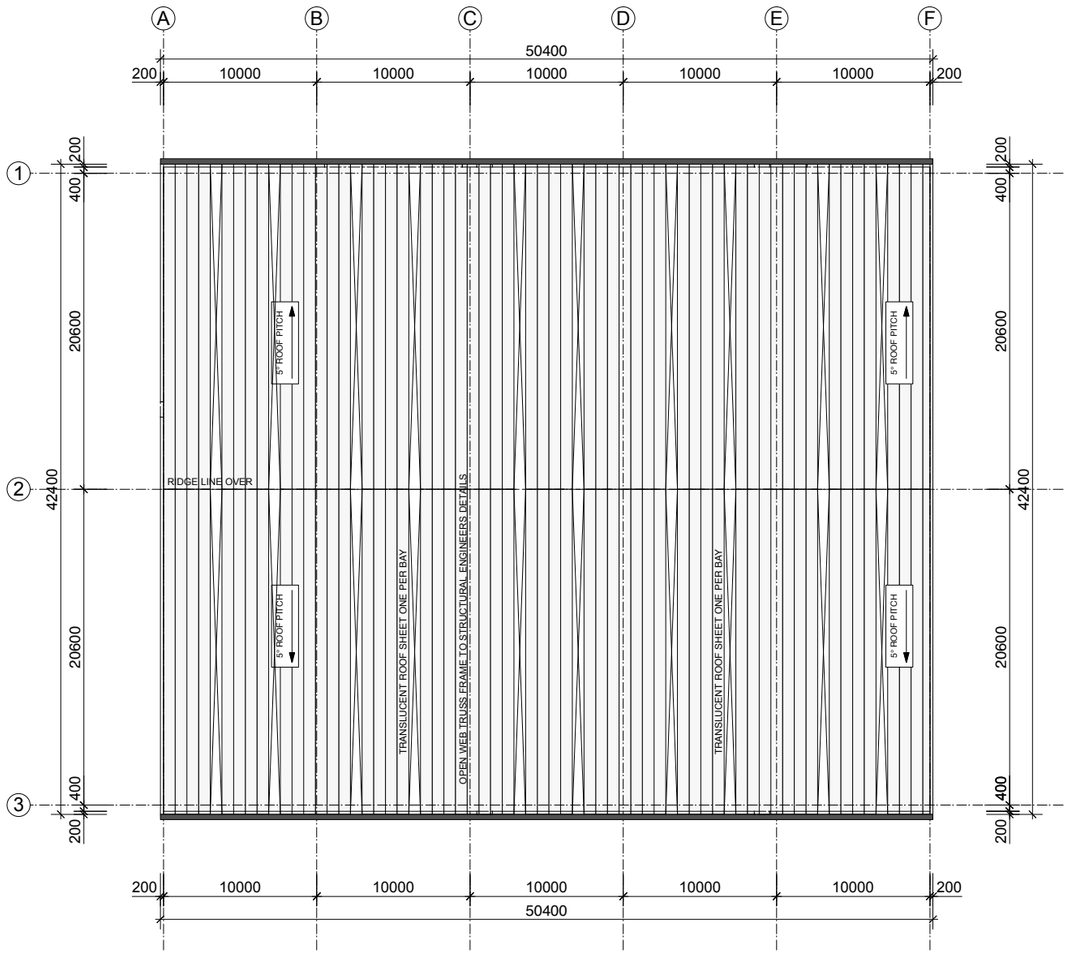
CHECKED

PROPOSED SECTIONS

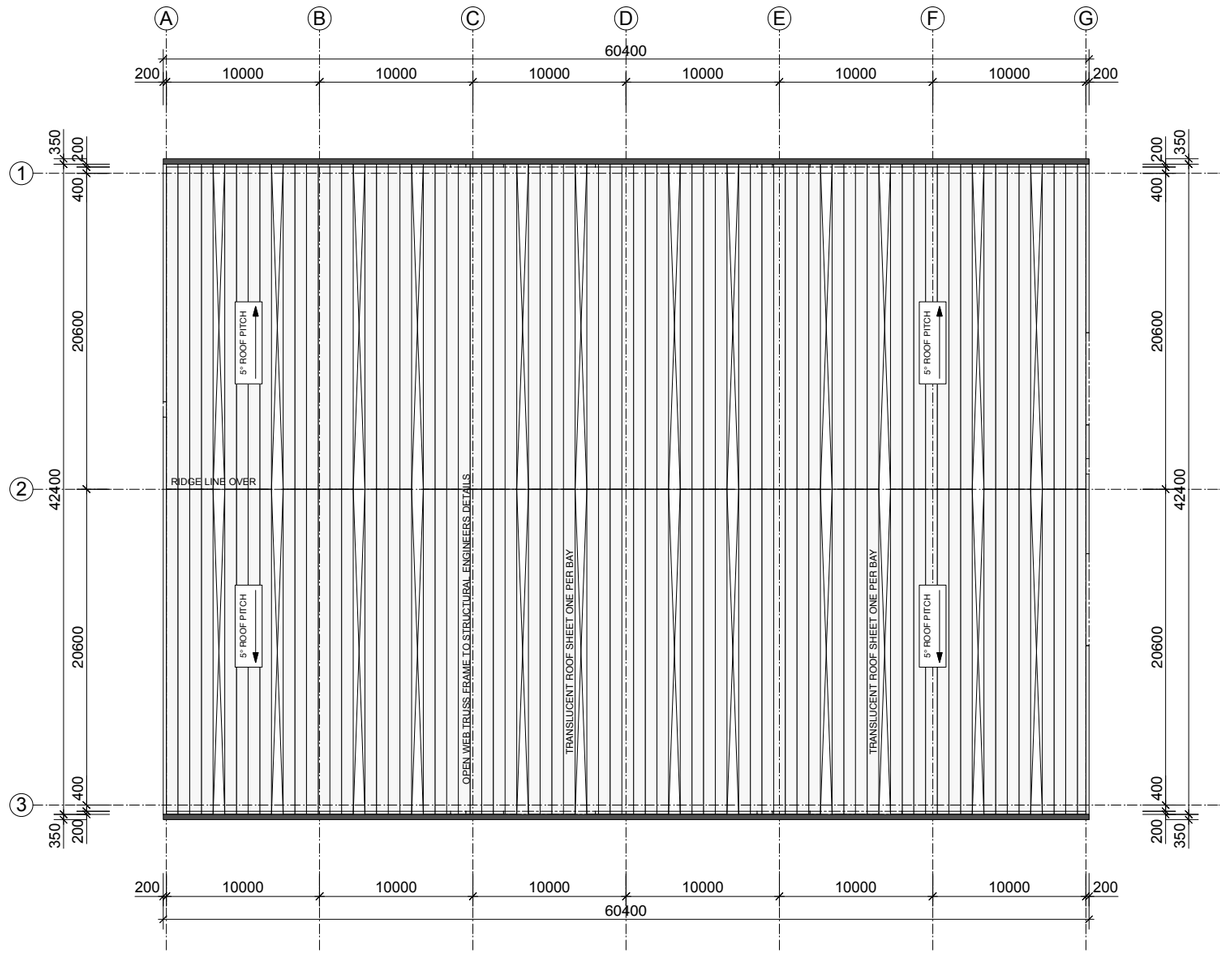
CLIENT :
SYDNEY RECYCLING PARK

SCALE
1 : 100
@ A1

DRAWING No.
2064 / 004B



PROPOSED SHED 2



PROPOSED SHED 3

NOTE: DOWNPIPE LOCATIONS AND QUANTITY TO BE DETERMINED BY HYDRAULIC ENGINEER

DATE	BY	REVISION	ISSUE

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SITE DESCRIPTION:
16 - 23 CLIFTON AVENUE
KEMPS CREEK
LOT 230 DP 1134016

LOCAL GOVERNMENT AREA:
PENRITH CITY COUNCIL

DRAWN
BAILEY FRANKS
2/6/22

CHECKED

PROPOSED ROOF PLANS

CLIENT :
SYDNEY RECYCLING PARK

SCALE
1 : 200
@ A1

DRAWING No.
2064 / 005

CONSULTING
EARTH
SCIENTISTS

Annexure E
Permeability Test Field Data Sheets

Project/job: CES110507 - WAE - 1P	Date: 30/5/23	
Location: 16-23 Clifton Ave, Kerikeri	Operator: C. R.	
Test site #: BH 1		
Depth of auger hole (*D*): 30 cm		
Depth of water in auger hole (*H*): 20 cm		
Average radius of auger hole (*r*): 4.5 cm		
Depth to any impermeable layer (*S*): N/A cm		

Vegetation at test site: Bare with some surrounding tall grass and small trees
Time elapsed between first filling and start of measurement: ~ 20 seconds
Was soil wet, moist or dry at time of excavation? Dry - test hole was saturated prior to test.
General comment about the site (indications of seasonal waterlogging, soil structure, biological pores, and so on). Atop of a 30° slope, high/shrub vegetated, sandy clay soil, well drained
PERMEAMETER AND TIME READINGS (Indicate whether time is read in minutes or seconds)

Test # ..1..			Test #		
Time (min)	Level in tube (mm)	Drop of level (mm)	Time	Level in tube	Drop of level
0	250				
25	246	4			
50	242	4			
75	239	3			
100	235	4			
125	231	4			
Q =	$5.0265 \times m^3/min$		Q =		
K_{sat} =	2.826×10^{-6} m/s		K_{sat} =		

FIGURE G3 SOIL PERMEABILITY FIELD RECORD SHEET – EXAMPLE

Project/job: CES110507-UAE-1P	Date: 30/5/23	
Location: 16-23 Clifton Ave, Kings Cross	Operator: CR.	
Test site #: BH2		
Depth of auger hole (*D*): 43 cm		
Depth of water in auger hole (*H*): 33 cm		
Average radius of auger hole (*r*): 4.5 cm		
Depth to any impermeable layer (*S*): N/A cm		

Vegetation at test site: Bare with some surrounding tall grass and small trees/shrub
Time elapsed between first filling and start of measurement: 120 sec
Was soil wet, moist or dry at time of excavation? Dry - Test hole was saturated before commencing testing
General comment about the site (indications of seasonal waterlogging, soil structure, biological pores, and so on). Atop of a ~30° slope, bush/shrub vegetated, sandy clay soil, well drained
PERMEAMETER AND TIME READINGS (Indicate whether time is read in minutes or seconds)

Test # ..1..			Test #		
Time (min)	Level in tube (mm)	Drop of level	Time	Level in tube	Drop of level
0	75				
20	64	11			
40	54	10			
60	49	5			
80	44	5			
Q =	15.708 cm^3/min		Q =		
K_{sat} =	3.566 $\times 10^{-6}$ m/s		K_{sat} =		

FIGURE G3 SOIL PERMEABILITY FIELD RECORD SHEET – EXAMPLE

Project/job: CES 110507 - WAE-LP	Date: 30/5/23	
Location: 16-23 Clifton Ave,	Operator: C.L	
Test site #: BH3		
Depth of auger hole (*D*): 40 cm		
Depth of water in auger hole (*H*): 30 cm		
Average radius of auger hole (*r*): 45 cm		
Depth to any impermeable layer (*S*): N/A cm		

Vegetation at test site: Bare
Time elapsed between first filling and start of measurement: ~~3~~ 5 sec
Was soil wet, moist or dry at time of excavation? Dry - like saturated plier
General comment about the site (indications of seasonal waterlogging, soil structure, biological pores, and so on). Foot of slope, level ground, no vegetation, sandy clay soil, moderately drained
PERMEAMETER AND TIME READINGS (Indicate whether time is read in minutes or seconds)

Test # .1...			Test #		
Time (min)	Level in tube (cm)	Drop of level	Time	Level in tube	Drop of level
0	52				
10	47	5			
20	46	1			
40	46	0 *			
			* The test did not stabilise		
			due to a suspected leak in		
			the ~~well~~ water reservoir of		
Q =	3.142 cm^3/min		Q =	the permeameter. Q and	
K_{sat} =	8.477×10^{-7} m/s		K_{sat} =	Ksat values are calculated based	
				on the early flow rate.	

FIGURE G3 SOIL PERMEABILITY FIELD RECORD SHEET – EXAMPLE