Structural
Civil
Traffic
Façade

Civil and Stormwater REF Design Report

Wentworth Health Service Redevelopment

Prepared for Health Infrastructure NSW - 19/04/2023

221039

Taylor Thomson Whitting (NSW) Pty Ltd (ACN 649 974 112)
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Contents

1.0 Introduction

TTW have been engaged to provide structural and civil engineering services for the proposed Wentworth Health Service Redevelopment project in Wentworth, NSW.

The Wentworth Health Service Redevelopment project will provide a modern facility to support the ongoing health needs of the Wentworth community and will incorporate the NSW Health Multi-purpose Service principles to increase service quality and efficiency.

This report covers the civil infrastructure and stormwater drainage aspects relevant to the site including site stormwater drainage design and proposed erosion and sediment controls, bulk earthworks and pavement design.

The civil engineering REF design is based on the information known at the time of the report production.

1.1 The Site

The site is located at 24 Hospital Road, Wentworth NSW and is bounded by Darling River to the west and Murray River to the south. Refer to Figure 1 below for site locality plan.

Figure 1 – Hospital site near the Darling River and Murray River

The proposed Hospital development will be directly south to the existing hospital building.

1.1.1 Site Constraints

Known site constraints to be considered within the civil design include:

- Proximity of existing hospital building and staging requirements
- Riparian zone extent

- Flood level and protection
- Site contamination and remediation
- Condition and alignment of existing site access roads for proposed design traffic
- Tree Protection Zones (TPZ)
- Existing perimeter levee bank

1.1.2 Geotechnical Conditions

On-site geotechnical investigations have been completed and indicate the existing subsurface conditions in proximity to the proposed hospital building comprise of Silty Clay & Sandy Silt fill material up to 700mm below the natural ground level with natural Clay material below the fill.

The shallow fill material encountered is considered as uncontrolled fill with the material appearing to have been placed with poor to moderate compaction only. The fill has been assessed to be not suitable for use as subgrade or foundation of any structure in its current state.

Piezometers have been installed on site and indicate the existing groundwater level is approximately 3 to 5m below the natural ground level.

1.1.3 Earthworks and Pavements

Major fill earthworks are required for the raised landscaping and building platform levels which currently sit approximately 1.3-2.1m above the natural ground level.

Pavements will be designed to withstand proposed traffic loads, suit structural demands, geotechnical conditions, and accessibility.

1.1.4 Site Contamination

Detailed site investigations by the project environmental consultant have confirmed the presence of asbestos containing materials (ACM) within the top-soil/fill layers across the site. Remediation measures including capping and containment of the exposed ACM on site have been proposed as part of the civil earthworks design.

1.1.5 Flooding

The project flooding consultant has indicated that the extreme flood event level in proximity to the Hospital site is at approximately RL 35.95 AHD. The pad level of the new building is proposed to be set at RL 36.00 AHD to protect from the predicted probable maximum flood (PMF) event.

2.0 Stormwater Drainage Design

2.1 Design Criteria

Wentworth Shire Council have provided guidance on the engineering design requirements for control, treatment, and discharge of stormwater from development sites within the Council area. The Council guidelines and relevant Australian Standards including AS 3500.3 have been used as the basis for the design of the proposed stormwater system.

The design of the stormwater drainage system for the development includes both minor and major stormwater conveyance systems, consisting of conventional pit and pipe drainage networks within the landscaping, roads, and car parks. The minor system comprised by the inground pipe network will be designed to cater for the 1 in 20-year Average Recurrence Interval (ARI) in accordance with AS 3500.3. The major system will incorporate overland flow paths shaped by open channels and the finished design surface and will be designed to cater for the 1 in 100-year ARI event. Refer to Appendix A for correspondence with Council confirming stormwater drainage design parameters.

The existing site stormwater discharge location at the south-west corner of the site will be utilised for the proposed development with modification required to bring the existing pit up to the proposed landscaping level to match the top of the adjoining levee bank. Council have no objections to utilise the existing discharge point. Refer to Figure 2 for the proposed Legal Point of Discharge location.

Figure 2 - Proposed site stormwater discharge point

2.2 On-Site Detention

On site detention (OSD) is proposed to meet Council requirements due to the increase in the amount of impervious area created by the proposed building and paved areas as well as a larger formal catchment directed to the LPoD. The OSD systems are proposed be sized for the 1 in 10-year ARI event. Flows above the 1 in 10-year ARI event up to the 1 in 100-year ARI event will either sheet flow across the crest of the levee bank and down the riverbank (raised building platform) or will be stored aboveground within the carpark area as a 150mm high extended detention depth (at-grade carpark). A 15 kL inground OSD tank is proposed for the raised building platform catchment and a 25 kL inground OSD tank is proposed for the at-grade carpark catchment.

Refer to Appendix B for the Civil REF drawings detailing the proposed site stormwater drainage design including the OSD systems.

2.3 Stormwater Quality

Wentworth Shire Council require that the quality of stormwater runoff from the new development minimise potential adverse effects on the downstream environment. This includes treating stormwater runoff prior to its discharge to remove pollutants.

Water quality treatment devices and water sensitive urban design (WSUD) features have been incorporated into the stormwater network to provide the required reduction in pollutant and nutrient loads. As much as possible, bio-filtration methods have been included in the treatment train to reduce maintenance burdens and increase efficiencies, with prefiltration via gross pollutant traps (GPT's) or in pit filtration devices such as SPEL Stormsacks.

Rainwater collected from the building roof catchment is proposed to be reused for irrigation as designed by the Hydraulics Engineer.

Typical treatment train chain is as per below.

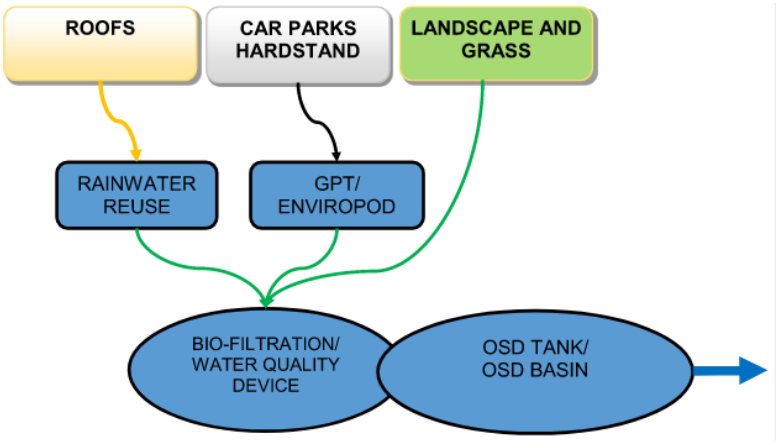

Figure 3 – Proposed Water Quality Treatment Chain

Table 1 identifies the stormwater pollution reduction targets and results for the site. Refer to Appendix C for the MUSIC assessment undertaken to determine the pollutant reduction achieved.

Table 1 – Stormwater Quality Treatment Requirements

Pollutant	BPEMG Targets	ESD – GreenStar Level B Targets	Pollutant Reduction Achieved
Total Suspended Solids	80%	80%	89.8%
Total Phosphorus	45%	60%	82.5%
Total Nitrogen	45%	45%	58.7%
Gross Pollutants (>5mm)	70%	90%	98.3%
Total Petroleum Hydrocarbons	-	90%	>90%*
Free Oils	-	90%	>90%*

*cannot be verified within MUSIC and shall be confirmed by the suppliers technical specification/data sheets

2.4 Construction Phase – Erosion and Sediment Control

During the construction stage, an erosion and sediment control plan is to be implemented in accordance with NSW's Managing Urban Stormwater, Soils and Construction "Blue Book" to prevent sediment laden stormwater from Discharging into the Darling River. Stormwater controls will be detailed in accordance with relevant regulatory authority guidelines.

Examples of erosion and sediment control measures that shall be implement during construction are shown in Figure 4 below.

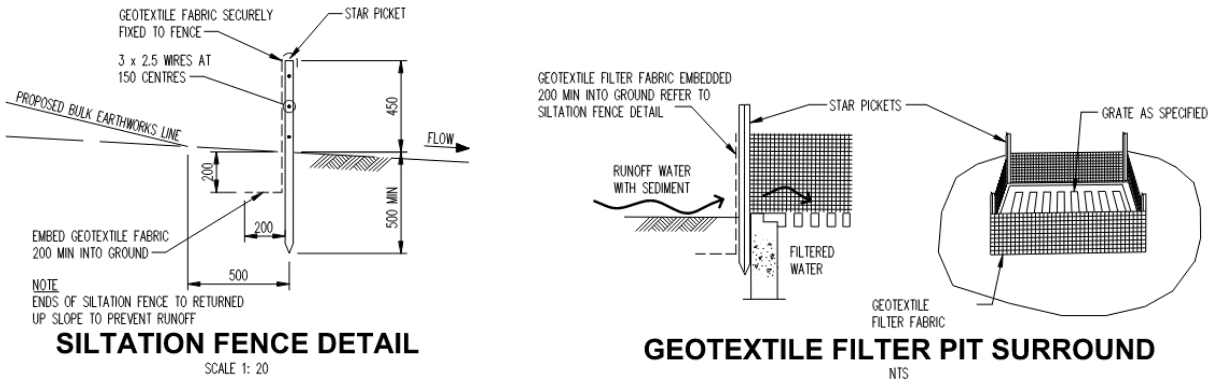

Figure 4 – Examples of erosion and sediment controls

An erosion and sediment control plan has been included in the Civil REF drawings provided in Appendix B.

3.0 Earthworks

The proposed building pad is set at RL 36.00 AHD to be above Hospital levee bank and the PMF as described in Section 1.1.5.

The raised building pad will nominally be 1.3-2.1m above the natural ground level where the building will be supported on a suspended slab system as designed by the project structural engineer.

Earthworks cut and fill plans have been included in the drawings. Table 2 below summarises the estimated earthworks volumes between the structural scheme options outlined in Section 2.

Table 2 – Bulk earthworks and ACM volume estimates

Bulk Earthworks & ACM Volume Estimates*			
	Stage 1A	Stage 1B	Stage 2
Site Stripping (uncontrolled fill excluding 150mm topsoil)	2,130 m^3	1,000 m^3	210 m^3
ACM (150mm depth of topsoil/fill)	740 m^3	230 m^3	170 m^3
Imported Fill (to benching level)	8,310 m^3	2,350 m^3	120 m^3

*Based on recommended ACM remediation strategy as described in Section 3.1

3.1 Site Contamination

The civil earthworks strategy has considered the outcomes from the environmental investigations undertaken by the environmental consultant which have confirmed the presence of asbestos containing materials (ACM) on site.

Refer to Figure 5 outlining the anticipated extent of ACM and the proposed remediation strategy to cap and contain the ACM on-site.

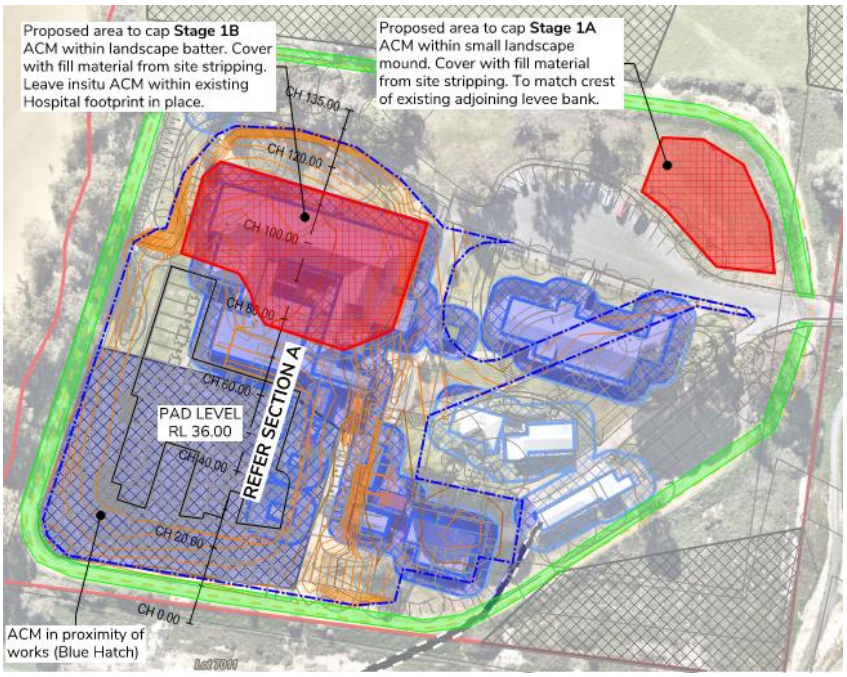

Figure 5 – ACM remediation strategy plan

The cross section shown in Figure 6 shows the relative levels of the existing and proposed Hospital buildings and the location of the capped Stage 1B ACM material within the footprint of the existing Hospital building

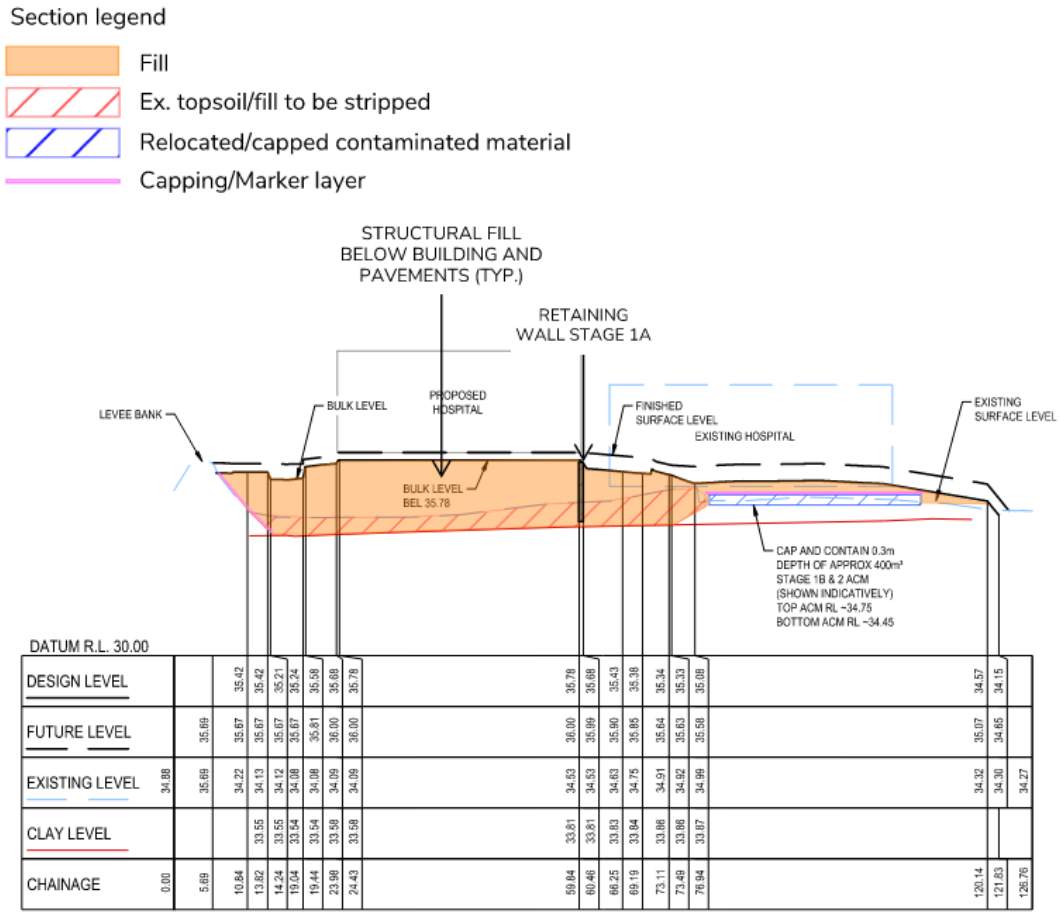

Figure 6 – Hospital cross section (viewing west towards Darling River)

4.0 Pavement Design

The design of pavements for the access roads and carparks have been undertaken with the advice and recommendations from the geotechnical report. Asphalt pavements are generally proposed for the site to meet the structural and traffic requirements of the roadways. Pavements will require the existing topsoil and fill layers to be removed to expose the natural clay subgrade prior to constructing the pavement profile.

Table 3 summarises the pavement design parameters and details.

Table 3 – Pavement Design Parameters

Pavement	Design Traffic - 30 year design life	Design CBR	Pavement Structure	Pavement Surfacing
Asphalt Vehicular Pavement	6.52 x 10^4 DESA	Min. 3.0% - Natural Clay Subgrade	40mm AC14 170mm DGB20 250mm Select Fill (E_v = 150MPa)	AC14
Concrete Pedestrian Pavement	Pedestrian only	Min. 3.0% - Natural Clay Subgrade	125mm 32MPa concrete with SL62 mesh central 100mm DGB20	Finish to architectural specifications

Prepared and Authorised by:
TTW (NSW) PTY LTD

Richard Penwell
Associate

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5.0 Appendices

5.1 Appendix A – Council Correspondence

Richard Penwell

From: Taygun Saritoprak <Taygun.Saritoprak@wentworth.nsw.gov.au>
Sent: Monday, 28 November 2022 4:10 PM
To: Richard Penwell
Subject: Re: Stormwater Legal Point of Discharge Application - 24 Hospital Road, Wentworth NSW 2648

Hi Richard,

As discussed, Council would be agreeable to looking at the 10%AEP for storage, with the remainder of Catchment A sheeting over the levee bank (no concentrated discharge points, if required, provide erosion protection detail).

Additionally, given that we're not discharging into a Council stormwater system, the pre-development discharge rates can be removed (no orifice requirement).

Just an FYI, Rachael Withers is no longer with Wentworth Shire Council.

Hope that helps. Any queries, just let me know.

Regards,
Taygun Saritoprak
Project Engineer

Phone 03 5027 5027
26-28 Adelaide Street, WENTWORTH NSW 2648
council@wentworth.nsw.gov.au
www.wentworth.nsw.gov.au

From: Richard Penwell <Richard.Penwell@ttw.com.au>
Sent: Monday, 28 November 2022 3:23 PM
To: Taygun Saritoprak
Cc: Rachael "Betty" Withers
Subject: RE: Stormwater Legal Point of Discharge Application - 24 Hospital Road, Wentworth NSW 2648

Hi Taygun,

Just wondering if you have had the chance to review the below query. Happy to discuss further if needed.

Regards,
Richard

Richard Penwell | Associate (Civil)
+61 3 9602 1433 | +61 3 96912813

Level 13, No. 379 Collins Street, Melbourne VIC 3000

TTW
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From: Richard Penwell
Sent: Thursday, 17 November 2022 3:35 PM
To: Taygun Saritoprak <Taygun.Saritoprak@wentworth.nsw.gov.au>
Cc: Rachael "Betty" Withers <Rachael.Withers@wentworth.nsw.gov.au>
Subject: RE: Stormwater Legal Point of Discharge Application - 24 Hospital Road, Wentworth NSW 2648

Hi Taygun,

Thank you for your time over the phone just now.

As discussed, we are hoping the OSD storage for catchment A (building pad above crest of levee bank) can be designed to the 10% AEP event in lieu of the 1% AEP event previously proposed with flows above the 10% AEP sheeting overland beyond the levee crest down the riverbank. We understand there are potential concerns with erosion of the riverbank with the overland flow, but please refer attached photos of the existing dense vegetation which we believe is sufficient to control erosion if the internal site is graded to ensure overland flows are not concentration at a certain point. Local rock beaching beyond the levee crest can be nominated if there are areas where overland flow is concentrated (pending detailed site grading). Our current OSD volume for catchment A is approx. 150kL (1% AEP storage) and incorporates a climate change factor of ~17% due to predicted increases in rainfall intensities over the next 50 years. Adopting 10% AEP storage will almost halve the size of the storage where we are somewhat constrained for space on site.

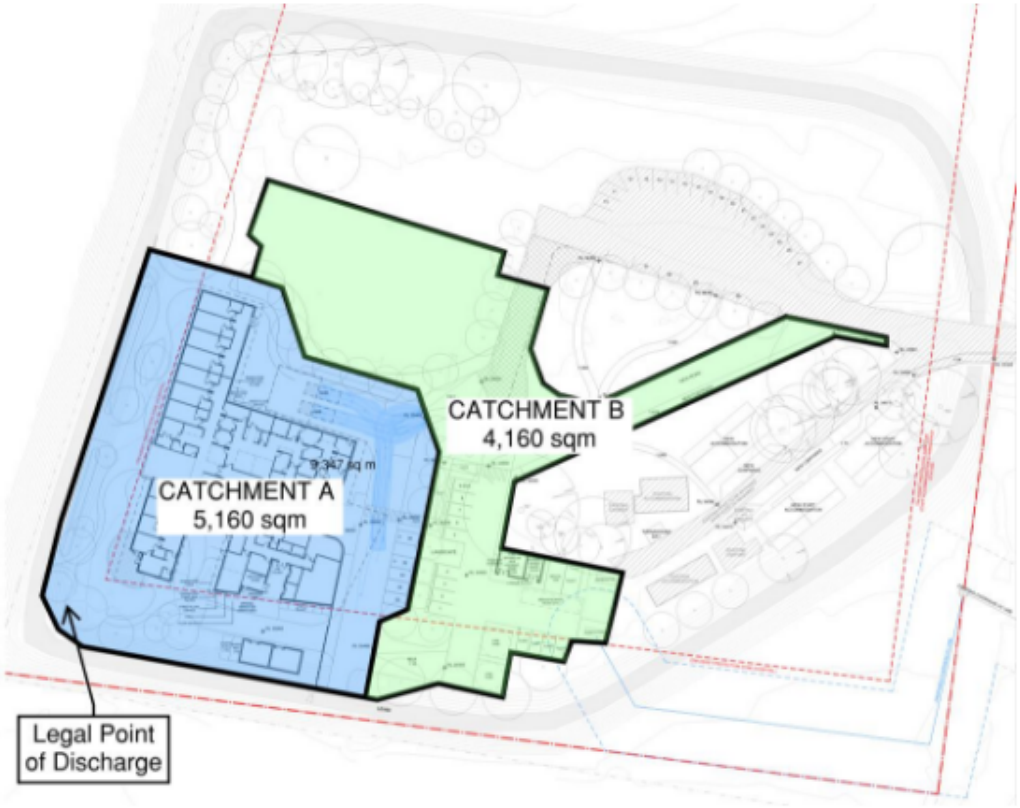

Figure 9 – Proposed stormwater drainage catchments

Catchment B will still require OSD storage for the 1% AEP event due the at grade road network being landlocked by the perimeter levee bank.

Permissible site discharge is proposed to the predevelopment 10% AEP event as previously discussed. Orifice plate will be sized accordingly.

Please advise any comments on the above.

Regards,
Richard

From: Taygun Saritoprak <Taygun.Saritoprak@wentworth.nsw.gov.au>
Sent: Wednesday, 17 August 2022 6:40 PM
To: Richard Penwell <Richard.Penwell@ttw.com.au>
Cc: Rachael "Betty" Withers <Rachael.Withers@wentworth.nsw.gov.au>
Subject: RE: Stormwater Legal Point of Discharge Application - 24 Hospital Road, Wentworth NSW 2648

Hi Richard,

If it's feasible for you to accommodate a tank of that size that's acceptable from a Council perspective. With regards to the levee bank, some type of permanent erosion protection may need to be applied to the outside surface as an alternative.

If you do find the stormwater tank to be a major issue we can look into erosion protection at a later date. However, Council would have to seek advice on the treatment options as the levee bank is protected (from my understanding).

Thank you for your patience and time. If you need anything please don't hesitate to make contact.

Regards,
Taygun Saritoprak
Project Engineer

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From: Richard Penwell <Richard.Penwell@ttw.com.au>
Sent: Tuesday, 16 August 2022 8:40 AM
To: Taygun Saritoprak <Taygun.Saritoprak@wentworth.nsw.gov.au>
Cc: Rachael "Betty" Withers <Rachael.Withers@wentworth.nsw.gov.au>
Subject: RE: Stormwater Legal Point of Discharge Application - 24 Hospital Road, Wentworth NSW 2648

Hi Taygun,

Yes, preliminary calculations indicate a total on-site detention storage volume of 45kL for the 10% AEP event and 100kL for the 1% AEP event. This is likely to be provided in the form of an underground tank.

Based on your concern with the overland flow path and potential erosion down the river/levee bank for the 10% AEP event, we can adopt detention storage sizing for the 1% AEP event. This means all stormwater flows up to the 1% AEP event generated on site will be contained within the site with no overland flow down the river/levee bank.

Regards,
Richard

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From: Taygun Saritoprak <Taygun.Saritoprak@wentworth.nsw.gov.au>
Sent: Monday, 15 August 2022 9:15 PM
To: Richard Penwell <Richard.Penwell@ttw.com.au>
Cc: Rachael "Betty" Withers <Rachael.Withers@wentworth.nsw.gov.au>
Subject: RE: Stormwater Legal Point of Discharge Application - 24 Hospital Road, Wentworth NSW 2648

Hi Richard,

Thanks for the detail. Have you already undertaken a preliminary assessment on the OSD for the 10% and 1% events? How does it impact the asset sizing?

My only other concern is the erosion along the levee bank via the overland flow. I can't recall anything within the locality that has the inside built to the levee height. Based on your modelling, which events are likely to have a large degree of run off directed through the overland flow path (over the levee)?

Regards,
Taygun Saritoprak
Project Engineer

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From: Richard Penwell <Richard.Penwell@ttw.com.au>
Sent: Monday, 15 August 2022 9:58 AM
To: Taygun Saritoprak <Taygun.Saritoprak@wentworth.nsw.gov.au>
Cc: Rachael "Betty" Withers <Rachael.Withers@wentworth.nsw.gov.au>
Subject: RE: Stormwater Legal Point of Discharge Application - 24 Hospital Road, Wentworth NSW 2648

Hi Taygun,

Drainage diversions are proposed for the remainder of the existing site and will be routed to the same discharge location at the south-west corner of the site (low point). Refer attachment for your information.

Regards,
Richard

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From: Taygun Saritoprak <Taygun.Saritoprak@wentworth.nsw.gov.au>
Sent: Monday, 15 August 2022 9:04 AM
To: Richard Penwell <Richard.Penwell@ttw.com.au>
Cc: Rachael "Betty" Withers <Rachael.Withers@wentworth.nsw.gov.au>
Subject: Re: Stormwater Legal Point of Discharge Application - 24 Hospital Road, Wentworth NSW 2648

Hi Richard,

Can you detail how the remainder of the site will be impacted post earthworks? Is there a designated lot point and drainage system proposed for the surrounding developed land?

Regards,
Taygun

From: Richard Penwell <Richard.Penwell@ttw.com.au>
Sent: Monday, 15 August 2022, 8:53 am
To: Taygun Saritoprak <Taygun.Saritoprak@wentworth.nsw.gov.au>
Cc: Rachael "Betty" Withers <Rachael.Withers@wentworth.nsw.gov.au>
Subject: RE: Stormwater Legal Point of Discharge Application - 24 Hospital Road, Wentworth NSW 2648

Hi Taygun,

Just following up on Council's preference for the OSD Site Storage Volume requirement as highlighted in cyan below?

We can either contain all flows up to the 1% AEP (1 in 100yr ARI) within the OSD tank (more conservative option) **or** contain only the 10% AEP (1 in 10yr ARI) flows within the OSD tank and let the additional flow up to the 1% AEP overflow towards the river via an overland flow path (surface grading away from proposed building).

Happy to discuss further if needed.

Regards,
Richard

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From: Richard Penwell
Sent: Tuesday, 9 August 2022 12:02 PM
To: Taygun Saritoprak <Taygun.Saritoprak@wentworth.nsw.gov.au>
Cc: Rachael "Betty" Withers <Rachael.Withers@wentworth.nsw.gov.au>
Subject: RE: Stormwater Legal Point of Discharge Application - 24 Hospital Road, Wentworth NSW 2648

Hi Taygun,

Thanks for the prompt response. Please refer to our return comments in red below for your review.

Regards,
Richard

From: Taygun Saritoprak <Taygun.Saritoprak@wentworth.nsw.gov.au>
Sent: Tuesday, 9 August 2022 11:03 AM
To: Richard Penwell <Richard.Penwell@ttw.com.au>
Cc: Rachael "Betty" Withers <Rachael.Withers@wentworth.nsw.gov.au>
Subject: RE: Stormwater Legal Point of Discharge Application - 24 Hospital Road, Wentworth NSW 2648

Hi Richard,

Thank you for clarifying and detailing your parameters. I just had two questions regarding the following:

Site Storage Volume = 10% AEP (1 in 10yr ARI) due to proposed clear overland flow path for surcharge to the river for proposed development The development is proposed to set the building level above the levee bank, so there will be a natural fall of the surface to the levee bank and river. Refer attached sketch plan attached. If Council prefer flows up to the 1% AEP (1 in 100yr ARI) to be stored within the site as opposed to sheeting off the site via overland flow path, we can update this SSV value as required (OSD tank will get bigger).

Stormwater pollutant reduction targets (as per GreenStar target 26.2 Column B snippet below) – will be achieved through rainwater reuse, swales, bio-filtration, and proprietary stormwater treatment systems. Likely to be a SPEL or OceanProtect GPT for paved areas to capture gross pollutants prior to discharge. We may also require a specialist product that removes free oils/hydrocarbons from the carpark areas subject to design development.

1. Are you able to detail more information regarding the overland flow path? Refer comment above.
2. Is the proprietary stormwater system a GPT of some sort? Correct

Regards,
Taygun Saritoprak
Project Engineer

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From: Richard Penwell <Richard.Penwell@ttw.com.au>
Sent: Tuesday, 9 August 2022 9:43 AM
To: Taygun Saritoprak <Taygun.Saritoprak@wentworth.nsw.gov.au>
Cc: Rachael "Betty" Withers <Rachael.Withers@wentworth.nsw.gov.au>
Subject: RE: Stormwater Legal Point of Discharge Application - 24 Hospital Road, Wentworth NSW 2648

Hi Taygun,

Thank you for your response.

If that is the case we propose the following design parameters which are in generally in accordance with AS3500.3 and ARR2019 guidelines. Please note the project is aiming to achieve a minimum GreenStar target of 4 Stars (potentially 5 Stars) which will provide a more environmentally sustainable design through further stormwater flow attenuation and stormwater pollutant removal.

- Stormwater drainage design
  - Minor stormwater network (inground pits and pipes) designed to cater for flows = 5% AEP (1 in 20yr ARI) event. As per Table 5.4.3 in AS3500.3 for important buildings
  - Major stormwater network (overland flow paths and landlocked areas) designed to cater for flows = 1% AEP (1 in 100yr ARI) event. As per Section 5.2.3 in AS3500.3
  - Time of concentration = 12min (typical for lot size >4000sqm)
- On site detention
  - Permissible site discharge (PSD) = 20% AEP (1 in 5yr ARI) event as per GreenStar target 26.1. We note the response below proposes a PSD of 10% AEP (1 in 10yr ARI), but adopting 1 in 5yr ARI flow will further reduce flows discharging from the site (more onerous)
  - Site Storage Volume = 10% AEP (1 in 10yr ARI) due to proposed clear overland flow path for surcharge to the river for proposed development

- Stormwater pollutant reduction targets (as per GreenStar target 26.2 Column B snippet below) – will be achieved through rainwater reuse, swales, bio-filtration, and proprietary stormwater treatment systems.

Table 26.2 Pollution Reduction Targets

Pollutant	Reduction Target (% of the typical urban annual load)		
	A	B	C
Total Suspended Solids (TSS)[1]	80%	80%	90%
Gross Pollutants	85%	90%	95%
Total Nitrogen (TN)[2]	30%	45%	60%
Total Phosphorus (TP)[2]	30%	60%	70%
Total Petroleum Hydrocarbons[3]	60%	90%	90%
Free Oils[3]	90%	90%	98%

Notes:

1 Load based on the following particulate size distribution (by mass): 20% <20 µm; 20% 20-60 µm; 20% 60-150 µm; 20% 150-400 µm; 20% 400-2000 µm.

2 Load includes particulate and dissolved fraction.

3 This requirement is not applicable where the site contains less than a total of 200m² of uncovered areas where vehicles are likely to transit and/or park e.g. roads, loading docks, refuelling bays, car parking etc.

26.2.2 Modelling Requirements

The stormwater treatment performance must be demonstrated by one of the following methods:

|| **26.2.2A Numerical Modelling**

Stormwater treatment performance must be demonstrated for compliance by numerical modelling of pollutant export. The *Model for Urban Stormwater Improvement Conceptualisation* (MUSIC) model (CRCCH, 2005) is widely adopted for this purpose. Modelling must be undertaken based on a continuous simulation of catchment hydrology using models, parameters and methodologies in accordance with the relevant local government requirements.

26.2.2B Manual Calculations

As an alternative to computer modelling, stormwater treatment performance calculations may be performed manually, in accordance with methodologies outlined in procedural manuals such as *WSUD Engineering Procedures – Stormwater* (CSIRO, 2005). || R2.26.02

We will be modelling the stormwater drainage hydraulics in accordance with ARR 2019 guidelines using DRAINS (ILSAX) modelling software. The stormwater pollutant reduction will be modelled using MUSIC. Both are industry standard software packages for engineering design across NSW.

Please let us know if you have any comments on the above otherwise we will proceed on this basis.

Regards,
Richard

Richard Penwell | Senior Civil Engineer

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From: Taygun Saritoprak <Taygun.Saritoprak@wentworth.nsw.gov.au>
Sent: Monday, 8 August 2022 7:49 PM
To: Richard Penwell <Richard.Penwell@ttw.com.au>

Cc: Rachael "Betty" Withers <Rachael.Withers@wentworth.nsw.gov.au>
Subject: Stormwater Legal Point of Discharge Application - 24 Hospital Road, Wentworth NSW 2648

[External Email]: Do not click links or open attachments unless you recognize the sender and know the content is safe.
Hi Richard,

Council do not currently have a Stormwater Drainage Design Guideline. We're happy to work with you to address any queries you may have, if you could just detail the requirements that you're after that will aid us in returning a response to you.

Typically for commercial and/or highly impervious land we'd be looking at larger stormwater events while reducing the out flow to the pre-developed 10%ARI. Given the significance of the site and the fact it's surrounded by a levee with a singular discharge point, it might be sensible to account for a similar scenario.

Council would request you provide your modelling and a plan view of the area displaying pervious, impervious, proposed run off coefficients, etc.

Ultimately, we'd like to see what level of 'pooling' would occur on site in the current conditions, and whether or not a detention basin/low lying area or similar would be required around the existing outlet as well.

Let me know if you have any queries.

Regards,
Taygun Saritoprak
Project Engineer

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From: Richard Penwell <Richard.Penwell@ttw.com.au>
Sent: Monday, 1 August 2022 4:08 PM
To: Wentworth Shire Council <council@wentworth.nsw.gov.au>
Subject: RE: ATTN: Engineering Department - Stormwater Legal Point of Discharge Application - 24 Hospital Road, Wentworth NSW 2648

Hi,

May I please request a status update from the Engineering Department regarding this application and general query regarding the DCP/stormwater drainage design guidelines as noted below?

Kind regards,
Richard

Richard Penwell | Senior Civil Engineer

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Level 13, No. 379 Collins Street, Melbourne VIC 3000

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Your Partner in Engineering

From: Richard Penwell
Sent: Wednesday, 20 July 2022 11:54 AM
To: council@wentworth.nsw.gov.au
Subject: ATTN: Engineering Department - Stormwater Legal Point of Discharge Application - 24 Hospital Road, Wentworth NSW 2648

Hi,

Please find attached stormwater legal point of discharge application for the proposed development at 24 Hospital Road, Wentworth NSW 2648.

We are also seeking to confirm if Wentworth Shire Council have a Development Control Plan (DCP) document and/or stormwater drainage design guidelines available for our reference.

Please let me know if you require further information.

Kind regards,
Richard

5.2 Appendix B – Civil REF Drawings

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING C002

WENTWORTH HEALTH SERVICE REDEVELOPMENT

24 HOSPITAL ROAD, WENTWORTH, NSW, 2648

CIVIL DRAWINGS

DRAWING LIST	
Drawing No.	Drawing Name
C001	COVER SHEET
C002	NOTES AND LEGENDS SHEET
C100	EROSION AND SEDIMENT CONTROL PLAN
C210	SITE PLAN
C310	PAVEMENT AND JOINTING PLAN
C410	CUT & FILL PLAN

DRAWINGS TO BE PRINTED IN COLOUR

Rev	Description	Eng	Draft	Date
2	REF ISSUE	RP	AE	11.04.23
1	ISSUED FOR SD	RP	AE	23.11.22

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BEWARE OF UNDERGROUND SERVICES.
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN

Project
WENTWORTH HEALTH SERVICE REDEVELOPMENT
24 HOSPITAL ROAD, WENTWORTH, NSW, 2648

Drawing Title
COVER SHEET

Architect
NBRS
+61 2 9922 2344 nbrs.com.au
Nominated Architect:
Andrew Duffin NSW 5602
NBRS & Partners Pty Ltd VIC 51197 ABN 16 002 247 565

Civil Engineer
TTW Structural Civil Traffic Façade
+61 2 9439 7288 | L6 73 Miller Street North Sydney NSW 2065

Scale: A1 Drawn: AE Authorised: RP

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Job No	Drawing No	Revision
221039	C001	2

Plot File Created: Apr 11, 2023 - 6:33pm

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING C002

GENERAL NOTES

1. Contractor must verify all dimensions and existing levels on site prior to commencement of works. Any discrepancies to be reported to the ENGINEER
2. Strip all topsoil from the construction area. All stripped topsoil shall be disposed of off-site unless directed otherwise.
3. Make smooth connection with all existing works.
4. Compact subgrade under buildings and pavements to minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1. Compaction under buildings to extend 2m minimum beyond building footprint.
5. All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority; the Contractor is to ensure that the drawings used for construction have been approved by all relevant authorities prior to commencement site.
6. All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority is to be carried out in accordance with the requirements of the relevant Authority. The Contractor shall obtain these requirements from the Authority. Where the requirements of the Authority are different to the drawings and specifications, the requirements of the Authority shall be applicable.
7. For all temporary batters refer to geotechnical recommendations.

REFERENCE DRAWINGS

1. These drawings have been based from, and to be read in conjunction with the following Consultants drawings. Any conflict to the drawings must be notified immediately to the Engineer.

Consultant	Dwg Title	Dwg No	Rev	Date
WALPOLE SVY	SURVEY	22072	4	07.10.22
NBRS	SITE PLAN - STAGE 1A	AR-0200	9	01.02.23
NBRS	SITE PLAN - STAGE 1B	AR-0201	9	01.02.23
NBRS	SITE PLAN - STAGE 2	AR-0202	9	01.02.23

SURVEY AND SERVICES INFORMATION

SURVEY

Origin of levels : CONTACT THE SURVEYOR
Datum of levels : A.H.D. VIDE SSM49545
Coordinate system : SURVEYOR TO CONFIRM
Survey prepared by : WALPOLE SVY
Setout Points : CONTACT THE SURVEYOR

Taylor Thomson Whitting does not guarantee that the survey information shown on these drawings is accurate and will accept no liability for any inaccuracies in the survey information provided to us from any cause whatsoever.

UNDERGROUND SERVICES - WARNING

The locations of underground services shown on Taylor Thomson Whittings drawings have been plotted from diagrams provided by service authorities. This information has been prepared solely for the authorities own use and may not necessarily be updated or accurate.

The position of services as recorded by the authority at the time of installation may not reflect changes in the physical environment subsequent to installation.

Taylor Thomson Whitting does not guarantee that the services information shown on these drawings shows more than the presence or absence of services, and will accept no liability for inaccuracies in the services information shown from any cause whatsoever.

The Contractor must confirm the exact location and extent of services prior to construction and notify any conflict with the drawings immediately to the Engineer/Superintendent.

The contractor is to get approval from the relevant state survey department, to remove/adjust any survey mark. This includes but is not limited to; State Survey Marks (SSM), Permanent Marks (PM), cadastral reference marks or any other survey mark which is to be removed or
adjusted in any way.
Taylor Thomson Whitting plans do not indicate the presence of any survey mark. The contractor is to undertake their own search.

BOUNDARY AND EASEMENT NOTE

The property boundary and easement locations shown on Taylor Thomson Whitting drawing's have been based from information received from : WALPOLE SVY 22072 Rev 4

Taylor Thomson Whitting makes no guarantees that the boundary or easement information shown is correct.
Taylor Thomson Whitting will accept no liabilities for boundary inaccuracies. The contractor/builder is advised to check/confirm all boundaries in relation to all proposed work prior to the commencement of construction. Boundary inaccuracies found are to be reported to the superintendent prior to construction starting.

STORMWATER DRAINAGE NOTES

1 Stormwater Design Criteria :
(A) Average exceedance probability -
1% AEP for roof drainage to first external pit
5% AEP for paved and landscaped areas
(B) Rainfall intensities -
Time of concentration: 12 minutes
1% AEP = 150 mm/hr
5% AEP = 98 mm/hr
(C) Rainfall losses -
Impervious areas: IL = 1.5 mm , CL = 0 mm/hr
Pervious areas: IL = 29mm , CL = 2 mm/hr

2. Pipes 300 dia and larger to be reinforced concrete Class "2" approved spigot and socket with rubber ring joints U.N.O.
5. Precast pits may be used external to the building subject to approval by Council.
6. Enlargers, connections and junctions to be manufactured fittings where pipes are less than 300 dia.
7. Where subsoil drains pass under floor slabs and vehicular pavements, unslotted uPVC sewer grade pipe is to be used.
8. Grates and covers shall conform with AS 3996-2006, and AS 1428.1 for access requirements.
9. Pipes are to be installed in accordance with AS 3725. All bedding to be type H2 U.N.O.
10. Care is to be taken with invert levels of stormwater lines. Grades shown are not to be reduced without approval.
11. All stormwater pipes to be 150 dia at 1.0% min fall U.N.O.
12. Subsoil drains to be slotted flexible uPVC U.N.O.
13. Adopt invert levels for pipe installation (grades shown are only nominal).
14. All drainage works to be installed in accordance with PCC standard details.

SITEWORKS NOTES

1. All basecourse material to comply with RMS specification No 3051 and compacted to minimum 98% modified standard dry density in accordance with AS 1289 5.2.1.
2. All trench backfill material shall be compacted to the same density as the adjacent material.
3. All service trenches under vehicular pavements shall be backfilled with an approved select material and compacted to a minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1

KERBING NOTES

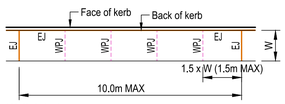
Includes all kerbs, gutters, dish drains, crossings and edges.

1. All kerbs, gutters, dish drains and crossings to be constructed on minimum 75mm granular basecourse compacted to minimum 98% modified maximum dry density in accordance with AS 1289 5.2.1.
2. Expansion joints (EJ) to be formed from 10mm compressible cork filler board for the full depth of the section and cut to profile. Expansion joints to be located at drainage pits, on tangent points of curves and elsewhere at 12m centres except for integral kerbs where the expansion joints are to match the joint locations in slabs.
3. Weakened plane joints to be min 3mm wide and located at 3m centres except for integral kerbs where weakened plane joints are to match the joint locations in slabs.
4. Broomed finished to all ramped and vehicular crossings, all other kerbing or dish drains to be steel float finished.
5. In the replacement of kerbs -
Existing road pavement is to be sawcut 900mm from lip of gutter. Upon completion of new kerbs, new basecourse and surface is to be laid 900mm wide to match existing materials and thicknesses.
Existing allotment drainage pipes are to be built into the new kerb with a 100mm dia hole.
Existing kerbs are to be completely removed where new kerbs are shown.

JOINTING NOTES

Pedestrian Footpath Jointing

1. Expansion joints (EJ) are to be located where possible at tangent points of curves and elsewhere at max 10.0m centres.
2. Weakened plane joints (WPJ) are to be located at a max 1.5 x width of the pavement.
3. Where possible joints should be located to match kerbing and / or adjacent pavement joints.
4. All pedestrian footpath jointings as follows U.N.O.



Wall Jointing

1. For concrete walls, weakened plane joints (WPJ) or control joints (CJ) to be located at a maximum of 8.0m centres. Expansion joints (EJ) to be located at a maximum of 30.0m centres U.N.O.
2. For blockwork walls, dowelled control joints (CJ) to be located at maximum of 8.0m spacing U.N.O.

CONCRETE FINISHING NOTES

1. All exposed concrete pavements are to be broomed finished unless noted otherwise in the Landscape Drawings/Specifications.
2. All edges of the concrete pavement including keyed and dowelled joints are to be finished with an edging tool.
3. Concrete pavements with grades greater than 10 % shall be heavily broomed finished.
4. Carborundum to be added to all stair treads and ramped crossings U.N.O.

BULK EARTHWORKS NOTES

1. Contractor to reference geotechnical report for subgrade preparation requirements
2. All batters at a maximum slope to be confirmed and subject to geotechnical engineer advice.
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 proof-rolled 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.)	Optimum moisture content (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 granular fill unless noted otherwise.
6. Contractor shall place safety barriers around excavations in accordance with relevant safety regulations.
7. Bulk earthworks drawings are not to be used for detailed excavation in landscape zones. Contractor to make allowance for additional fill or cut through landscape zones.
8. Contractor to review landscape drawings to confirm softscape profile depths
9. Strip all topsoil from the construction area. All stripped topsoil shall be disposed of off-site unless directed otherwise.
10. Make smooth connection with all existing works
11. Compact subgrade under buildings and pavements to minimum 98% standard maximum dry density in accordance with AS1289.5.1.1. Compaction under buildings to extend 2.0m minimum beyond building footprint
12. Temporary stormwater control and connections to be managed onsite by the builder/contractor
13. Site to be free draining and subgrade to be protected from moisture ingress.
14. Dewatering to be managed by contractor at all times.
15. Quantities to underlying geology such as rock or natural clay are indicative only and based on the geotechnical information available at the time of issue. Underlying natural clay and rock levels can be highly variable between geotech sample locations.
16. All earthworks activities shall be undertaken with level 1 supervision in accordance with AS3798 (2007) by a suitably qualified geotechinical inspection and testing authority (GITA) engaged by the contractor. As a minimum, the frequency and location of testing shall be in accordance with table 8.1 of AS3798 (2007). The GITA is to maintain daily site record sheets as set out in AS3798 (2007)

EROSION AND SEDIMENT CONTROL NOTES

1. All work shall be generally carried out in accordance with
(A) Local authority requirements,
(B) EPA - Pollution control manual for urban stormwater,
(C) LANDCOM NSW - Managing Urban Stormwater: Soils and Construction ("Blue Book").
2. The erosion and sediment control shall be implemented and adapted to meet the varying situations as work on site progresses.
3. Maintain all erosion and sediment control devices to the satisfaction of the superintendent and the local authority.
4. When stormwater pits are constructed prevent site runoff entering the pits unless silt fences are erected around pits.
5. Minimise the area of site being disturbed at any one time.
6. Protect all stockpiles of materials from scour and erosion. Do not stockpile loose material in roadways, near drainage pits or in watercourses.
7. All soil and water control measures are to be put back in place at the end of each working day, and modified to best suit site conditions.
8. Control water from upstream of the site such that it does not enter the disturbed site.
9. All construction vehicles shall enter and exit the site via the temporary construction entry/exit.
10. All vehicles leaving the site shall be cleaned and inspected before leaving.
11. Maintain all stormwater pipes and pits clear of debris and sediment. Inspect stormwater system and clean out after each storm event.
12. Clean out all erosion and sediment control devices after each storm event.

Sequence Of Works

1. Prior to commencement of excavation the following soil management devices must be installed.
1.1. Construct silt fences below the site and across all potential runoff sites.
1.2. Construct temporary construction entry/exit and divert runoff to suitable control systems.
1.3. Construct measures to divert upstream flows into existing stormwater system.
1.4. Construct sedimentation traps/basin including outlet control and overflow.
1.5. Construct turf lined swales.
1.6. Provide sandbag sediment traps upstream of existing pits.
2. Construct geotextile filter pit surround around all proposed pits as they are constructed.
3. On completion of pavement provide sand bag kerb inlet sediment traps around pits.
4. Provide and maintain a strip of turf on both sides of all roads after the construction of kerbs.

WATER QUALITY TESTING REQUIREMENTS

Prior to discharge of site stormwater, groundwater and seepage water
into council's stormwater system, contractors must undertake water quality tests in conjunction with a suitably qualified environment consultant outlining the following:

- Compliance with the criteria of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)
- If required subject to the environmental consultants advice, provide remedial measures to improve the quality of water that is to be discharged into Councils storm water drainage system.This should include comments from a suitably qualified environmental consultant confirming the suitability of these remedial measures to manage the water discharged from the site into Councils storm water drainage system. Outlining the proposed, ongoing monitoring, contingency plans and validation program that will be in place to continually monitor the quality of water discharged from this site. This should outline the frequency of water quality testing that will be undertaken by a suitably qualified environmental consultant.

SAFETY IN DESIGN

Contractor to refer to Appendix B of the Civil Specification for the Civil Risk and Solutions Register.

EXISTING SERVICES

Contractor to be aware existing services are located within the site. Location of all services to be verified by the Contractor prior to commencing works. Contractor to confirm with relevant authority regarding measures to be taken to ensure services are protected or procedures are in place to demolish and/or relocate.

EXISTING STRUCTURES

Contractor to be aware existing structures may exist within the site. To prevent damage to existing structure(s) and/or personnel, site works to be carried out as far as practicably possible from existing structure(s).

EXISTING TREES

Contractor to be aware existing trees exist within the site which need to be protected. To prevent damage to trees and/or personnel, site works to be carried out as far as practicably possible from existing trees. Advice needs to be sought from Arborist and/or Landscape Architect on measures required to protect trees. Refer to report 'ARB_220623_TreeIQ Wentworth Health Service Preliminary Advice' by TreeIQ dated 23/06/22.

GROUNDWATER

Contractor to be aware ground water levels are close to existing surface level. Temporary de-watering may be required during construction works.

EXCAVATIONS

Deep excavations due to stormwater drainage works is required. Contractor to ensure safe working procedures are in place for works. All excavations to be fenced off and batters adequately supported to approval of Geotechnical Engineer.

GROUND CONDITIONS

Contractor to be aware of the site geotechnical conditions. Refer to geotechnical report by JK Geotechnics (16 Nov 2017, ref:30993ZArpt) for details.

HAZARDOUS MATERIALS

Existing asbestos products & contaminated material are present on site. Contractor to ensure all hazardous materials are identified prior to commencing works. Safe working practices as per relevant authority to be adopted and appropriate PPE to be used when handling all hazardous materials. Remediation of ACM exposed on site shall be undertaken in accordance with the requirements noted in the Remediation Action Plan (RAP) by JBS&G. ACM volumes are indicative only and are based on nominal 150mm depth across area noted in the detailed site investigation report by JBS&G.

CONFINED SPACES

Contractor to be aware of potential hazards due to working in confined spaces such as stormwater pits, trenches and/or tanks. Contractor to provide safe working methods and use appropriate PPE when entering confined spaces.

MANUAL HANDLING

Contractor to be aware manual handling may be required during construction. Contractor to take appropriate measures to ensure manual handling procedures and assessments are in place prior to commencing works.

WATER POLLUTION

Contractor to ensure appropriate measures are taken to prevent pollutants from construction works contaminating the surrounding environment.

SITE ACCESS/EGRESS

Contractor to be aware site works occur in close proximity to footpaths and roadways. Contractor to erect appropriate barriers and signage to protect site personnel and public.

VEHICLE MOVEMENT

Contractor to supply and comply with traffic management plan and provide adequate site traffic control including a certified traffic marshall to supervise vehicle movements where necessary.

SITEWORKS LEGEND

- × F22.20 — FINISHED SURFACE LEVEL
- 22.00 — FINISHED MAJOR CONTOUR
- 22.10 — FINISHED MINOR CONTOUR
- PROPERTY BOUNDARY
- K&G — KERB AND GUTTER
- KO — KERB ONLY
- K&G - O — KERB AND GUTTER WITH OPENINGS
- IL 10.20 — STORMWATER PIT AND DRAIN
- GT — GRATED TRENCH
- AG — AG (SUBSOIL) DRAIN
- GI — GRATED INLET / FLOOR WASTE
- CONCRETE ENDWALL
- IO — INSPECTION OPENING WITH SUBSOIL DRAINAGE LINE (100 DIA)
- FP — FLUSHOUT POINT WITH SUBSOIL DRAINAGE LINE (100 DIA)
- DP — DOWN PIPE
- OVERLAND FLOWPATH
- RW — RETAINING WALL
- BATTER
- SAWCUT JOINT
- EXPANSION JOINT
- DOWELLED SAWCUT JOINT
- DOWELLED EXPANSION JOINT
- BIO SWALE
- GRASSED SWALE
- GUARD RAIL
- FENCE
- TPZ — TPZ — TREE PROTECTION ZONE
- SRZ — SRZ — STRUCTURAL ROOT ZONE

EXISTING SERVICES LEGEND

- eT — TELECOM
- eG — GAS
- eE — ELECTRICAL
- eO — ELECTRICAL (OVERHEAD)
- eW — WATER
- eD — STORM WATER
- eS — SEWER

DRAWINGS TO BE PRINTED IN Y M C [R] G B K

WORKS NEAR EXISTING SERVICES
ALL EXISTING UNDERGROUND SERVICES ARE TO BE LOCATED ON SITE PRIOR TO COMMENCING WORKS

WORKS NEAR EXISTING TREES
PRECAUTIONS ARE TO BE UNDERTAKEN TO ENSURE EXISTING TREES IN THE VICINITY OF WORKS ARE NOT DAMAGED DURING CONSTRUCTION ACTIVITIES

CIVIL SPECIFICATIONS
DRAWINGS TO BE READ IN CONJUNCTION WITH THE CIVIL SPECIFICATION. REFER APPENDIX A FOR INSPECTION HOLD POINTS

HIGH VOLTAGE ELECTRICAL CABLE
PRECAUTIONS ARE TO BE UNDERTAKEN TO ENSURE HIGH VOLTAGE CABLE IN THE VICINITY OF WORKS IS NOT DAMAGED DURING CONSTRUCTION ACTIVITIES.
LIAISE WITH ASSET OWNER AS REQUIRED

EXISTING STORMWATER ASSETS
SIZE, INVERT LEVEL AND CONDITION OF ALL AFFECTED EXISTING STORMWATER ASSETS TO BE CONFIRMED PRIOR TO COMMENCING WORKS

Rev	Description	Eng	Draft	Date
2	REF ISSUE	RP	AE	11.04.23
1	ISSUED FOR SD	RP	AE	23.11.22

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Project
WENTWORTH HEALTH SERVICE REDEVELOPMENT
24 HOSPITAL ROAD, WENTWORTH, NSW, 2648

Drawing Title
NOTES AND LEGENDS SHEET

Architect
NBRS
+61 2 9922 2344 nbrs.com.au
Nominated Architect:
Andrew Duffin NSW 5602
NBRS & Partners Pty Ltd VIC 51197 ABN 16 002 247 565

Civil Engineer
TTW Structural Civil Traffic Façade
+61 2 9439 7288 | L6 73 Miller Street North Sydney NSW 2065

Scale: A1 Drawn: AE Authorised: RP

Job No 221039 Drawing No C002 Revision 2

Plot File Created: Apr 11, 2023 - 6:33pm

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING C002

EROSION AND SEDIMENT CONTROL LEGEND

- SILTATION FENCE
- STORMWATER PIT WITH GEOTEXTILE FILTER SURROUND
- HAY BALE BARRIERS
- SANDBAG SEDIMENT TRAP
- CATCH DRAIN / OPEN CHANNEL
- STAGE 1A - LIMIT OF WORKS BOUNDARY (INDICATIVE)
- STAGE 1B - LIMIT OF WORKS BOUNDARY (INDICATIVE)
- STAGE 2 - LIMIT OF WORKS BOUNDARY (INDICATIVE)
- TREE PROTECTION ZONE
- STRUCTURAL ROOT ZONE

DARLING RIVER

HEAVY VEGETATION

EXISTING HOSPITAL BUILDING

TEMPORARY SILT FENCE AROUND EXTENT OF WORKS LOCATION IS SHOWN INDICATIVELY ONLY AND IS TO BE CONFIRMED BY CONTRACTOR

PROPOSED TEMPORARY OPEN CHANNEL LOCATION (STAGE 1A). CONTRACTOR TO PROVIDE/CONFIRM ONSITE

DISCHARGE FROM SITE TO BE PROVIDED AND CONTROLLED BY CONTRACTOR (TYP.)

PROVIDE GEOTEXTILE FILTER PIT SURROUND AND SANDBAG SEDIMENT TRAP TO EXISTING GRATED PIT

CONTRACTOR TO MONITOR SITE RUNOFF DURING CONSTRUCTION TO ENSURE SEDIMENT LADEN WATER IS NOT DISCHARGED FROM THE SITE TO DARLING RIVER

TEMPORARY SEDIMENT BASIN TO TREAT SITE RUNOFF. SHOWN INDICATIVELY ONLY

PROPOSED TEMPORARY OPEN CHANNEL LOCATION (STAGE 1A). CONTRACTOR TO PROVIDE/CONFIRM ONSITE

HAYBALE SEDIMENT FILTER ALONG OPEN CHANNEL (TYP.). SHOWN INDICATIVELY ONLY

PROPOSED TEMPORARY OPEN CHANNEL LOCATION (STAGE 1B). CONTRACTOR TO PROVIDE/CONFIRM ONSITE

PROVIDE GEOTEXTILE FILTER PIT SURROUND AND SANDBAG SEDIMENT TRAP TO TEMPORARY GRATED PIT

DISCHARGE FROM SITE TO BE PROVIDED AND CONTROLLED BY CONTRACTOR (TYP.)

TREE 67 TO BE PROTECTED IN ACCORDANCE WITH ARBORIST REQUIREMENTS. PROPOSED LEVELS WITHIN TPZ ABOVE EXISTING GRADE

PROVIDE GEOTEXTILE FILTER PIT SURROUND AND SANDBAG SEDIMENT TRAP TO TEMPORARY GRATED PIT

DISCHARGE FROM SITE TO BE PROVIDED AND CONTROLLED BY CONTRACTOR (TYP.)

TEMPORARY SILT FENCE LOCATION IS SHOWN INDICATIVELY ONLY AND IS TO BE CONFIRMED BY CONTRACTOR

EXISTING BUILDING

TEMPORARY SILT FENCE LOCATION IS SHOWN INDICATIVELY ONLY AND IS TO BE CONFIRMED BY CONTRACTOR

DISCHARGE FROM SITE TO BE PROVIDED AND CONTROLLED BY CONTRACTOR (TYP.)

EXISTING BUILDING

WORKS WITHIN TREE PROTECTION ZONES SHALL BE UNDERTAKEN IN ACCORDANCE WITH ARBORIST REQUIREMENTS

REMEDIATION OF ASBESTOS CONTAMINATED MATERIALS 'ACM' EXPOSED ON SITE SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE REQUIREMENTS NOTED IN THE REMEDIATION ACTION PLAN (RAP) BY JBS&G. THE CONTRACTOR SHALL ALSO REFER TO THE THE DETAILED SITE INVESTIGATION REPORT BY JBS&G

EARTHWORKS AND TEMPORARY BATTERS TO BE CONSTRUCTED IN ACCORDANCE WITH GEOTECHNICAL REPORT TO ENSURE BATTER STABILITY IN THE INTERIM CONDITION.

CONSIDERATION TO BE MADE TO PROVIDING RESIN BINDER POLYMER SPRAY TO ALL INTERIM BATTERS AT INTERFACE OF THE WORKS. DIRTGLUE OR EQUIVALENT.

THE CONTRACTOR SHALL ENSURE THAT DUST SUPPRESSION MEASURES ARE IMPLEMENTED DURING AND UPON COMPLETION OF WORKS ACROSS THE EXTENT OF WORKS. OPTIONS INCLUDE, BUT ARE NOT LIMITED TO:

- HYDROSEEDING (PROVIDE 50mm TOP SOIL LAYER - NOT INCLUDED IN FILL VOLUME ESTIMATES)
- RESIN POLYMER BINDER SPRAY

THE CONTRACTOR SHALL SEEK APPROVAL FROM THE SUPERINTENDENT FOR PROPOSED ALTERNATIVE MEASURES

SCALE 1:300 0 2.5 5 7.5 10 12.5 m
AT ORIGINAL SIZE

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Rev	Description	Eng	Draft	Date
1	REF ISSUE	RP	AE	11.04.23

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Project
WENTWORTH HEALTH SERVICE REDEVELOPMENT
24 HOSPITAL ROAD, WENTWORTH, NSW, 2648

Drawing Title
EROSION AND SEDIMENT CONTROL PLAN

Architect
NBRS
+61 2 9922 2344
nbrs.com.au
Nominated Architect:
Andrew Duffin NSW 5602
NBRS & Partners Pty Ltd VIC 51197
ABN 16 002 247 565

Civil Engineer
TTW Structural Civil Traffic Façade
+61 2 9439 7288 | L6 73 Miller Street North Sydney NSW 2065

Scale: A1 Drawn: AE Authorised: RP

Job No	Drawing No	Revision
221039	C100	1

Plot File Created: Apr 11, 2023 - 6:34pm

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING C002

SITEWORKS LEGEND

- × F22.20 — FINISHED SURFACE LEVEL
- 22.00 — FINISHED MAJOR CONTOUR
- 22.10 — FINISHED MINOR CONTOUR
- PROPERTY BOUNDARY
- K&G — KERB AND GUTTER
- KO — KERB ONLY
- FK — FLUSH KERB
- IL 10.20 — STORMWATER PIT AND DRAIN
- GT — GRATED TRENCH
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- DP — DOWN PIPE
- OVERLAND FLOWPATH
- RW — RETAINING WALL
- BATTER
- BIO SWALE
- GRASSED SWALE
- TPZ — TREE PROTECTION ZONE
- SRZ — STRUCTURAL ROOT ZONE
- PROPOSED ACM CAP AND CONTAIN LOCATION

DARLING RIVER

EXISTING LEVEE BANK

NEW HOSPITAL BUILDING
FFL 36.00

EXISTING CARPARK

LANDSCAPE BATTER REFER TO LANDSCAPE DRAWINGS FOR DETAILS

STAGE 1B & 2 ACM MATERIAL (APPROX. 400 m³) CAPPED AND CONTAINED WITHIN LANDSCAPE BATTER. SHOWN INDICATIVELY ONLY

LANDSCAPE MOUND REFER TO LANDSCAPE DRAWINGS FOR DETAILS

STAGE 1A ACM MATERIAL (APPROX. 740 m³) CAPPED AND CONTAINED WITHIN LANDSCAPE MOUND. SHOWN INDICATIVELY ONLY

MATCH LEVELS TO TOP OF LEVEE BANK

MATCH INTO EXISTING PAVEMENT LEVELS AND MAKE GOOD AT INTERFACE

MATCH INTO EXISTING KERB AND MAKE GOOD

1:40 LANDING

3m WIDE GRASSED SWALE MIN 1 IN 200 SLOPE TO GRATED SW PIT

1.5m WIDE BIO-SWALE

ABOVEGROUND RWHT. CONNECT 225Ø OVERFLOW TO SW PIT

TEMPORARY 1.5m MAX HEIGHT BLOCKWORK RETAINING WALL ALONG INTERFACE WITH EXISTING HOSPITAL (STAGE 1A)

18 m² BIO-RETENTION RAINGARDEN

TREE 67 TO BE PROTECTED IN ACCORDANCE WITH ARBORIST REQUIREMENTS. PROPOSED LEVELS WITHIN TPZ ABOVE EXISTING GRADE

SERVICES ROOMS - FFL 34.70

CONNECT FIRE TANK OVERFLOWS TO GRATED SW PIT. SERVICES PLINTHS SET ABOVE RL 34.65

CONNECT ROOF DOWNPIPES FOR NEW BUILDINGS TO INGROUND SW DRAINAGE. DETAIL TBC

EXISTING Ø300 RCP OUTLET

INSTALL NON-RETURN VALVES TO PREVENT BACKFLOW. PERMISSIBLE SITE DISCHARGE 124 l/s (Ex. Ø300 PIPE CAPACITY)

SPEL ECOCEPTOR 1500 SERIES - E.240/153030.RCP OR APPROVED EQUIVALENT

BAFFLE PIT WITH ORIFICE PLATE TO RESTRICT FLOWS TO 48 l/s

15KL UNDERGROUND ON-SITE DETENTION (OSD) 5.4 X 3.6m SD ACO STORMBRIXX OR APPROVED EQUIVALENT.

STORE ROOM AND MAINTENANCE SHED - FFL 35.67

TAPER KERBS TO ZERO HEIGHT OVER 1m

SPEL ECOCEPTOR 1500 - E240/153030.RCP SERIES OR APPROVED EQUIVALENT

BAFFLE PIT WITH ORIFICE PLATE TO RESTRICT FLOWS TO 73 l/s

GENERATOR SLAB - SSL 34.90

25KL UNDERGROUND ON-SITE DETENTION (OSD). 9.6 X 3.0m HD ACO STORMBRIXX OR APPROVED EQUIVALENT.

CARPARK EXTENDED DETENTION DEPTH OSD STORAGE 1 IN 100 YR RL 34.65 (BLUE DASH LINE)

SCALE 1:300 0 2.5 5 7.5 10 12.5 m
AT ORIGINAL SIZE

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Rev	Description	Eng	Draft	Date
3	REF ISSUE	RP	AE	11.04.23
2	ISSUED FOR SD	RP	AE	23.11.22
1	ISSUED FOR DRAFT SD	RP	AE	21.11.22

DIAL BEFORE YOU DIG www.1100.com.au

BEWARE OF UNDERGROUND SERVICES. THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN

Project
WENTWORTH HEALTH SERVICE REDEVELOPMENT
24 HOSPITAL ROAD, WENTWORTH, NSW, 2648

Drawing Title
SITE PLAN

Architect
NBRS
+61 2 9922 2344 nbrs.com.au
Nominated Architect: Andrew Duffin NSW 5602
NBRS & Partners Pty Ltd VIC 51197 ABN 16 002 247 565

Civil Engineer
TTW Structural Civil Traffic Façade
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Scale: A1 Drawn: AE Authorised: RP

Job No	Drawing No	Revision
221039	C210	3

Plot File Created: Apr 11, 2023 - 6:47pm

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING C002

PAVEMENT LEGEND

P1 — ASPHALT VEHICULAR PAVEMENT
40mm thickness asphalt (AC14) with primerseal on 170mm compacted thickness DGB20 or equivalent on 250mm select fill material (Ev=150Mpa) on evenly compacted sub-grade to 100% standard maximum dry density in accordance with A.S.1289.5.1.1 (Min. CBR 3.0%)

P2 — CONCRETE PEDESTRIAN PAVEMENT
125mm thickness concrete (f'c = 32MPa) with SL62 fabric mesh (40 cover) on 100mm compacted thickness DGB20 on evenly compacted sub-grade to 100% standard maximum dry density in accordance with A.S.1289.5.1.1 (Min. CBR 3.0%)

P3 — GRAVEL/PERMEABLE PAVEMENT
Refer to Landscape Specifications for details

ANY UNCONTROLLED/SOFT SPOT TO BE REMOVED AND BACKFILL WITH ENGINEERING FILL/PROOF ROLL AND COMPACTED IN ACCORDANCE WITH GEOTECHNICAL ENGINEER'S RECOMMENDATION

REFER TO GEOTECHNICAL REPORT FOR SUBGRADE PREPARATION REQUIREMENTS

TREE 67 TO BE PROTECTED IN ACCORDANCE WITH ARBORIST REQUIREMENTS. PROPOSED LEVELS WITHIN TPZ ABOVE EXISTING GRADE

SCALE 1:300 0 2.5 5 7.5 10 12.5
AT ORIGINAL SIZE m

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Rev	Description	Eng	Draft	Date
3	REF ISSUE	RP	AE	11.04.23
2	ISSUED FOR SD	RP	AE	23.11.22
1	ISSUED FOR DRAFT SD	RP	AE	21.11.22

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Project
WENTWORTH HEALTH SERVICE REDEVELOPMENT
24 HOSPITAL ROAD, WENTWORTH, NSW, 2648

Drawing Title
PAVEMENT AND JOINTING PLAN

Architect
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Scale: A1 Drawn: AE Authorised: RP

Job No	Drawing No	Revision
221039	C310	3

Plot File Created: Apr 11, 2023 - 6:48pm

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING C002

LEVELS TABLE

No.	FROM LEVEL (m)	TO LEVEL (m)	COLOUR
1	-0.70	-0.10	
2	-0.10	0.50	
3	0.50	1.10	
4	1.10	1.70	
5	1.70	2.30	

× FX.XX DENOTES CUT / FILL DEPTH FROM NATURAL SURFACE TO DESIGN SURFACE

CUT AND FILL ESTIMATES

	STAGE 1A	STAGE 1B	STAGE 2
AREA OF WORKS	6,620 m²	3,790 m²	1,050 m²
CUT (UNCONTROLLED FILL)	2,130 m³	1,000 m³	210 m³
ACM (APPROX 150mm DEPTH OF TOPSOIL/FILL)	740 m³	230 m³	170 m³
FILL (TO BENCHING LEVEL)	8,310 m³	2,350 m³	120 m³

1. NO BULKING FACTOR APPLIED.
2. CUT AND FILL VOLUME ESTIMATES CALCULATED FROM THE FINISHED EARLY WORKS STRIPPED SURFACE (150mm BELOW NATURAL SURFACE) TO THE DESIGN BULK EARTHWORKS BENCHING SURFACE.
3. FOR RE-USE OF SITE WON MATERIAL, REFERENCE SHOULD BE MADE TO THE GEOTECHNICAL REPORT. THE CONTRACTOR IS TO MAKE ALLOWANCE FOR SORTING/TESTING AND HANDLING OF ANY FILL MATERIAL PROPOSED FOR RE-USE. ALL TESTING SHALL BE AT THE CONTRACTOR'S EXPENSE.
4. NO VOLUME ALLOWANCE OF BENCHING FOR STRUCTURAL FOOTINGS, SERVICE TRENCHES AND INGROUND SERVICES TANKS.

NEW HOSPITAL BUILDING

SCALE 1:300 0 2.5 5 7.5 10 12.5 m
AT ORIGINAL SIZE

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Rev	Description	Eng	Draft	Date
4	REF ISSUE	RP	AE	11.04.23
3	PRELIMINARY	RP	AE	19.12.22
2	ISSUED FOR SD	RP	AE	23.11.22
1	ISSUED FOR DRAFT SD	RP	AE	21.11.22

DIAL BEFORE YOU DIG www.1100.com.au

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Project
WENTWORTH HEALTH SERVICE REDEVELOPMENT
24 HOSPITAL ROAD, WENTWORTH, NSW, 2648

Drawing Title
CUT & FILL PLAN

Architect
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Scale: A1 Drawn: AE Authorised: RP

Job No	Drawing No	Revision
221039	C410	4

Plot File Created: Apr 11, 2023 - 6:32pm

5.3 Appendix C – MUSIC Assessment