Warrawong Community Health Centre

REF DESIGN STATEMENT – CIVIL

Prepared for: Health Infrastructure NSW
By: enstruct group pty ltd
Revision: B
March 2024

ISSUE AUTHORISATION

PROJECT: Warrawong Community Health Centre
Project No: 5988

Rev	Date	Purpose of Issue / Nature of Revision	Prepared by	Reviewed by	Issue Authorise by
A	15/12/23	Draft REF	TAH		
B	18/03/24	REF Submission	TAH	PAL	PAL

Executive Summary

This report describes the civil engineering design to meet the requirements of the proposed Warrawong Community Health Centre, covering the following:

- Existing site conditions.
- Civil engineering requirements for the site.
- Bulk earthworks
- Road infrastructure
- Stormwater treatment quality and quantity for the project.
- Design in accordance with HI requirements.
- Stormwater detention systems design to consider the Council and Greenstar requirements and required site works.

Typically, stormwater design address Council requirements along with Greenstar measures.

Contents

1 Introduction

1.1 The New Shellharbour Hospital and Integrated Services Project

The NSW Government has committed to a $100 billion infrastructure pipeline over the next four years, $10.7 billion of which will be spent on new and upgraded health facilities. Underpinning this capital spend is the Government's economic reform and recovery strategy. It is within this context that $722 million plus has been committed to the New Shellharbour Hospital and Integrated Services Project (NSH Project).

The NSH Project is the largest capital investment to be undertaken in the Illawarra Shoalhaven Local Health District (ISLHD) and involves several phases of work at Bulli, Wollongong, Shellharbour and Warrawong.

1.2 Warrawong Community Health Centre

The ISLHD 2021 Clinical Services Plan (CSP) builds on previous service planning; setting out the key directions for service and capital development across the ISLHD from 2020 to 2030, as well as the vision for an integrated health system within the Illawarra Shoalhaven region.

The Warrawong Community Health Centre is expected to:

- Provide care locally and support the southern Illawarra population through the provision of:
  - Specialised community-based services that provide care for people and families with chronic health conditions, complex needs and of marginalised status.
  - Targeted approach in providing services, responding to local needs.
  - With care closer to home to effectively minimise inequity to health care access.
- Support the local vulnerable community through the provision of the following clinical services:
  - Services currently hospital based which are more appropriately, conveniently, and effectively delivered within a community setting.
  - Child and Family services including PKH Child Development Service, Illawarra Early Childhood Nurses, Domestic Family Violence and Sexual Assault Services and Binji & Boori Child & Family Illawarra Aboriginal Services (AMHICH).
  - Ambulatory and Primary Health Care services including facilities offering Chronic Disease Prevention and Rehab Services such as the Aunty Jeans Program and Healthy Hearts program.
  - District Wide Sexual Health Service.
  - Drug and Alcohol Services, based in the community including Drug & Alcohol Needle & Syringe Program (First Step), and Counselling & Withdrawal Management.
  - Community based Mental Health services.
  - Allied Health (including Brain Injury Service).
  - Ante-natal.
  - Equipment Loan Pool.
- Support partnered service delivery with the integration and collocation of other health care providers and government agencies to delivered coordinated approaches to supporting the local community.
- The development at Warrawong Community Health Centre (WCHC) will also provide the opportunity to relocate selected services from the Port Kembla Hospital (PKH) site and other locations in the Illawarra region.

1.3 Key Project Drivers

- Ageing and constrained infrastructure that does not meet current AusHFG standards and inhibits the ability to:
  - Deliver contemporary services and meet future health care needs.
  - Provide digitally enabled facilities and services.
  - Deliver appropriate community-based health services.
- Increasing cost escalation to maintain and operate inefficient, disparate facilities that are at the end of their useful life.

1.4 Expected Project Benefits

- Increasing operational efficiencies to achieve improved financial sustainability.
- Improving the health and well-being outcomes for the local populations.
- Providing increased self-sufficiency as a hospital serving its local population, taking the pressure off, and enabling Wollongong Hospital to fulfil its role as the ISLHD's tertiary referral centre.
- Creating expanded, modern, and contemporary built environments for both staff and patients.

1.5 Project Status

The project has undergone a masterplan and schematic design which has now moved into the design development phase.

2 Site Existing Conditions

2.1 Site Location

The proposed hospital site is located on Cowper Street, Warrawong. It is in the Wollongong LGA. The site is to the north of Lake Illawarra and approximately 7km south of the Wollongong CBD. It is part of the Port Kembla Hospital Campus.

Figure 1 Local Context Map (Source: NSW Six Maps 2023)

Figure 2 Site Context Map (Source: Google Maps 2023)

2.2 Site Description

The proposed Warrawong Community Health Centre is located on the north-eastern corner of the existing Port Kembla Hospital Site at the corner of Cowper Street and Fairfax Avenue. It is situated over the footprint of the existing childcare and occupational therapy buildings which are to be demolished.

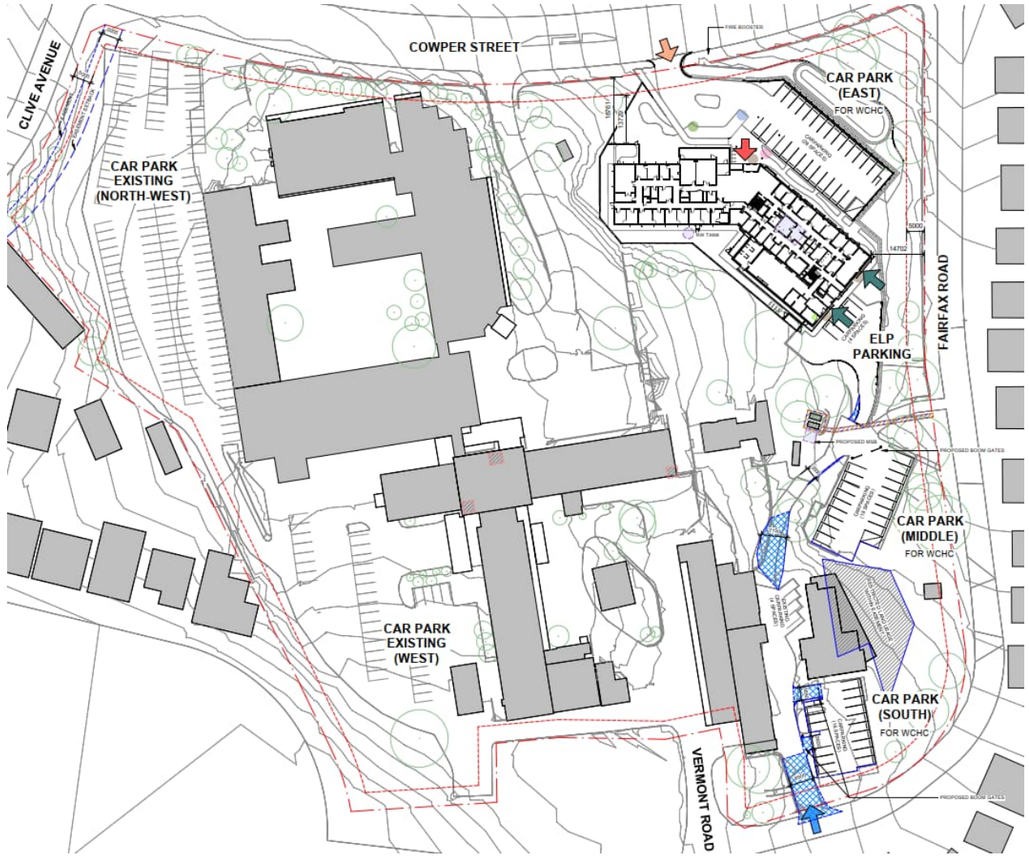


Figure 3 Site Plan

2.3 Site Survey

A survey has been conducted by LandTeam Australia for the Port Kembla Hospital site, job reference 214930, dated 12/10/2022. The survey has been used to assess and compare the site location and site layout options. The existing site survey drawings are enclosed within Appendix A of this report.

Surveyor Name:	LandTeam Australia Pty Ltd
Surveyor Contact Details:	5/97 Shellharbour Road Warilla NSW 2528 PO Box 353 Warilla NSW 2528
Job Reference:	214930
Survey Date:	August - October 2022
Drawing Number:	214930-TS03

2.4 Site Topography

Port Kembla Hospital sits atop a hill. The hospital site falls broadly into 4 separate catchments. The proposed WCHC falls generally to the north, with a portion of the site falling to the east. Existing grass surfaces typically have falls in the order of between 1:6 and 1:10.

Concrete crib retaining walls can be found around the perimeter of the site, as well as retaining the existing car park.

2.5 Existing Drainage

There are existing stormwater pits and pipes across the WCHC site, which discharge the Council stormwater system in Cowper Street and Fairfax Avenue.

Figure 4 Site from the northern corner, showing concrete crib wall and existing Council drainage

2.6 Flooding

Given the site location on top of a hill, the site is not susceptible to flooding.

3 Civil Design

3.1 Onsite Stormwater Detention (OSD)

Due to the change in impervious area on the site, OSD is required to manage the stormwater discharge rate from the site. enstruct has reviewed the OSD requirements as outlined in Wollongong City Council DCP 2009 (Chapter E14). This document specifies that the peak flows generated from the development are to be reduced to below the flowrates experienced under the existing ('pre-development') site conditions.

Stormwater detention can be achieved through the use of an OSD tank, or an OSD basin. OSD storage must generally be located as close as possible to the lowest point of the site and be designed to collect all piped and surface stormwater runoff from all impervious areas of the site. The location and design of the OSD storage must not have a detrimental impact on upstream or adjacent properties. OSD is to be located away from any natural watercourses and Overland Flow Paths (OLFP) from catchments external to the site, and are not to be inundated by a natural watercourse or externally sourced OLFP in any events up to and including the 1% AEP storm event.

OSD has been provided in an open basin to the north east of the proposed development. Stormwater from the buildings and car parks is directed into the basin. A total storage volume of 15m^3 has been calculated based on the procedures outlined in Chapter E14, Section 10.2.4 of the DCP is required with discharge rates of 122 L/s and 203 L/s in the 5-year and 100-year ARIs respectively.

3.2 Water Sensitive Urban Design

Council provides stormwater quality targets in chapter E15 of the Development Control Plan (DCP). The project is also targeting Greenstar credits for stormwater quality treatment. Given the targets for the Greenstar Emi-5 are stricter than Council requirements, the Greenstar targets have been adopted for this development.

Table 1 Stormwater quality targets

Stormwater quality treatment targets	Wollongong Council DCP	Greenstar 26.2 column B
Total Suspended Solids (TSS)	80%	80%
Gross Pollutants	90%	90%
Total Nitrogen (TN)	40%	45%
Total Phosphorus (TP)	55%	60%

Rainwater harvesting has been proposed for the site with rainwater re-use for external uses such as irrigation. The risk of water-borne disease/infection limits the ability to re-use stormwater within the building for non-potable uses in a hospital environment.

Vegetated water sensitive urban design features such as vegetated swales, bioretention basins and buffer strips are proposed to be integrated into landscaped areas.

4 Civil Design

4.1 Bulk Earthworks

The bulk earthwork for the development have been designed to comply with AS3798-1996 Guidelines on earthworks for commercial and residential developments.

A bulk earthworks design for the main building has been prepared based on the architectural plan. Batter slopes of 1:3 have been adopted as per the geotechnical advice.

The bulk earthworks considers the main building, entry driveway, east car park, internal road upgrades to the south of the WCHC, and the south car park.

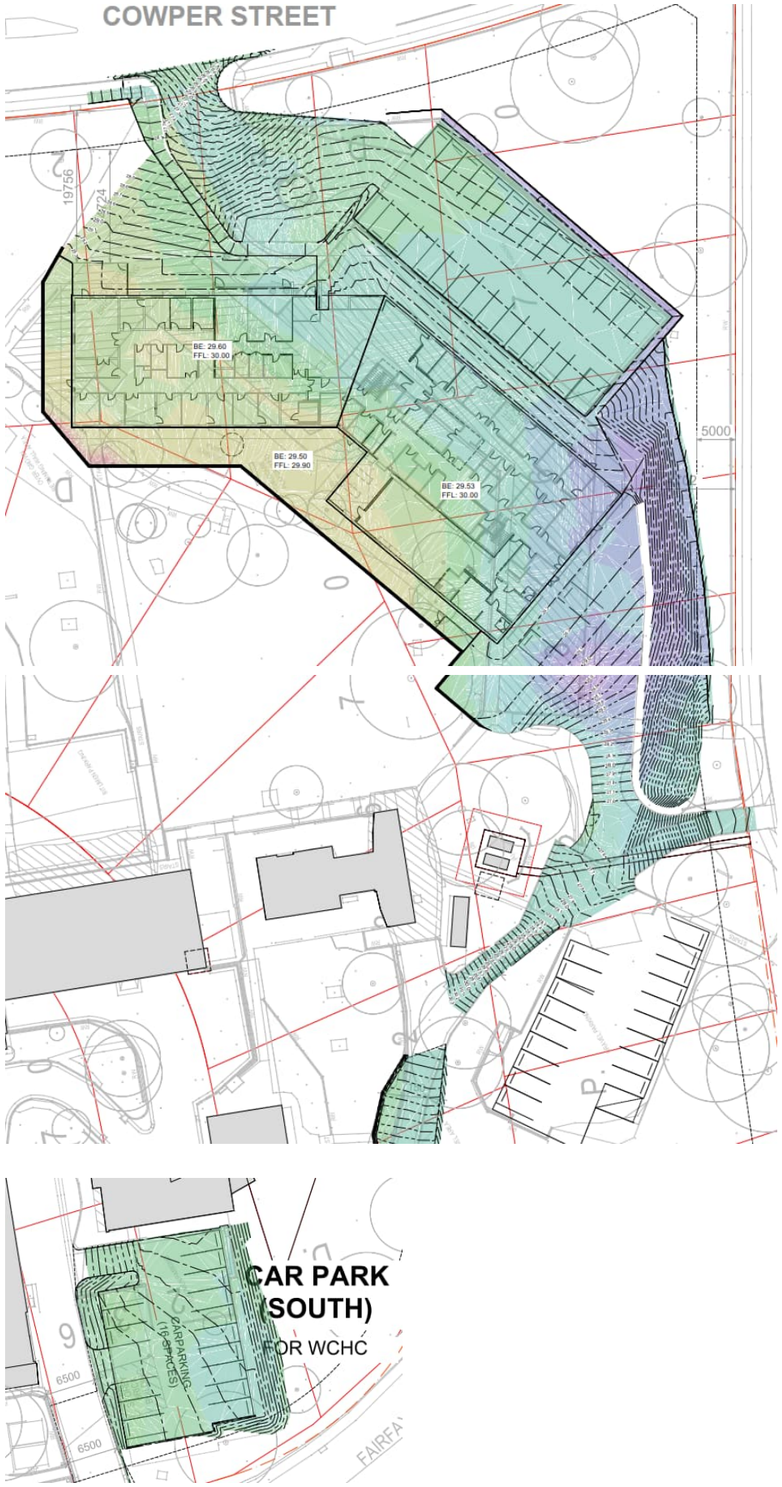


Figure 5 Bulk Earthworks Plans

4.2 *Road Infrastructure*

The front entry road has been shifted a few metres up Cowper Street in order to raise the height of the driveway to meet the proposed building. Cowper Street has a longitudinal fall of between 10% and 11%, making the entry road design challenging. Design has been undertaken in coordination with the project traffic engineer.

An internal road between Fairfax Road to the south requires upgrades to accommodate MRV's servicing the WCHC. The road design includes a regrading and some widening to meet the requirements of AS2890.2:2018.

4.2.1 *Pavement Construction*

Generally, pavements consist of flexible pavement construction for the circulation roads, and concrete pavements for loading zones. Flexible pavements consist of layers of granular compacted material, usually crushed rock, under a layer of asphalt used as a wearing course. Concrete pavement has also been specified for the east car park to integrate the pavement and crash barrier footing.

Concrete pavements throughout may be considered as a value engineering option.

Due to the reactive clays present at the site, a bridging layer of 300mm crushed rock/gravel (per the geotechnical report) is required to minimise the impact of shrinking/swelling soil on the pavement.

4.2.2 *Road Grading*

Concept road grading has been undertaken to review the design against requirements based on:

- AS 2890.1: Parking facilities, Part 1: Off-street car parking
- AS 2890.2: Parking facilities, Part 2: Off-street commercial vehicle facilities
- AS 2890.6: Parking facilities, Off-street parking for people with disabilities
- AS 1428.1: Design for access and mobility – General requirements for access – New building work

Where possible, car park areas and footpaths will have a maximum grade of 1:20 (5%) and a maximum crossfall of 1:40 (2.5%).

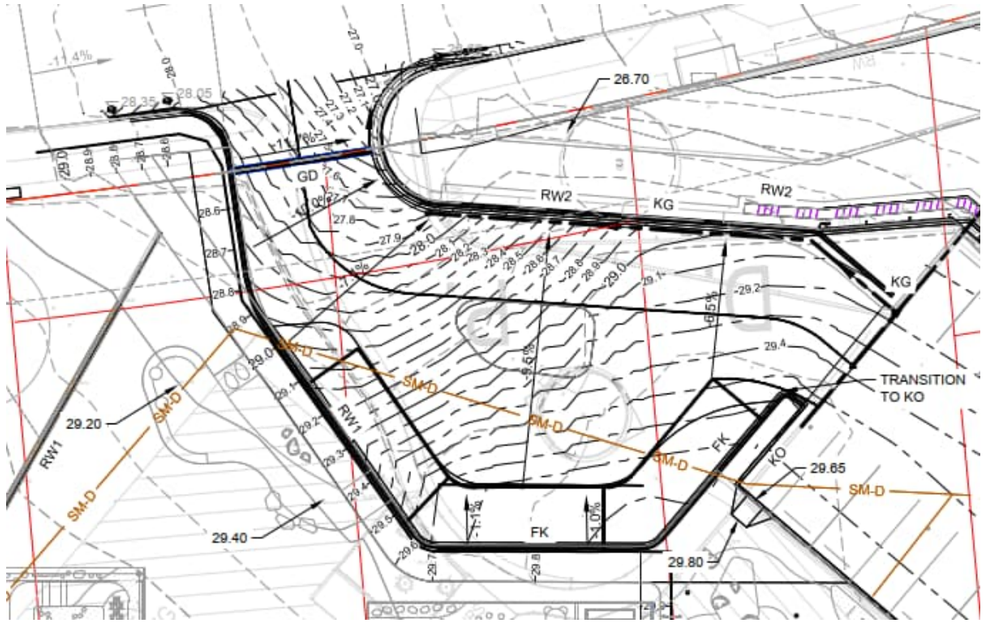


Figure 6 Front entry grading

Cowper Street has a longitudinal grade of 10.9%, and as a result crossfalls cannot be kept to maximum 5%.

Figure 7 Loading dock and access road grading

4.3 Retaining Walls

Existing concrete crib retaining walls show some evidence of cracking and spalling in the concrete sleepers, and subsidence in the wall structure. Proposed works are generally outside the zone of influence of the existing walls that are to remain.

Retaining walls up to 2m high are proposed to be constructed as gabion walls, with a staggered arrangement to the landscape architect detail. Retaining walls in the back of house area is proposed to be cantilevered blockwork wall.

4.4 Stormwater

4.4.1 Roof Levels

Gutters and downpipes will be designed by the Hydraulic Engineer. The roof drainage system of gutters, downpipes and associated pipework is to be designed in accordance with AS/NZS 3500.3 Plumbing and Drainage Part 3: Stormwater Drainage.

Downpipes conveying rainwater from the roof level of the proposed building will be connected to a rainwater capture and re-use system by the hydraulic engineer. Rainwater will typically be used for external uses such as irrigation.

4.4.2 Surface Water

The majority of surface water from roads, footpaths, parking areas at ground level will be collected and conveyed via stormwater pits and pipes. The stormwater network is designed for a 5% AEP (1 in 20-year) storm event. A drainage plan has been prepared showing the proposed network.

The proposed southern car park will be graded to a bioretention swale on the eastern side of the car park. This source-based treatment is an efficient and effective form of stormwater treatment with minimal “hard” infrastructure such as pits and pipes.

4.4.3 WSUD

The drainage network for the WCHC has been designed to discharge into a bioretention basin integrated into the landscape design on the east side of the car park. Stormwater pond up to approximately 200mm and filter through soil layers prior to discharge from the site. The basin has been modelled in MUSICX to demonstrate the effective removal of pollutants and nutrients from the site, with results presented in Table 2

Table 2 MUSICX model results - main basin

	Source (kg/year)	Residual load (kg/year)	Reduction	Target reduction
Total Suspended Solids (TSS)	1105.7	117.2	89.4%	80%
Gross Pollutants	130.6	~0	~99%	90%
Total Nitrogen (TN)	15.7	7.0	55.2%	45%
Total Phosphorus (TP)	2.3	0.9	62.1	60%

The proposed south car park utilises a bioretention swale adjacent to the car park to treat surface water prior to discharge to the street drainage system on Fairfax Avenue. MUSICX modelling results for this carpark and swale are presented in Table 3.

Table 3 MUSICX model results - south car park

	Source (kg/year)	Residual load (kg/year)	reduction	Target reduction
Total Suspended Solids (TSS)	187.0	14.2	92.4%	80%
Gross Pollutants	13.71	~0	~99%	90%
Total Nitrogen (TN)	1.40	0.59	58.0%	45%
Total Phosphorus (TP)	0.33	0.09	73.1%	60%

4.4.4 Overland Flow

During a storm event larger than the 5% AEP storm event, or in the event there is a blockage or failure of the underground drainage network, stormwater will flow as overland flow from the WCHC site.

Design has been undertaken to ensure overland flows are directed away from the WCHC building.

4.5 Erosion and Sediment Control

The erosion and sediment control measures adopted for the development during the construction phase have been designed in accordance with Council guidelines and Soils and Construction – Managing Urban Stormwater – Landcom.

Erosion and sediment controls will be provided during the construction phase in accordance with Council guidelines. These control measures have been developed alongside consideration of the necessary earthworks associated with the development.

A sedimentation and erosion control plan has been prepared for the site works, and is provided in Appendix B. The plan includes measures such as: sediment fences surrounding disturbed areas to capture sediment runoff and a truck shaker tray at each point of access to the work area. The measures to be adopted are summarised in Table 4.

Final details of sediment and erosion control measures for the works will be implemented on site by the successful contractor who will be provided with these drawings. The contractor will take into account the site works staging including the preferred site access points, site shed

locations and temporary stockpile locations in developing and implementing these requirements but will be ultimately responsible for managing temporary stormwater and sediment and erosion control during construction.

Table 4 Sedimentation control measures

Measure	Location	Purpose
Sediment Fence	Near site boundary along the downstream side of the site.	To prevent sediment leaving the site with stormwater runoff. Stormwater will pass through the fence but the fence will trap the sediment.
Shaker Grid and Wash Down	At construction exit from the site.	To remove ground materials from the construction vehicle wheels prior to the vehicle leaving the site and discharging material onto the public roadway.
Sand Bag Sediment Traps	Directly upstream of all stormwater kerb inlet structures located in close proximity of the site.	To prevent sediment discharged from the site from entering the stormwater inlet structure and contaminating the water course.
Inlet Sediment Trap	Around any stormwater surface inlet structures	To prevent sediment discharged from the site from entering the stormwater inlet structure and contaminating the water course.
Sediment Basin	At the downstream end of the site near the boundary.	To store sediment on site during the construction phase. Basins to be cleaned out prior to the completion of the landscaping in the basins.

Erosion and sediment control will also be further addressed during detailed design and construction of this phase and future development.

5 Civil Engineering Design Principles

All new works will utilise the HI systemised design approach and be designed in accordance with the following civil principles and parameters.

5.1 Design Standards

The civil design is in accordance with the latest revision of all relevant structural Australian Standards, relevant structural sections of the BCA and other statutory requirements.

In particular the civil design is in accordance with the following relevant Australian Standards:

- AS/NZS 3500.3 (2021) – Plumbing and Drainage Part 3: Stormwater Drainage
- AS 3600 (2018) – Concrete Structures
- AS 3700 (2011) – Masonry Code
- AS 4678 (2002) – Earth Retaining Structures
- AS 2890.1 (2004) - Parking facilities - Off-street car parking
- AS2890.2 (2018) - Off-street Commercial Vehicle Facilities
- Australian Rainfall and Runoff (ARR 2019)
- Shellharbour Development Control Plan 2017
- Shellharbour Drainage Design Handbook
- Managing Urban Stormwater: Soils and construction - Volume 1 4th edition (Landcom)

5.2 Stormwater design

All stormwater drainage is designed to comply with best practise as designated in Australian Rainfall and Runoff and the Australian Standards AS3500.

Element	Criteria
Pipe Class	Minimum Class 2
Design Loading	SM1600 – Traffic Loading T44, CAT16H – Construction Loading
Minimum Pipe Size	Private Property – 225mm Diameter min. Local Roads – 375mm Diameter min.
Maximum Spacing of Pits	Desirable – 70m Absolute – 120m
Pit Blockage Allowance	On-grade – 0.2
	Sag – 0.5
Minimum Pipe Cover	600 mm
Design Storm	Minor - 5% AEP Major – 1% AEP
Minor Storm Pit Freeboard	Desirable – 150 mm Absolute – 100 mm
Design Freeboard	0.5m above trunk open drainage channel. 0.5m above PMF for habitable floors.
Allowable Flow Velocities	Max. 6.0m/s for 10% AEP Min. 0.6m/s in 2EY
Flood Planning Level	PMF

5.3 Design Life

The civil works have been designed to provide adequate performance for a minimum period of 50 years with a typical maintenance system. Flexible pavements have a design life of 20-years, after which a mill and re-sheet may be required.

5.4 Green Star

Civil influence on Green Star targets for a building of this nature is limited to the EMI 5 Stormwater criteria: To encourage and recognise the minimisation of peak stormwater flows and the protection of receiving waters from pollutants.

Credits can be gained through the provision of stormwater detention and stormwater quality treatment to meet Council guidelines, subject to further design.

APPENDIX A

Existing Site Survey

LandTeam Australia Pty Ltd (2022)

SURVEY METHOD:

SITE SURVEY: TOTAL STATION

UNDERLYING IMAGE: NEARMAP IMAGE 04/06/2022

SURVEY CONTROL: TOTAL STATION

CAUTION

www.dialbeforeyoudig.com.au
DIAL 1100 BEFORE YOU DIG

ONLY APPARENT SERVICES HAVE BEEN LOCATED BY SURVEY. NO SEARCH OF PUBLIC UTILITIES HAS BEEN CARRIED OUT TO DETERMINE THE LOCATION OF ANY UNDERGROUND SERVICES SUCH AS TELSTRA, POWER, GAS, SEWER OR WATER. AS SUCH BEFORE CARRYING OUT ANY DESIGN OR CONSTRUCTION WORK YOU NEED TO DIAL 1100 BEFORE YOU PROCEED

NOTES:

1. SEE SURE SEARCH PTY LTD PLANS & 3D CAD MODEL FOR UNDERGROUND SERVICE UTILITY SPATIAL DATA.
2. REFER TO LANDTEAM 3D CAD MODEL FOR SPOT LEVELS, LAYER DEFINITIONS & SURVEY CONTROL INFORMATION.
3. BOUNDARY INFORMATION IS BY CADASTRAL OVERLAY POSITIONED ON GENERAL DEFINITION FROM UNDERLYING CADASTRAL INFORMATION SOURCED FROM LAND REGISTRY SERVICES (DEPOSITED PLANS & TITLE).

(A)	EASEMENT FOR PADMOUNT SUBSTATION 5 X 5.5 WIDE (DP1138483)
(B)	RESTRICTION ON USE OF LAND (DP1138483)
(C)	EASEMENT FOR UNDERGROUND CABLES 1 WIDE (DP1138483)
(D)	RESTRICTION(S) ON THE USE OF LAND (AF772244)
(E)	EASEMENT FOR SUPPORT OF POSSIBLE FUTURE ROAD BATTERS 3.05 WIDE (DP593925)
(F)	LEASE AREAS TO VODAFONE HUTCHINSON AUSTRALIA PTY LTD (AH781832 + AD458462) EXPIRES: 31/10/2016. OPTION OF RENEWAL. CAVEAT (AN958411)

LEGEND

— — DENOTES SHEET LAYOUT

FILE NAME : 214930-TS03_A.dwg

NOT TO SCALE

ISSUE	AMENDMENT	DRAWN	DATE
A	INITIAL ISSUE	AJC	12/10/22

LandTeam Australia Pty Ltd
ABN 35 300 283 592
Wollongong Office
5/97 Shellharbour Road
Postal: PO Box 353
WARILLA NSW 2528
p: (02) 4296 7055
f: (02) 4297 1163
e: wollongong@landteam.com.au
www.landteam.com.au

NSW GOVERNMENT: HEALTH INFRASTRUCTURE

CADASTRE / SITE PLAN
DETAIL & CONTOUR SURVEY PLAN
PORT KEMBLA HOSPITAL SITE
COWPER STREET, PORT KEMBLA

DATUM	A.H.D.	CONTOUR INTERVAL	0.5m	DATE	SURVEYED AUG - OCT 22

A1 SHEET
SURVEYED: KT/AS
DRAWN: AJC
CHECKED: GG
ISSUE A
DRAWING No.
214930-TS03
SHEET 1 OF 5 SHEET(S)

SOFTWARE: MAGNET

SOFTWARE: MAGNET

(F) LEASE AREAS TO VODAFONE HUTCHINSON AUSTRALIA PTY LTD (AH781832 + AD458462)
EXPIRES: 31/10/2016. OPTION OF RENEWAL. CAVEAT (AN958411)

SCALE 1:250

0 3 6 9 12 15
Metres

ISSUE	AMENDMENT	DRAWN	DATE
A	INITIAL ISSUE	AJC	12/10/22

LandTeam Australia Pty Ltd
ABN 35 300 283 592
Wollongong Office
5/97 Shellharbour Road
Postal: PO Box 353
WARILLA NSW 2528
p: (02) 4296 7055
f: (02) 4297 1163
e: wollongong@landteam.com.au
www.landteam.com.au

NSW GOVERNMENT: HEALTH INFRASTRUCTURE

A1
SHEET

DETAIL & CONTOUR SURVEY PLAN
PORT KEMBLA HOSPITAL SITE
COWPER STREET, PORT KEMBLA

SURVEYED: KT/AS
DRAWN: AJC
CHECKED: GG

ISSUE
A

DRAWING No.
214930-TS03
SHEET 2 OF 5 SHEET(S)

DATUM A.H.D.
CONTOUR INTERVAL 0.5m
DATE SURVEYED AUG - OCT 22

(E) EASEMENT FOR SUPPORT OF POSSIBLE FUTURE ROAD BATTERS 3.05 WIDE (DP593925)
(F) LEASE AREAS TO VODAFONE HUTCHINSON AUSTRALIA PTY LTD (AH781832 + AD458462)
EXPIRES: 31/10/2016. OPTION OF RENEWAL. CAVEAT (AN958411)

SCALE 1:250

0 3 6 9 12 15

Metres

ISSUE	AMENDMENT	DRAWN	DATE
A	INITIAL ISSUE	AJC	12/10/22

LandTeam Australia Pty Ltd
ABN 35 300 283 592
Wollongong Office
5/97 Shellharbour Road
Postal: PO Box 353
WARILLA NSW 2528
p: (02) 4296 7055
f: (02) 4297 1163
e: wollongong@landteam.com.au
www.landteam.com.au

LandTeam

NSW GOVERNMENT: HEALTH INFRASTRUCTURE

A1 SHEET

DETAIL & CONTOUR SURVEY PLAN
PORT KEMBLA HOSPITAL SITE
COWPER STREET, PORT KEMBLA

SURVEYED:	KT/AS
DRAWN:	AJC
CHECKED:	GG
ISSUE	A

DRAWING No. 214930-TS03

SHEET 3 OF 5 SHEET(S)

DATUM	A.H.D.	CONTOUR INTERVAL	0.5m	DATE	SURVEYED AUG - OCT 22

FILE NAME : 214930-TS03_A.dwg

SOFTWARE: MAGNET

FILE_NAME - 214930-TS03_A.dwg

(A) EASEMENT FOR PADMOUNT SUBSTATION 5 X 5.5 WIDE (DP1138483)
(B) RESTRICTION ON USE OF LAND (DP1138483)
(C) EASEMENT FOR UNDERGROUND CABLES 1 WIDE (DP1138483)
(D) RESTRICTION(S) ON THE USE OF LAND (AF772244)

SCALE 1:250

0 3 6 9 12 15

Metres

ISSUE	AMENDMENT	DRAWN	DATE
A	INITIAL ISSUE	AJC	12/10/22

LandTeam Australia Pty Ltd
ABN 35 300 285 992
Wollongong Office
5/97 Shellharbour Road
Postal: PO Box 353
WARILLA NSW 2528
p: (02) 4296 7055
f: (02) 4297 1163
e: wollongong@landteam.com.au
www.landteam.com.au

LandTeam

NSW GOVERNMENT: HEALTH INFRASTRUCTURE

A1 SHEET

DETAIL & CONTOUR SURVEY PLAN
PORT KEMBLA HOSPITAL SITE
COWPER STREET, PORT KEMBLA

SURVEYED: KT/AS
DRAWN: AJC
CHECKED: GG
ISSUE A

DRAWING No. 214930-TS03

SHEET 4 OF 5 SHEET(S)

DATUM A.H.D. | CONTOUR INTERVAL 0.5m | DATE SURVEYED AUG - OCT 22

SOFTWARE: MAGNET

(F) LEASE AREAS TO VODAFONE HUTCHINSON AUSTRALIA PTY LTD (AH781832 + AD458462)
EXPIRES: 31/10/2016. OPTION OF RENEWAL. CAVEAT (AN958411)

SCALE 1:250

0 3 6 9 12 15

Metres

ISSUE	AMENDMENT	DRAWN	DATE
A	INITIAL ISSUE	AJC	12/10/22

LandTeam Australia Pty Ltd
ABN 35 300 283 592
Wollongong Office
5/97 Shellharbour Road
Postal: PO Box 353
WARILLA NSW 2528
p: (02) 4296 7055
f: (02) 4297 1163
e: wollongong@landteam.com.au
www.landteam.com.au

LandTeam

NSW GOVERNMENT: HEALTH INFRASTRUCTURE

A1 SHEET

DETAIL & CONTOUR SURVEY PLAN
PORT KEMBLA HOSPITAL SITE
COWPER STREET, PORT KEMBLA

SURVEYED: KT/AS	ISSUE
DRAWN: AJC	A
CHECKED: GG	

DRAWING No. 214930-TS03

SHEET 5 OF 5 SHEET(S)

DATUM	A.H.D.	CONTOUR INTERVAL	0.5m	DATE	SURVEYED AUG - OCT 22

FILE NAME : 214930-TS03_A.dwg

SOFTWARE: MAGNET

APPENDIX B

Warrawong Community Health Centre

Civil Engineering REF Drawings

enstruct 2024

enstruct

CIVIL ENGINEERING WORKS

WARRAWONG COMMUNITY HEALTH CENTRE

91 COWPER ST, WARRAWONG, NSW 2052

CIVIL ENGINEERING WORKS DRAWING LIST:

Date generated: 18/03/2024 5:07:41 PM U:\TRANSITION\ENSTRUCT\CAD\J1-5900\5988\CIVIL\AUTOCAD\WARRAWONG - REF\5988-CV-10000

rev	date	description	drn	ch'k
02	18/03/24	ISSUE FOR REF	BEJ	TAH
01	15/12/23	ISSUE FOR REF	BEJ	TAH

rev	date	description	drn	ch'k

NSW GOVERNMENT Health Infrastructure

enstruct group pty ltd

Level 4, 2 Glen Street
Milsons Point NSW 2061
Australia

Telephone (02) 8904 1444
Facsimile (02) 8904 1555
www.enstruct.com.au

enstruct

project
WARRAWONG COMMUNITY HEALTH CENTRE - REF SUBMISSION

91 Cowper St, Warrawong, NSW 2052

drawing title
COVER SHEET

status
ISSUE FOR REF

scale at A1	drawn	checked	approved
NTS	ALA	TAH	TAH

project no.	drawing no.	rev.
5988	5988-CV-10000	02

DESIGN & CONSTRUCT DOCUMENTATION

1. The level of detail / design reflected in these documents is based on the understanding this will be built as part of a design & construct contract.
2. The contractor shall retain the responsibility to undertake detailed design, confirm compliance with relevent standards, concent conditions & the specification.
3. The contractor shall be responsible for ensuring the final design is co-ordinated fully with other consultants.
4. No variation will be accepted for design amendments required to meet the functional objective of this documentation.

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.

SURVEY AND SERVICES INFORMATION

SURVEY

Origin of levels :
Datum of levels : A.H.D. AUSTRALIAN HEIGHT DATUM
Coordinate system : MGA2020
Survey prepared by : LANDTEAM AUSTRALIA
Setout Points : CONTACT THE SURVEYOR

enstruct 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 enstruct 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.

enstruct 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.

enstruct plans do not indicate the presence of any survey mark. The contractor is to undertake their own search.

CIVIL SAFETY IN DESIGN

enstruct (NSW) Pty Ltd operates under Safe Work Australia's code of Conduct for the Safe Design of Structures.
These drawings shall be read in conjunction with the enstruct Civil risk and Solutions Register.
Under the Code of Conduct it is the Client's responsibility to provide a copy of the Civil Risk and Solutions Register to the Principal Contractor.
It is the Principal Contractor's responsibility to review the hazards and risks identified during the design process to ensure a safe workplace is maintained for the construction, maintenance and eventual demolition of the civil infrastructure.

SITEWORKS NOTES

1. All basecourse material to comply with RMS specification No 3051 and compacted to minimum 98% modified 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

DBYD SERVICES NOTE

"Public Service Utility information shown on plan has been complied from information received from Dial Before You Dig inquiry, reference Number [redacted] which was obtained on [redacted]
Unless specifically shown otherwise, this location and depth of services shown on this plan have not been verified.

The location of services shown on this drawing have been plotted as accurately as possible from diagrams provided by service authorities and should be confirmed by site inspection."

CONCRETE NOTES

EXPOSURE CLASSIFICATION : External B2

CONCRETE

Place concrete of the following characteristic compressive strength f'c as defined in AS 1379.

Location	AS 1379 f'c MPa at 28 days	Specified Slump	Nominal Agg. Size
Kerbs	S20	80	20
Pavements	S32	80	20
Retaining wall footing	S40	80	20

1. Use Type 'GP' cement, unless otherwise specified.
2. All concrete shall be subject to project assessment and testing to AS 1379.
3. Consolidate by mechanical vibration. Cure all concrete surfaces as directed in the Specification.
4. For all falls in slab, drip grooves, reglets, chamfers etc. refer to Architects drawings and specifications.
5. The location of all construction joints shall be submitted to Engineer for review.
6. No holes or chases shall be made in the slab without the approval of the Engineer.
7. Slurry used to lubricate concrete pump lines is not to be used in any concrete members.
8. All building slabs cast on ground require sand blinding with a Concrete Underlay. Refer to structural drawings.

FORMWORK

1. The design, certification, construction and performance of the formwork, falsework and backpropping shall be the responsibility of the contractor. Proposed method of installation and removal of formwork is to be submitted to the superintendent for comment prior to work being carried out.

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: 5 minutes
1% AEP = 306 mm/hr
5% AEP = 217 mm/hr
(C) Rainfall losses -
Impervious areas: IL= 1.0 mm , CL = 0 mm/hr
Pervious areas: IL=16.5 mm, CL =1.56mm/hr

2. Pipes 300 dia and larger to be reinforced concrete Class "2" approved spigot and socket with rubber ring joints U.N.O. Pipes in public roadways (including public domain) to be class "4" reinforced concrete.
3. Pipes up to 225 dia may be sewer grade uPVC with solvent welded joints, subject to approval by the engineer
5. Enlargers, connections and junctions to be manufactured fittings where pipes are less than 300 dia.
6. Pipes are to be installed in accordance with AS 3725. All bedding to be type H2 U.N.O.
7. Care is to be taken with invert levels of stormwater lines. Grades shown are not to be reduced without approval.
8. Adopt invert levels for pipe installation (grades shown are only nominal).
8. All downpipe connections are to be 150mm DIA or the same size as the downpipe (whichever is larger) laid at 1% minimum fall connection to the nearest pit. Minimum cover 450mm in non-trafficable landscaped areas.
9. Pits in roadways (including public domain) are to be insitu to council details.
10. Pit grates and covers shall conform with AS3996-2006, and AS1428.1 for access requirements.

SUBSOIL NOTES

1. Subsoil drains to be slotted flexible uPVC U.N.O.
2. All subsoil drainage shall outlet to drainage pits or land drains.
3. Pavement subsoil drains are to be placed in accordance with standard drawings behind all kerb and gutter, on the low side of all pavements, and road crossings at sag vertical curves.
4. Where subsoil drains pass under floor slabs and/or vehicular pavements, unslotted uPVC sewer grade pipe is to be used.

rev	date	description	drn	ch'k
02	18/03/24	ISSUE FOR REF	BEJ	TAH
01	15/12/23	ISSUE FOR REF	BEJ	TAH

rev	date	description	drn	ch'k

NSW GOVERNMENT Health Infrastructure

enstruct group pty ltd
Level 4, 2 Glen Street
Milsons Point NSW 2061
Australia

Telephone (02) 8904 1444
Facsimile (02) 8904 1555
www.enstruct.com.au

enstruct

project
WARRAWONG COMMUNITY HEALTH CENTRE - REF SUBMISSION

91 Cowper St, Warrawong, NSW 2052

drawing title
NOTES SHEET

status
ISSUE FOR REF

scale at A1	drawn	checked	approved
NTS	ALA	TAH	TAH

project no.	drawing no.	rev.
5988	5988-CV-10001	02

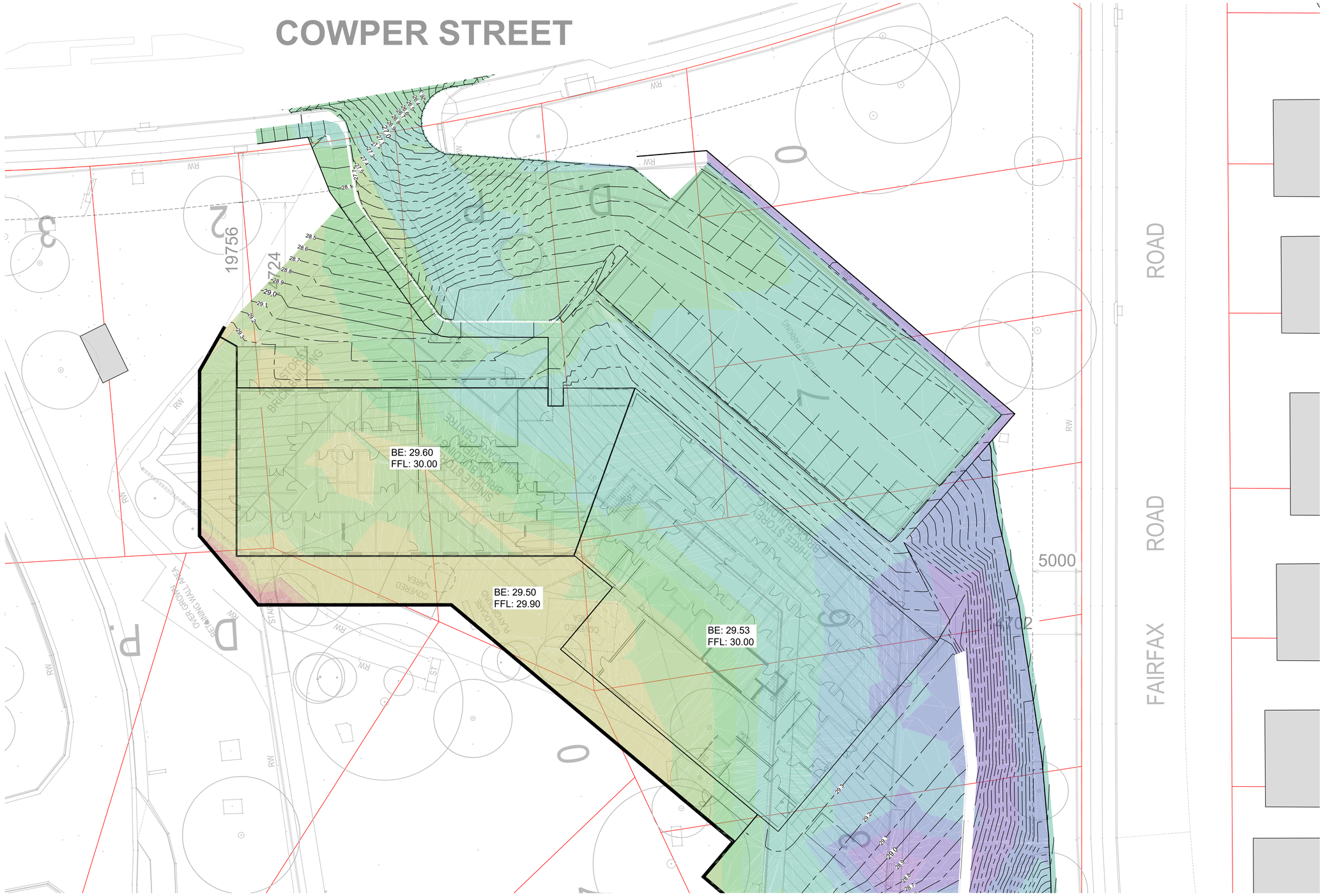
Cut/Fill Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
Surface Bulk Volumes_Warrawong	**1.000**	**1.000**	5825.315sq.m	4263.478 Cu. M.	679.658 Cu. M.	3583.820 Cu. M.<Cut>
Totals			5825.315sq.m	4263.478 Cu. M.	679.658 Cu. M.	3583.820 Cu. M.<Cut>

Surface Analysis: Elevation Ranges			
Number	Color	Minimum Elevation (m)	Maximum Elevation (m)
1		-4.000	-3.500
2		-3.500	-3.000
3		-3.000	-2.500
4		-2.500	-2.000
5		-2.000	-1.500
6		-1.500	-1.000
7		-1.000	-0.500
8		-0.500	0.000
9		0.000	0.500
10		0.500	1.000
11		1.000	1.500
12		1.500	2.000

BULK EARTHWORKS MODEL NOTES

1. THIS DRAWING IS AN ESTIMATE FOR INFORMATION ONLY WHICH SHOULD NOT BE TAKEN AS AN ACCURATE MEASUREMENT AND SHOULD NOT BE USED FOR CONSTRUCTION.
2. THIS MODEL REPRESENTS A LEVEL COMPARISON BETWEEN:
   A) THE EXISTING SURFACE LEVELS, AND
   B) THE FORMATION LEVELS OF THE PROPOSED DEVELOPMENT.
3. THE FORMATION LEVELS ARE BASED ON PAVEMENT THICKNESSES AS ASSUMED THE EXISTING SURFACE LEVELS ARE BASED ON THE TIN MODEL FROM THE SURVEY FILE. REFER TO SURVEY NOTES. SURFACE LEVELS UNDER EXISTING BUILDINGS ARE BASED ON SURROUNDING SURFACE LEVELS AND A SUBFLOOR AREA OBSERVED ON SITE
4. THIS ESTIMATE DOES NOT INCLUDE EXCAVATION FOR ANY BELOW GROUND SERVICES INCLUDING STORMWATER INFRASTRUCTURE.
5. NO ALLOWANCE HAS BEEN CONSIDERED FOR SERVICE TRENCHES, IN GROUND TANKS, STRUCTURAL FOOTINGS, PILING, FLOOR SLABS OR LIFT PITS.
6. NO BULKING FACTOR HAVE BEEN APPLIED TO THE BULK EXCAVATION VOLUMES.
7. IT HAS BEEN ASSUMED THAT ALL EXCAVATED MATERIAL IS NOT CONTAMINATED AND CAN BE USED AS FILL MATERIAL ON SITE (NOT INCLUDING TOPSOIL). IF CONTAMINATION IS PRESENT, A SEPARATE ASSESSMENT SHOULD TAKE PLACE.
8. ANY DAMAGE TO EXISTING ROADS OR EXISTING BUILDINGS WILL BE RECTIFIED BY THE CONTRACTOR AT HIS EXPENSE.
9. ALL ENVIRONMENTAL MEASURES INCLUDING VEGETATION PROTECTION AND EROSION AND SEDIMENT CONTROLS SHALL BE PLACE PRIOR TO THE COMMENCEMENT OF ANY WORK.
10. EROSION PLANS AND BUILDING REPRESENTATIVE FAMILIAR WITH THE PLAN MUST BE ON SITE AT ALL TIMES DURING CONSTRUCTION.
11. ALL ARCHITECTURAL FINISHED SURFACE LEVELS SUPERSEDE THOSE INDICATED ON THE BULK EARTHWORKS PLAN. THE CONTRACTOR SHALL CONFIRM THE FINAL BUILDING PAD LEVEL REQUIRED TO SUIT THE STRUCTURAL DESIGN WITH THE STRUCTURAL DRAWINGS PRIOR TO COMMENCEMENT OF WORK.
12. REFER GEOTECHNICAL REPORT / ENGINEER FOR SUITABILITY OF MATERIAL WON FROM EXCAVATION BACKFILL.
13. NOT TO BE USED FOR DETAILED EXCAVATION, WHICH INCLUDES: LIFT PITS, TRENCHING, FOOTINGS AND OTHER EXCAVATION OF SIMILAR NATURE
14. NO ALLOWANCE HAS BEEN MADE FOR A PILING PAD IF REQUIRED



Date generated: 18/03/2024 4:27:10 PM U:\TRANSITION\ENSTRUCT\CAD\1-5900\5988\CIVIL\AUTOCAD\WARRAWONG - REF\5988-CV-10201

rev	date	description	drn	ch'k
02	18/03/24	ISSUE FOR REF	BEJ	TAH
01	15/12/23	ISSUE FOR REF	BEJ	TAH

rev	date	description	drn	ch'k

NSW GOVERNMENT Health Infrastructure

enstruct group pty ltd

Level 4, 2 Glen Street
Milsons Point NSW 2061
Australia

Telephone (02) 8904 1444
Facsimile (02) 8904 1555
www.enstruct.com.au

enstruct

project
WARRAWONG COMMUNITY HEALTH CENTRE - REF SUBMISSION

91 Cowper St, Warrawong, NSW 2052

drawing title
BULK EARTHWORKS SHEET 1

status
ISSUE FOR REF

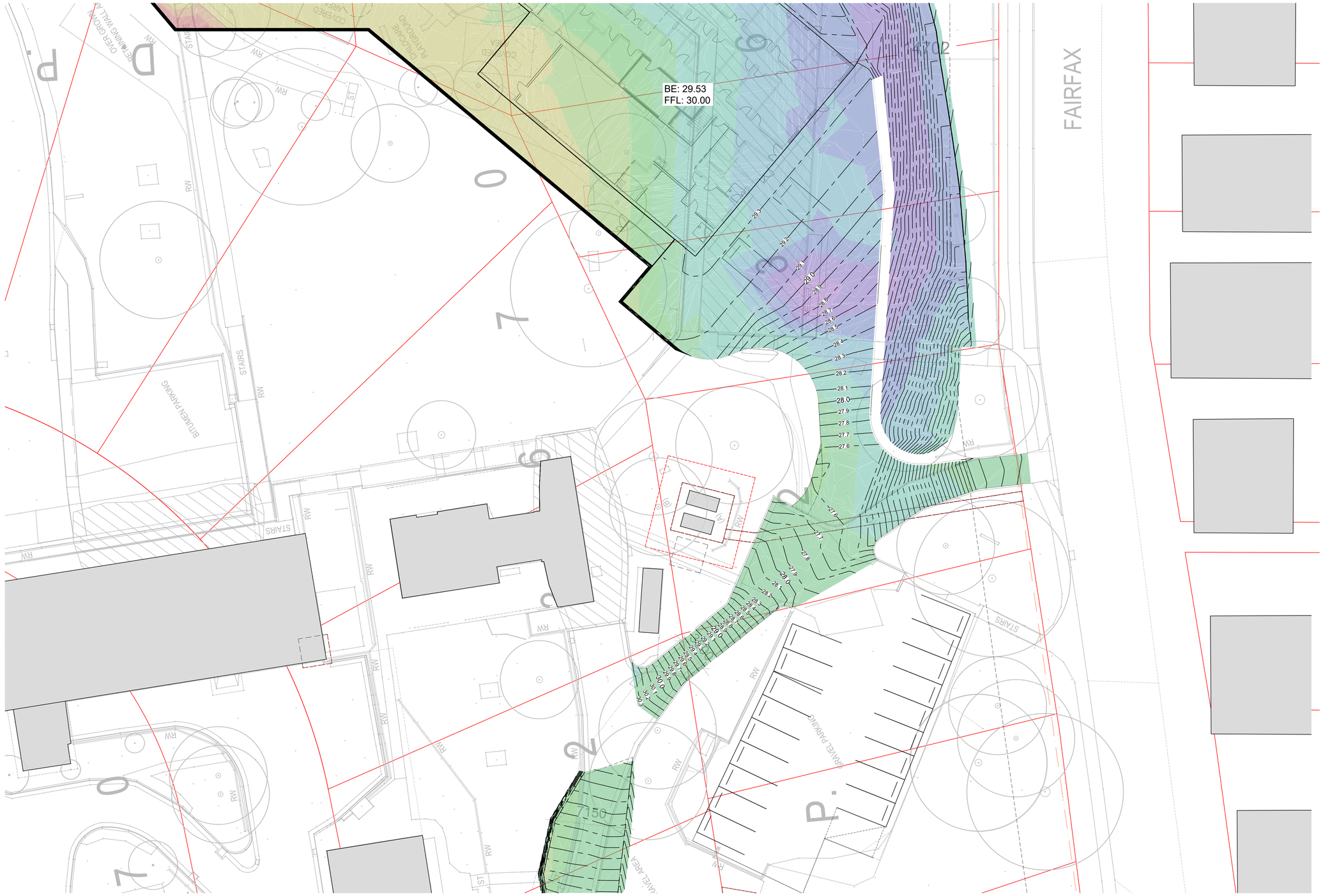
scale at A1	drawn	checked	approved
1:200	ALA	TAH	TAH

project no.	drawing no.	rev.
5988	5988-CV-10201	02

Cut/Fill Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
Surface Bulk Volumes_Warrawong	**1.000**	**1.000**	5825.315sq.m	4263.478 Cu. M.	679.658 Cu. M.	3583.820 Cu. M.<Cut>
Totals			5825.315sq.m	4263.478 Cu. M.	679.658 Cu. M.	3583.820 Cu. M.<Cut>

Surface Analysis: Elevation Ranges			
Number	Color	Minimum Elevation (m)	Maximum Elevation (m)
1		-4.000	-3.500
2		-3.500	-3.000
3		-3.000	-2.500
4		-2.500	-2.000
5		-2.000	-1.500
6		-1.500	-1.000
7		-1.000	-0.500
8		-0.500	0.000
9		0.000	0.500
10		0.500	1.000
11		1.000	1.500
12		1.500	2.000



BULK EARTHWORKS MODEL NOTES

1. THIS DRAWING IS AN ESTIMATE FOR INFORMATION ONLY WHICH SHOULD NOT BE TAKEN AS AN ACCURATE MEASUREMENT AND SHOULD NOT BE USED FOR CONSTRUCTION.
2. THIS MODEL REPRESENTS A LEVEL COMPARISON BETWEEN:
   A) THE EXISTING SURFACE LEVELS, AND
   B) THE FORMATION LEVELS OF THE PROPOSED DEVELOPMENT.
3. THE FORMATION LEVELS ARE BASED ON PAVEMENT THICKNESSES AS ASSUMED THE EXISTING SURFACE LEVELS ARE BASED ON THE TIN MODEL FROM THE SURVEY FILE. REFER TO SURVEY NOTES. SURFACE LEVELS UNDER EXISTING BUILDINGS ARE BASED ON SURROUNDING SURFACE LEVELS AND A SUBFLOOR AREA OBSERVED ON SITE
4. THIS ESTIMATE DOES NOT INCLUDE EXCAVATION FOR ANY BELOW GROUND SERVICES INCLUDING STORMWATER INFRASTRUCTURE.
5. NO ALLOWANCE HAS BEEN CONSIDERED FOR SERVICE TRENCHES, IN GROUND TANKS, STRUCTURAL FOOTINGS, PILING, FLOOR SLABS OR LIFT PITS.
6. NO BULKING FACTOR HAVE BEEN APPLIED TO THE BULK EXCAVATION VOLUMES.
7. IT HAS BEEN ASSUMED THAT ALL EXCAVATED MATERIAL IS NOT CONTAMINATED AND CAN BE USED AS FILL MATERIAL ON SITE (NOT INCLUDING TOPSOIL). IF CONTAMINATION IS PRESENT, A SEPARATE ASSESSMENT SHOULD TAKE PLACE.
8. ANY DAMAGE TO EXISTING ROADS OR EXISTING BUILDINGS WILL BE RECTIFIED BY THE CONTRACTOR AT HIS EXPENSE.
9. ALL ENVIRONMENTAL MEASURES INCLUDING VEGETATION PROTECTION AND EROSION AND SEDIMENT CONTROLS SHALL BE PLACE PRIOR TO THE COMMENCEMENT OF ANY WORK.
10. EROSION PLANS AND BUILDING REPRESENTATIVE FAMILIAR WITH THE PLAN MUST BE ON SITE AT ALL TIMES DURING CONSTRUCTION.
11. ALL ARCHITECTURAL FINISHED SURFACE LEVELS SUPERSEDE THOSE INDICATED ON THE BULK EARTHWORKS PLAN. THE CONTRACTOR SHALL CONFIRM THE FINAL BUILDING PAD LEVEL REQUIRED TO SUIT THE STRUCTURAL DESIGN WITH THE STRUCTURAL DRAWINGS PRIOR TO COMMENCEMENT OF WORK.
12. REFER GEOTECHNICAL REPORT / ENGINEER FOR SUITABILITY OF MATERIAL WON FROM EXCAVATION BACKFILL.
13. NOT TO BE USED FOR DETAILED EXCAVATION, WHICH INCLUDES: LIFT PITS, TRENCHING, FOOTINGS AND OTHER EXCAVATION OF SIMILAR NATURE
14. NO ALLOWANCE HAS BEEN MADE FOR A PILING PAD IF REQUIRED

Date generated: 14/12/2023 3:55:23 PM U:\TRANSITION\ENSTRUCT\CAD\J1-5900\5988\CIVIL\AUTOCAD\WARRAWONG - REF\5988-CV-10202

rev	date	description	drn	ch'k
02	18/03/24	ISSUE FOR REF	BEJ	TAH
01	15/12/23	ISSUE FOR REF	BEJ	TAH

rev	date	description	drn	ch'k

NSW GOVERNMENT Health Infrastructure

enstruct group pty ltd

Level 4, 2 Glen Street
Milsons Point NSW 2061
Australia

Telephone (02) 8904 1444
Facsimile (02) 8904 1555
www.enstruct.com.au

enstruct

project
WARRAWONG COMMUNITY HEALTH CENTRE - REF SUBMISSION

91 Cowper St, Warrawong, NSW 2052

drawing title
BULK EARTHWORKS SHEET 2

status
ISSUE FOR REF

scale at A1	drawn	checked	approved
1:200	ALA	TAH	TAH

project no.	drawing no.	rev.
5988	5988-CV-10202	02

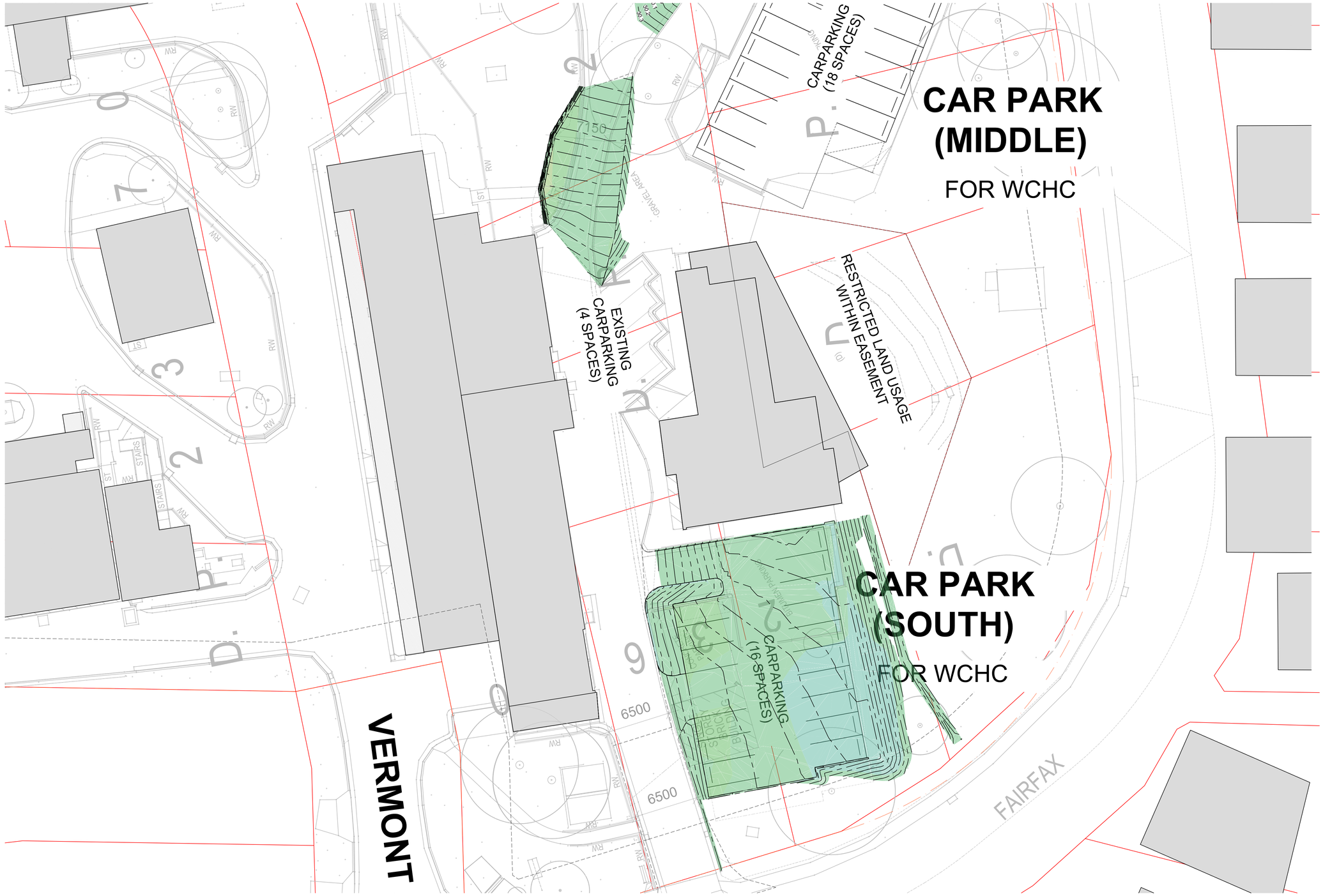
Cut/Fill Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
Surface Bulk Volumes_Warrawong	1.000	1.000	5825.315sq.m	4263.478 Cu. M.	679.658 Cu. M.	3583.820 Cu. M.<Cut>
Totals			5825.315sq.m	4263.478 Cu. M.	679.658 Cu. M.	3583.820 Cu. M.<Cut>

Surface Analysis: Elevation Ranges			
Number	Color	Minimum Elevation (m)	Maximum Elevation (m)
1		-4.000	-3.500
2		-3.500	-3.000
3		-3.000	-2.500
4		-2.500	-2.000
5		-2.000	-1.500
6		-1.500	-1.000
7		-1.000	-0.500
8		-0.500	0.000
9		0.000	0.500
10		0.500	1.000
11		1.000	1.500
12		1.500	2.000

BULK EARTHWORKS MODEL NOTES

1. THIS DRAWING IS AN ESTIMATE FOR INFORMATION ONLY WHICH SHOULD NOT BE TAKEN AS AN ACCURATE MEASUREMENT AND SHOULD NOT BE USED FOR CONSTRUCTION.
2. THIS MODEL REPRESENTS A LEVEL COMPARISON BETWEEN:
   A) THE EXISTING SURFACE LEVELS, AND
   B) THE FORMATION LEVELS OF THE PROPOSED DEVELOPMENT.
3. THE FORMATION LEVELS ARE BASED ON PAVEMENT THICKNESSES AS ASSUMED THE EXISTING SURFACE LEVELS ARE BASED ON THE TIN MODEL FROM THE SURVEY FILE. REFER TO SURVEY NOTES. SURFACE LEVELS UNDER EXISTING BUILDINGS ARE BASED ON SURROUNDING SURFACE LEVELS AND A SUBFLOOR AREA OBSERVED ON SITE
4. THIS ESTIMATE DOES NOT INCLUDE EXCAVATION FOR ANY BELOW GROUND SERVICES INCLUDING STORMWATER INFRASTRUCTURE.
5. NO ALLOWANCE HAS BEEN CONSIDERED FOR SERVICE TRENCHES, IN GROUND TANKS, STRUCTURAL FOOTINGS, PILING, FLOOR SLABS OR LIFT PITS.
6. NO BULKING FACTOR HAVE BEEN APPLIED TO THE BULK EXCAVATION VOLUMES.
7. IT HAS BEEN ASSUMED THAT ALL EXCAVATED MATERIAL IS NOT CONTAMINATED AND CAN BE USED AS FILL MATERIAL ON SITE (NOT INCLUDING TOPSOIL). IF CONTAMINATION IS PRESENT, A SEPARATE ASSESSMENT SHOULD TAKE PLACE.
8. ANY DAMAGE TO EXISTING ROADS OR EXISTING BUILDINGS WILL BE RECTIFIED BY THE CONTRACTOR AT HIS EXPENSE.
9. ALL ENVIRONMENTAL MEASURES INCLUDING VEGETATION PROTECTION AND EROSION AND SEDIMENT CONTROLS SHALL BE PLACE PRIOR TO THE COMMENCEMENT OF ANY WORK.
10. EROSION PLANS AND BUILDING REPRESENTATIVE FAMILIAR WITH THE PLAN MUST BE ON SITE AT ALL TIMES DURING CONSTRUCTION.
11. ALL ARCHITECTURAL FINISHED SURFACE LEVELS SUPERSEDE THOSE INDICATED ON THE BULK EARTHWORKS PLAN. THE CONTRACTOR SHALL CONFIRM THE FINAL BUILDING PAD LEVEL REQUIRED TO SUIT THE STRUCTURAL DESIGN WITH THE STRUCTURAL DRAWINGS PRIOR TO COMMENCEMENT OF WORK.
12. REFER GEOTECHNICAL REPORT / ENGINEER FOR SUITABILITY OF MATERIAL WON FROM EXCAVATION BACKFILL.
13. NOT TO BE USED FOR DETAILED EXCAVATION, WHICH INCLUDES: LIFT PITS, TRENCHING, FOOTINGS AND OTHER EXCAVATION OF SIMILAR NATURE
14. NO ALLOWANCE HAS BEEN MADE FOR A PILING PAD IF REQUIRED



Date generated 14/12/2023 3:59:26 PM U:\TRANSITIONENSTRUCT\CAD\J-5900\5988\CIVIL\AUTOCAD\WARRAWONG - REF\5988-CV-10203

rev	date	description	drn	ch'k
02	18/03/24	ISSUE FOR REF	BEJ	TAH
01	15/12/23	ISSUE FOR REF	BEJ	TAH

rev	date	description	drn	ch'k

NSW GOVERNMENT Health Infrastructure

enstruct group pty ltd

Level 4, 2 Glen Street
Milsons Point NSW 2061
Australia

Telephone (02) 8904 1444
Facsimile (02) 8904 1555
www.enstruct.com.au

enstruct

project
WARRAWONG COMMUNITY HEALTH CENTRE - REF SUBMISSION

91 Cowper St, Warrawong, NSW 2052

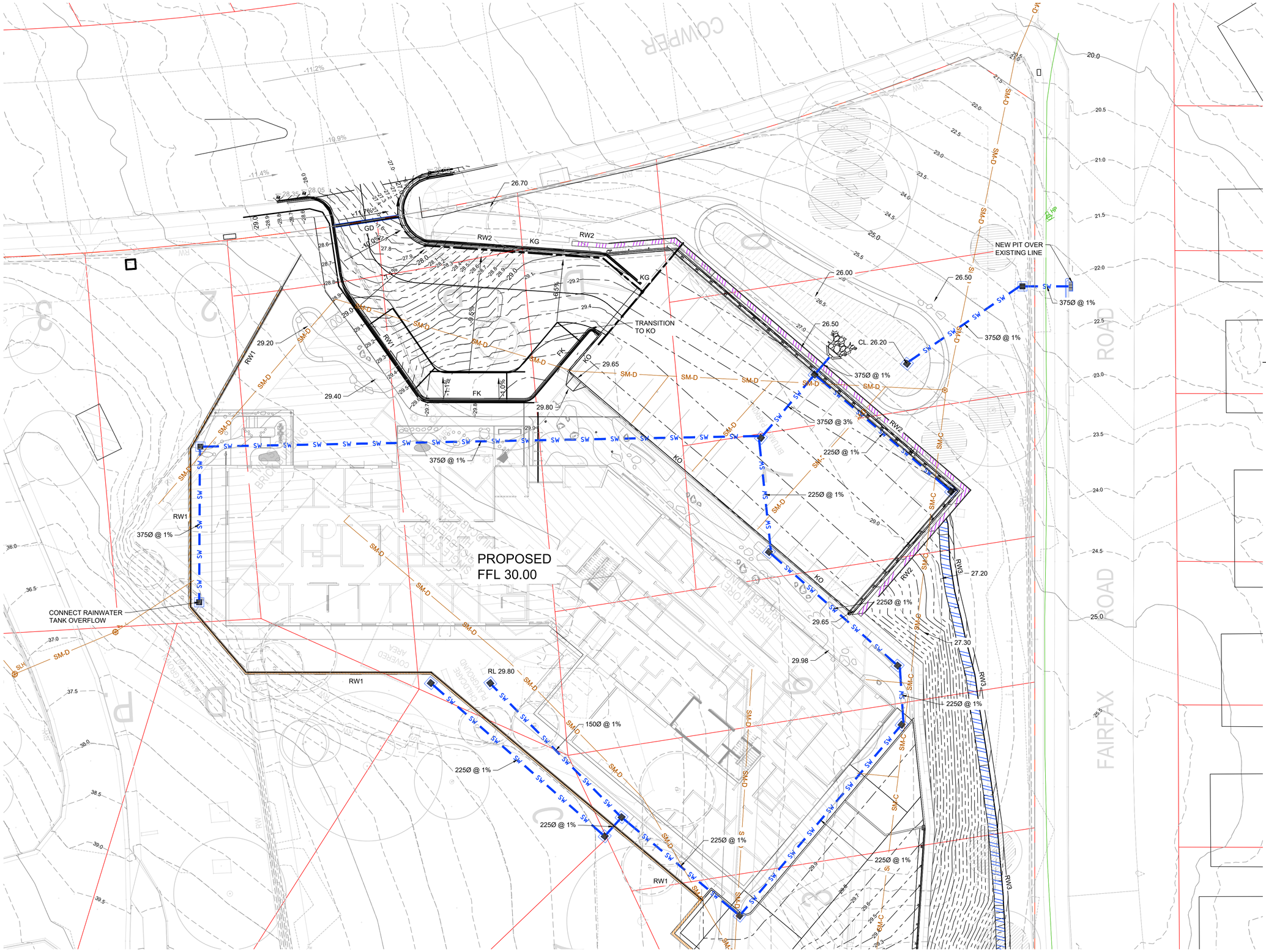
drawing title
BULK EARTHWORKS SHEET 3

status
ISSUE FOR REF

scale at A1	drawn	checked	approved
1:200	ALA	TAH	TAH

project no.	drawing no.	rev.
5988	5988-CV-10203	02

A1



DRAINAGE LEGEND

SW	Stormwater pit, flow direction and line with
IL10.00 600 Ø 'Z' 1.25% Q=345 L/s IL9.65	Invert level upstream Pipe size and class Pipe grade Flow (Litres per second) Invert level downstream
	Grated and solid lid pits
	On-grade kerb inlet and sag pit
DP	Down pipe
RP	Rodding point
SW	Concrete encased stormwater line
	Stormwater line with pipe taper and flow direction
GD	Grated drain
SS	subsoil drainage line (100 dia) at 1% min slope (typ)
SS IR SS	Intermediate riser with subsoil drainage line (100 dia)
FP	Flushing point with subsoil drainage line (100 dia)
	Grass catch drain
	Overland flow path
RW1	190 Thick block retaining wall
RW2	Crash barrier & gabion retaining wall
RW3	Gabion retaining wall
SM-D	Existing Sewer

N

Date generated: 18/03/2024 3:38:02 PM U:\TRANSITION\MENSTRUCT\CAD\1-5900\5988CIVIL\AUTOCAD\WARRAWONG - REF\5988-CV-10301

rev	date	description	drn	ch'k
02	18/03/24	ISSUE FOR REF	BEJ	TAH
01	15/12/23	ISSUE FOR REF	BEJ	TAH

rev	date	description	drn	ch'k

NSW GOVERNMENT Health Infrastructure

enstruct group pty ltd

Level 4, 2 Glen Street
Milsons Point NSW 2061
Australia

Telephone (02) 8904 1444
Facsimile (02) 8904 1555
www.enstruct.com.au

enstruct

project
WARRAWONG COMMUNITY HEALTH CENTRE - REF SUBMISSION

91 Cowper St, Warrawong, NSW 2052

drawing title
SITEWORKS PLAN SHEET 1

status
ISSUE FOR REF

scale at A1	drawn	checked	approved
1:200	ALA	TAH	TAH

project no.	drawing no.	rev.
5988	5988-CV-10301	02

A1

DRAINAGE LEGEND

SW	Stormwater pit, flow direction and line with
IL10.00 600 Ø 'Z' 1.25% Q=345 L/s IL9.65	Invert level upstream Pipe size and class Pipe grade Flow (Litres per second) Invert level downstream
	Grated and solid lid pits
	On-grade kerb inlet and sag pit
DP	Down pipe
RP	Rodding point
SW	Concrete encased stormwater line
SW GD	Stormwater line with pipe taper and flow direction
GD	Grated drain
SS SS	subsoil drainage line (100 dia) at 1% min slope (typ)
SS IR SS	Intermediate riser with subsoil drainage line (100 dia)
FP	Flushing point with subsoil drainage line (100 dia)
>>	Grass catch drain
	Overland flow path
RW1	190 Thick block retaining wall
RW2	Crash barrier & gabion retaining wall
RW3	Gabion retaining wall
SM-D	Existing Sewer

N

Date generated: 18/03/2024 3:38:13 PM U:\TRANSITION\ENINSTRUCT\CAD\Lt 5900\5988\CIVIL\AUTOCAD\WARRAWONG - REF\5988-CV-10302

rev	date	description	drn	ch'k
02	18/03/24	ISSUE FOR REF	BEJ	TAH
01	15/12/23	ISSUE FOR REF	BEJ	TAH

NSW GOVERNMENT Health Infrastructure

enstruct group pty ltd

Level 4, 2 Glen Street
Milsons Point NSW 2061
Australia

Telephone (02) 8904 1444
Facsimile (02) 8904 1555
www.enstruct.com.au

enstruct

project
WARRAWONG COMMUNITY HEALTH CENTRE - REF SUBMISSION

91 Cowper St, Warrawong, NSW 2052

drawing title
SITEWORKS PLAN SHEET 2

status
ISSUE FOR REF

scale at A1	drawn	checked	approved
1:200	ALA	TAH	TAH

project no.	drawing no.	rev.
5988	5988-CV-10302	02

A1

REMOVE AND REINSTATE CONCRIB RETAINING WALL IN NEW LOCATION FOR ROAD WIDENING

ALLOW FOR STAIR REPLACEMENT

BIORETENTION SWALE

FARFAX ROAD

GRAVEL AREA

BITUMEN PAVING

STORM WATER BASIN

STAIRS

DRAINAGE LEGEND

SW IL10.00 600 Ø 'Z' 1.25% Q=345 L/s IL9.65	Stormwater pit, flow direction and line with Invert level upstream Pipe size and class Pipe grade Flow (Litres per second) Invert level downstream
	Grated and solid lid pits
	On-grade kerb inlet and sag pit
DP	Down pipe
RP	Rodding point
SW	Concrete encased stormwater line
SW GD	Stormwater line with pipe taper and flow direction
GD	Grated drain
SS SS	subsoil drainage line (100 dia) at 1% min slope (typ)
SS IR SS	Intermediate riser with subsoil drainage line (100 dia)
FP	Flushing point with subsoil drainage line (100 dia)
>>	Grass catch drain
	Overland flow path
RW#	Blockwork retaining wall
RW#	Brickwork retaining wall

N

Date generated 18/03/2024 3:38:24 PM I:\TRANSIT\ONE\NSTRUCT\CAD\U1-5900\5988\CW\LIAU\TOCAD\WARRAWONG - REF\5988-CV-10303

rev	date	description	drn	ch'k
02	18/03/24	ISSUE FOR REF	BEJ	TAH
01	15/12/23	ISSUE FOR REF	BEJ	TAH

rev	date	description	drn	ch'k

NSW GOVERNMENT Health Infrastructure

enstruct group pty ltd

Level 4, 2 Glen Street
Milsons Point NSW 2061
Australia

Telephone (02) 8904 1444
Facsimile (02) 8904 1555
www.enstruct.com.au

enstruct

project
WARRAWONG COMMUNITY HEALTH CENTRE - REF SUBMISSION

91 Cowper St, Warrawong, NSW 2052

drawing title
SITEWORKS PLAN SHEET 3

status
ISSUE FOR REF

scale at A1	drawn	checked	approved
1:200	ALA	TAH	TAH

project no.	drawing no.	rev.
5988	5988-CV-10303	02

A1

PAVEMENT LEGEND

NOTES

1. Asphaltic concrete shall conform to AS2150 and the specification

P1	Finish to landscape architect specifications on 120mm concrete (f'c=25MPa) with SL72 fabric on 50mm sand on 100mm compacted fine crushed rock (DGB20)
P2	Asphaltic concrete (AC14) finish
P4	Concrete finish
L	Landscape Area

Date generated - 18/03/2024 3:38:34 PM U:\TRANSITIONENSTRUCT\CAD\J-5900\5988CV\LA\AUTOCAD\WARRAWONG - REF\5988-CV-10401

rev	date	description	drn	ch'k
02	18/03/24	ISSUE FOR REF	BEJ	TAH
01	15/12/23	ISSUE FOR REF	BEJ	TAH

rev	date	description	drn	ch'k

NSW GOVERNMENT Health Infrastructure

enstruct group pty ltd

Level 4, 2 Glen Street
Milsons Point NSW 2061
Australia

Telephone (02) 8904 1444
Facsimile (02) 8904 1555
www.enstruct.com.au

enstruct

project
WARRAWONG COMMUNITY HEALTH CENTRE - REF SUBMISSION

91 Cowper St, Warrawong, NSW 2052

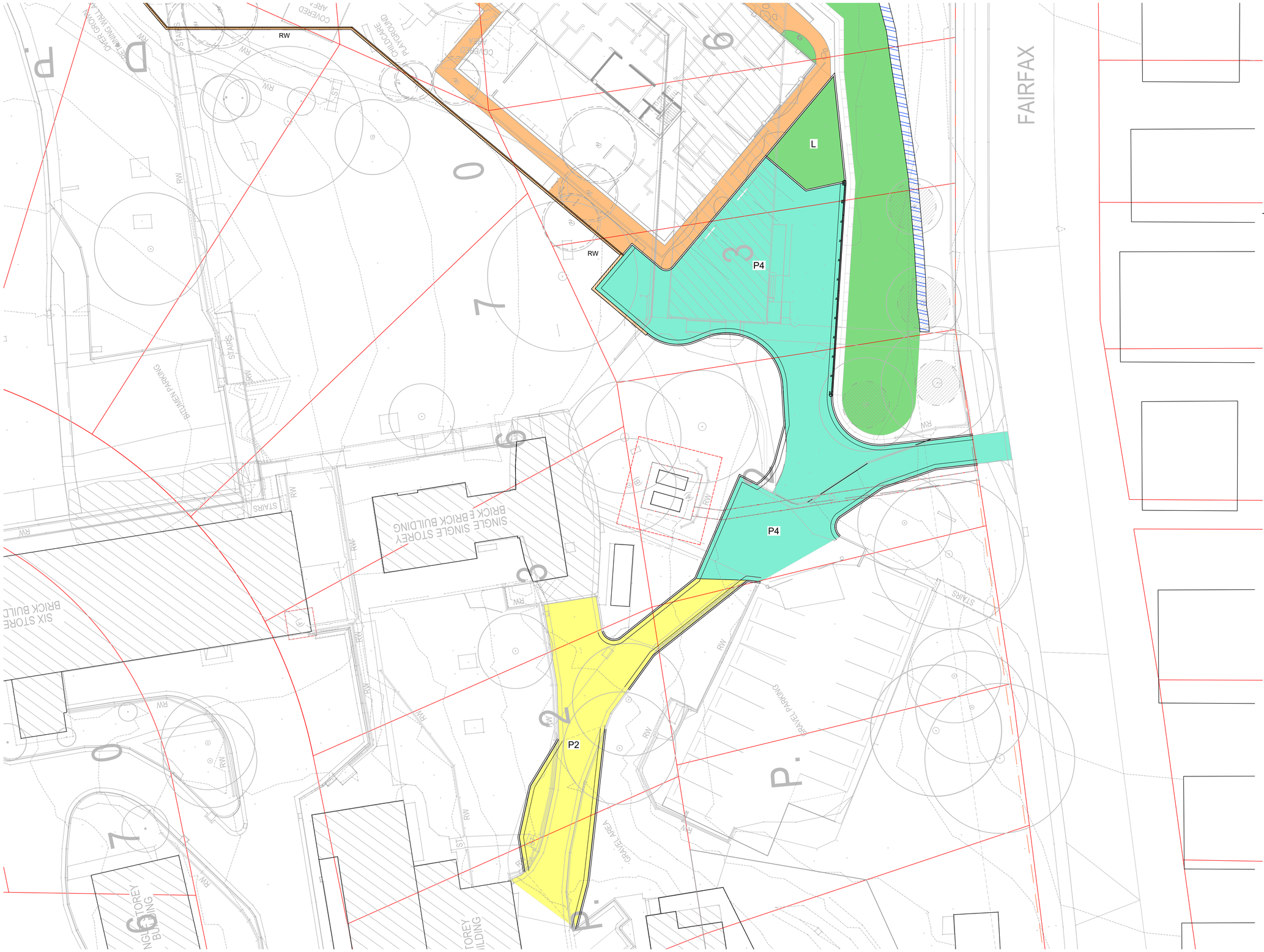
drawing title
PAVEMENT PLAN SHEET 1

status
ISSUE FOR REF

scale at A1	drawn	checked	approved
1:200	ALA	TAH	TAH

project no.	drawing no.	rev.
5988	5988-CV-10401	02

A1



PAVEMENT LEGEND

NOTES

1. Asphaltic concrete shall conform to AS2150 and the specification

P1	Finish to landscape architect specifications on 120mm concrete (f'c=25MPa) with SL72 fabric on 50mm sand on 100mm compacted fine crushed rock (DGB20)
P2	Asphaltic concrete (AC14) finish
P4	Concrete finish
L	Landscape Area

Date generated 18/03/2024 3:38:44 PM I:\TRANSITION\CONSTRUCT\CAD\1-5900\5988\CIVIL\ALITOCAD\WARRAWONG - REF\5988-CV-10402

rev	date	description	drn	ch'k
02	18/03/24	ISSUE FOR REF	BEJ	TAH
01	15/12/23	ISSUE FOR REF	BEJ	TAH

rev	date	description	drn	ch'k

NSW GOVERNMENT Health Infrastructure

enstruct group pty ltd

Level 4, 2 Glen Street
Milsons Point NSW 2061
Australia

Telephone (02) 8904 1444
Facsimile (02) 8904 1555
www.enstruct.com.au

enstruct

project
WARRAWONG COMMUNITY HEALTH CENTRE - REF SUBMISSION

91 Cowper St, Warrawong, NSW 2052

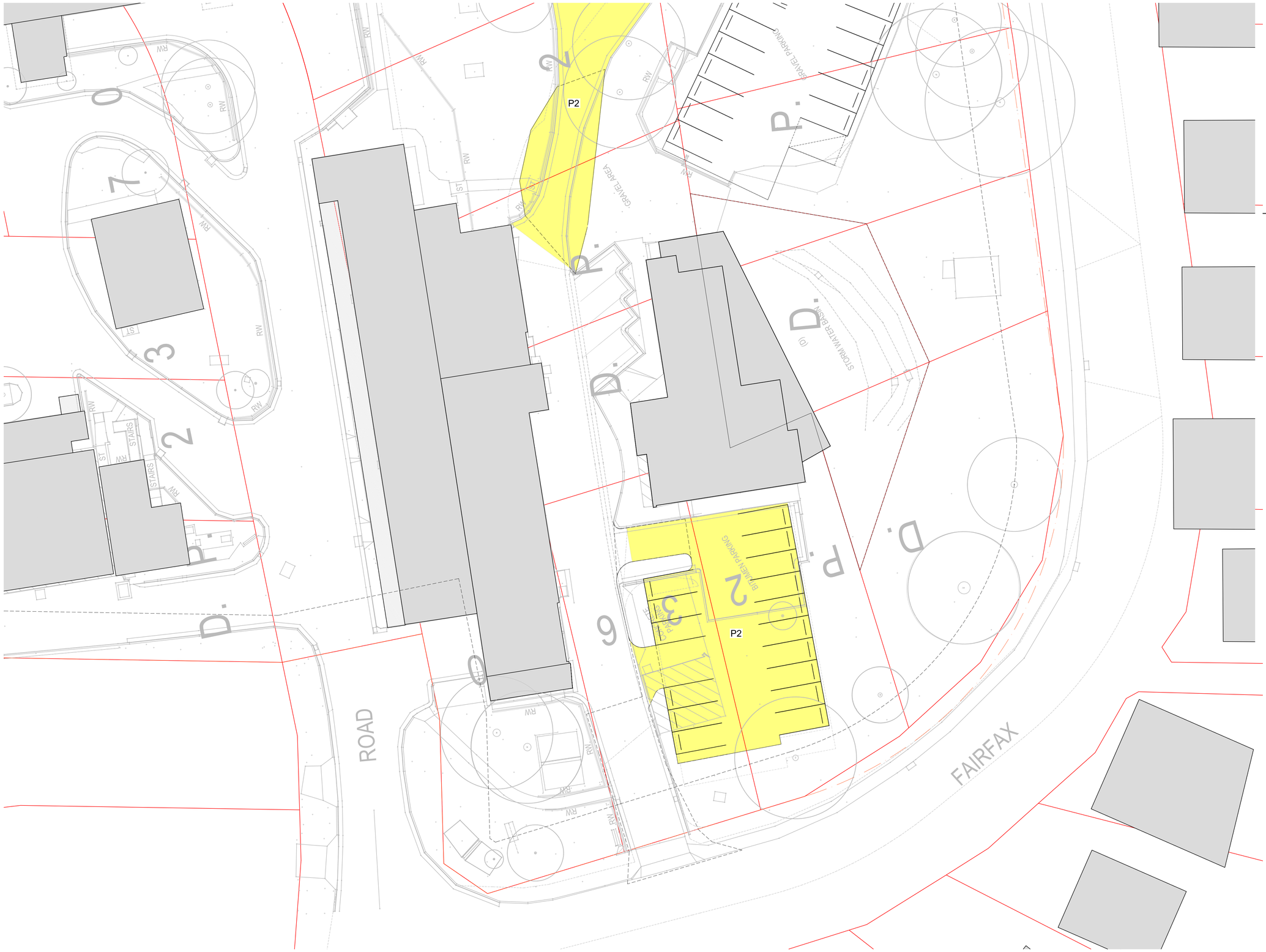
drawing title
PAVEMENT PLAN SHEET 2

status
ISSUE FOR REF

scale at A1	drawn	checked	approved
1:200	ALA	TAH	TAH

project no.	drawing no.	rev.
5988	5988-CV-10402	02

A1



PAVEMENT LEGEND

NOTES

1. Asphaltic concrete shall conform to AS2150 and the specification

P1	Finish to landscape architect specifications on 120mm concrete (f'c=25MPa) with SL72 fabric on 50mm sand on 100mm compacted fine crushed rock (DGB20)
P2	Asphaltic concrete (AC14) finish
P4	Concrete finish
L	Landscape Area

Date generated 18/03/2024 3:38:55 PM I:\TRANSIT\ONEDNSTRUCT\CAD\1-5900\5988\CIVIL\AUTOCAD\WARRAWONG - REF\5988-CV-10403

rev	date	description	drn	ch'k
02	18/03/24	ISSUE FOR REF	BEJ	TAH
01	15/12/23	ISSUE FOR REF	BEJ	TAH

rev	date	description	drn	ch'k

NSW GOVERNMENT Health Infrastructure

enstruct group pty ltd

Level 4, 2 Glen Street
Milsons Point NSW 2061
Australia

Telephone (02) 8904 1444
Facsimile (02) 8904 1555
www.enstruct.com.au

enstruct

project
WARRAWONG COMMUNITY HEALTH CENTRE - REF SUBMISSION

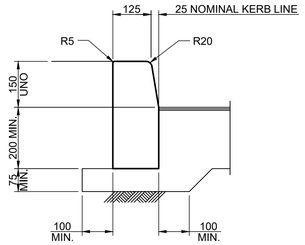
91 Cowper St, Warrawong, NSW 2052

drawing title
PAVEMENT PLAN SHEET 3

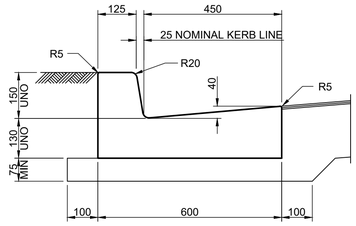
status
ISSUE FOR REF

scale at A1	drawn	checked	approved
1:200	ALA	TAH	TAH

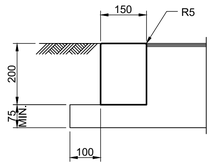
project no.	drawing no.	rev.
5988	5988-CV-10403	02



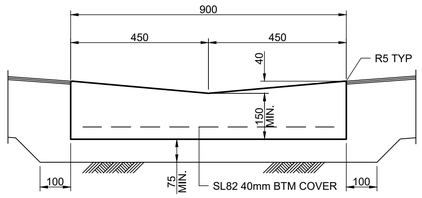
KERB ONLY (KO)
SCALE 1:10



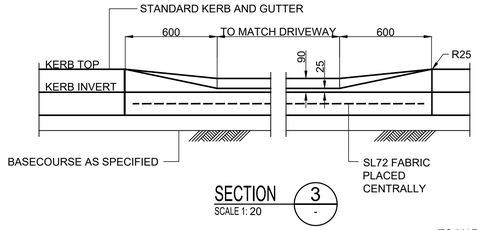
KERB AND GUTTER (K&G)
SCALE 1:10



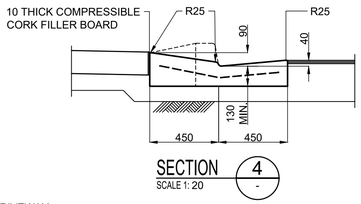
FLUSH KERB (FK)
SCALE 1:10



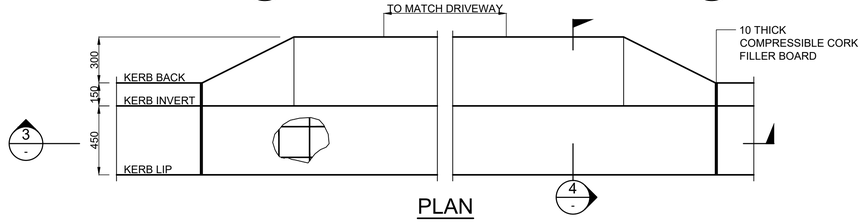
900 DISH DRAIN (DD)
SCALE 1:10



SECTION 3 -
SCALE 1:20

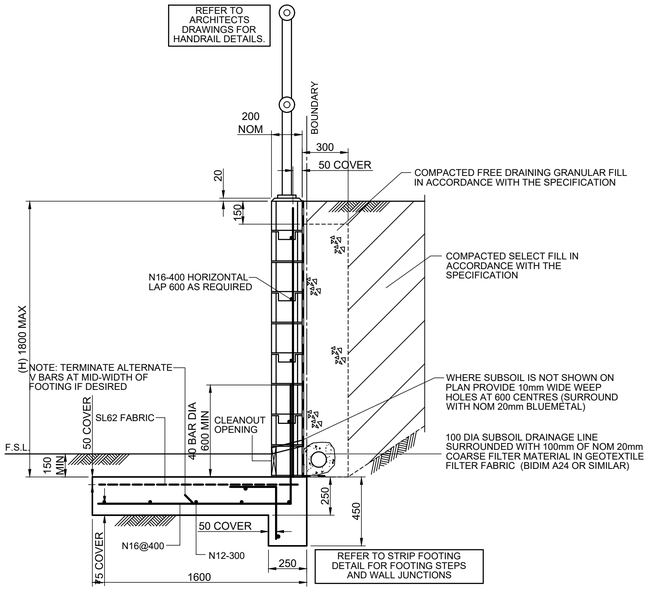


SECTION 4 -
SCALE 1:20

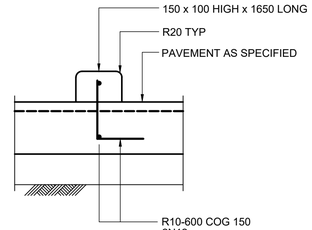


PLAN

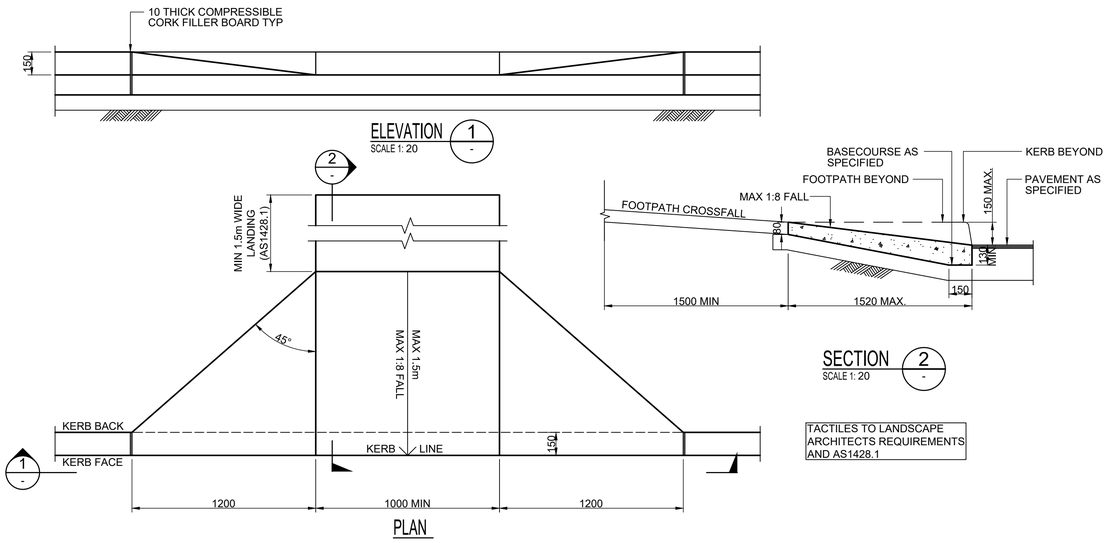
VEHICULAR CROSSING
SCALE 1:20



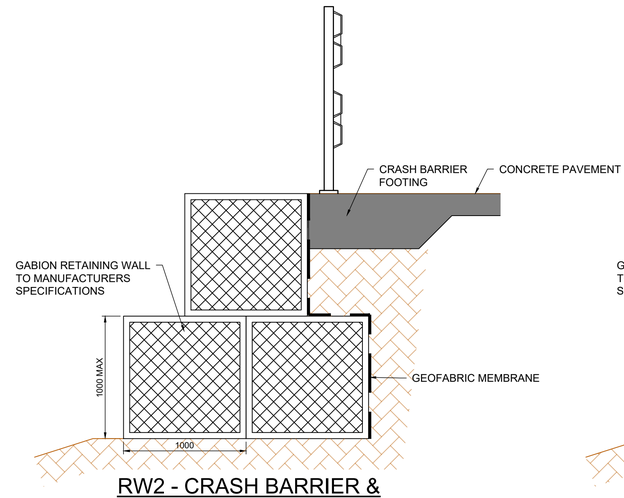
RETAINING WALL (RW1)
SCALE 1:20



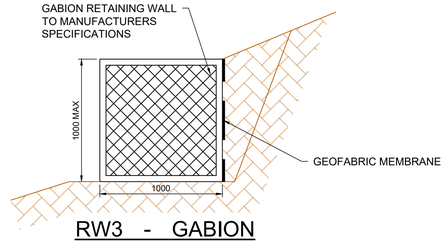
WHEEL STOP IN CONCRETE PAVEMENT
SCALE 1:10



KERB RAMP
SCALE 1:20



RW2 - CRASH BARRIER & GABION RETAINING WALL
SCALE 1:25



RW3 - GABION RETAINING WALL
SCALE 1:25

Date generated: 18/03/2024 5:03:26 PM U:\TRANSITION\ENSTRUCT\CAD\1-5900\5988\CIV\LAUTOCAD\WARRAWONG - REF\5988-CV-10801

rev	date	description	drn	ch'k
02	18/03/24	ISSUE FOR REF	BEJ	TAH
01	15/12/23	ISSUE FOR REF	BEJ	TAH

rev	date	description	drn	ch'k

NSW GOVERNMENT Health Infrastructure

enstruct group pty ltd

Level 4, 2 Glen Street
Milsons Point NSW 2061
Australia

Telephone (02) 8904 1444
Facsimile (02) 8904 1555
www.enstruct.com.au

enstruct

project
WARRAWONG COMMUNITY HEALTH CENTRE - REF SUBMISSION

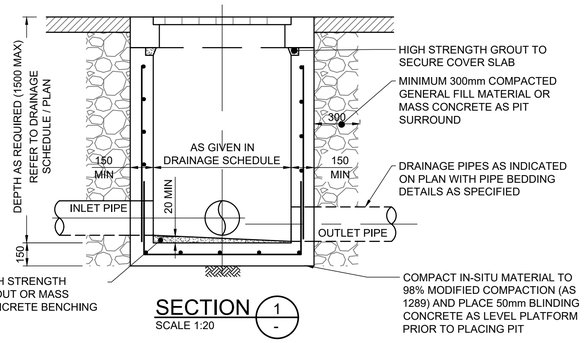
91 Cowper St, Warrawong, NSW 2052

drawing title
DETAIL SHEET 1

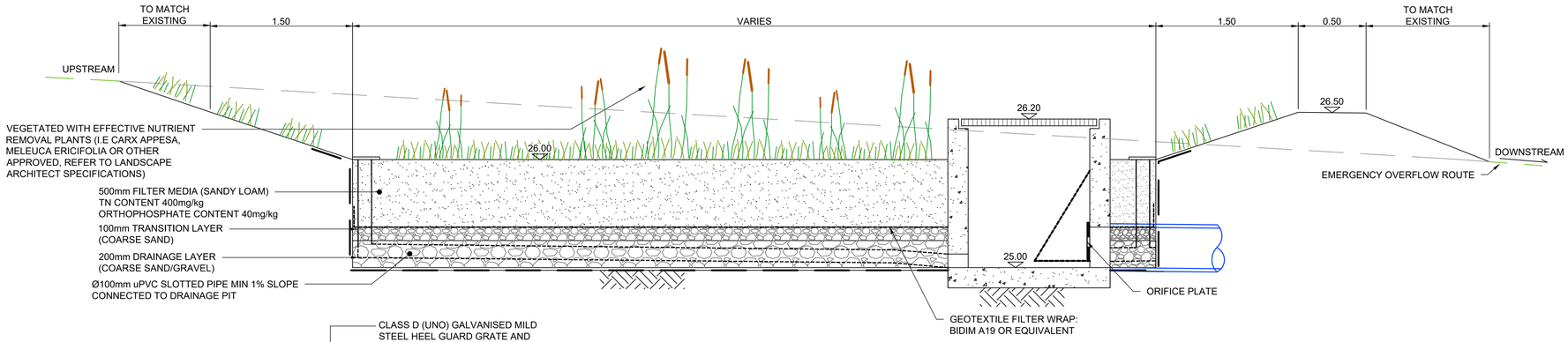
status
ISSUE FOR REF

scale at A1	drawn	checked	approved
AS SHOWN	ALA	TAH	TAH

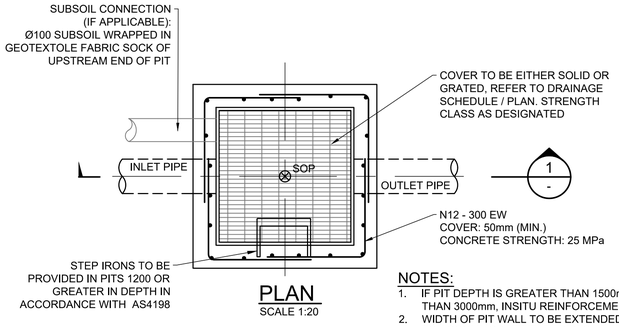
project no.	drawing no.	rev.
5988	5988-CV-10801	02



SECTION 1/-
SCALE 1:20



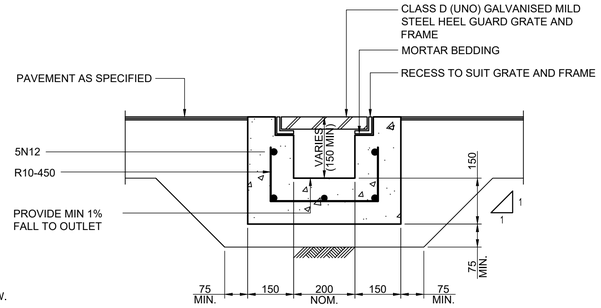
BIORETENTION BASIN
SCALE 1:20



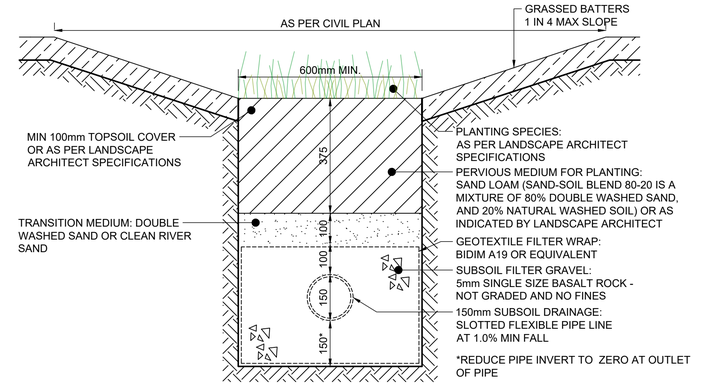
PLAN
SCALE 1:20

NOTES:
1. IF PIT DEPTH IS GREATER THAN 1500mm BUT LESS THAN 3000mm, INSITU REINFORCEMENT IS N16-150 EW.
2. WIDTH OF PIT WALL TO BE EXTENDED ACCORDINGLY TO ACCOMMODATE TWIN PIPES.

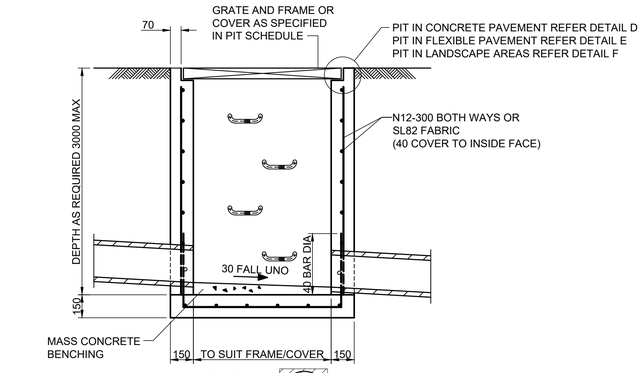
IN-SITU GRATED PIT TYPICAL DETAIL
SCALE 1:20



GRATED DRAIN
SCALE 1:10

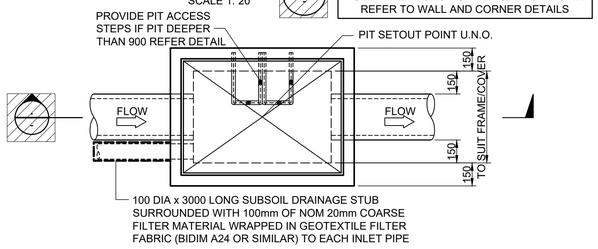


BIORETENTION SWALE (BRS)
SCALE 1:10



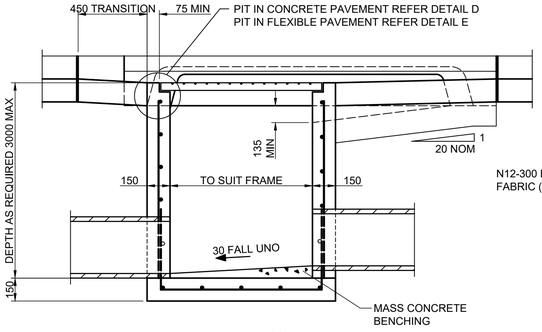
SECTION -/-
SCALE 1: 20

NOTE:IF REINFORCING FABRIC IS TO BE USED REFER TO WALL AND CORNER DETAILS

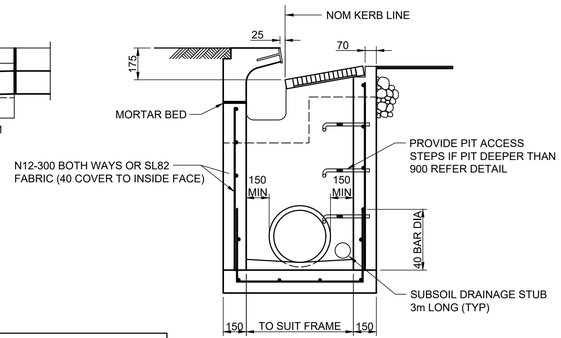


PLAN
SCALE 1:20

IN-SITU REGULAR JUNCTION PIT

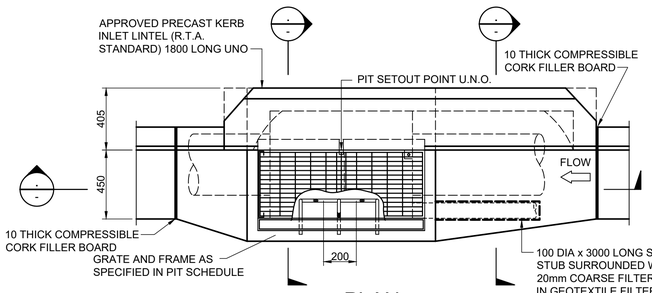


SECTION -/-
SCALE 1: 20

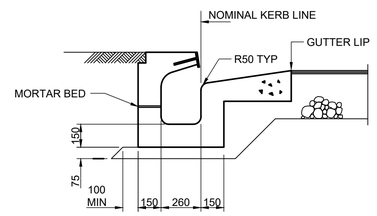


SECTION -/-
SCALE 1: 20

NOTE:IF REINFORCING FABRIC IS TO BE USED REFER TO WALL AND CORNER DETAILS

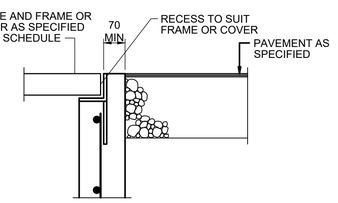


PLAN
SCALE 1:20

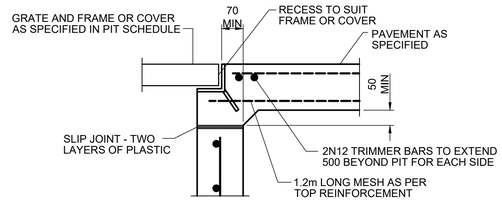


SECTION -/-
SCALE 1: 20

IN-SITU REGULAR ON-GRADE KERB INLET PIT



DETAIL E
SCALE 1:10



DETAIL D
SCALE 1:10

rev	date	description	drn	ch'k
02	18/03/24	ISSUE FOR REF	BEJ	TAH
01	15/12/23	ISSUE FOR REF	BEJ	TAH

NSW GOVERNMENT Health Infrastructure

enstruct group pty ltd
Level 4, 2 Glen Street
Milsons Point NSW 2061
Australia
Telephone (02) 8904 1444
Facsimile (02) 8904 1555
www.enstruct.com.au
enstruct

project
WARRAWONG COMMUNITY HEALTH CENTRE - REF SUBMISSION
91 Cowper St, Warrawong, NSW 2052

drawing title
DETAIL SHEET 2

status
ISSUE FOR REF

scale at A1	drawn	checked	approved
AS SHOWN	ALA	TAH	TAH

project no.	drawing no.	rev.
5988	5988-CV-10802	02

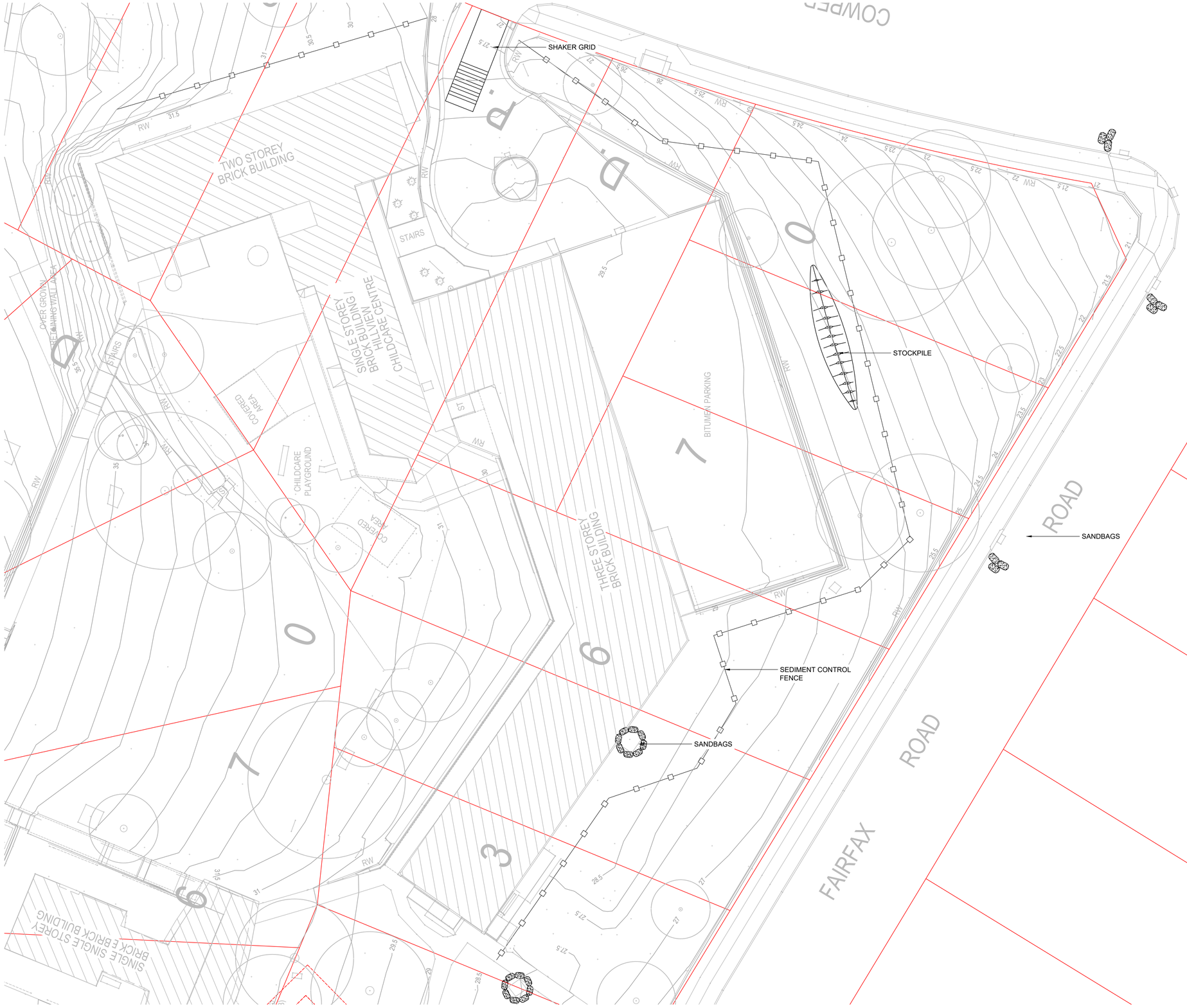
APPENDIX C

Warrawong Community Health Centre

Civil Engineering Erosion and Sediment Control Drawings

enstruct 2024

A1



EROSION AND SEDIMENT CONTROL LEGEND

- Batter
- Siltation fence, with star pickets at max 2.5m centres (typ)
- Catch drain
- Overland flow path
- Tree to be removed
- Stockpile
- Stormwater pit, with Geotextile filter
- Straw bale barriers
- Sandbag sediment trap

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. Erosion and sediment control drawings and notes are provided for the whole of the works. Should the Contractor stage these works then the design may be required to be modified. Variation to these details may require approval by the relevant authorities.
   The erosion and sediment control plan 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 clean flows into existing stormwater system.
1.4. Construct sedimentation traps/basin (if any) including outlet control and overflow; otherwise allocate a place for the runoff and temporary sediment storage.
1.5. Construct turf lined swales.
1.6. Provide sandbag sediment traps upstream of existing pits.
2. Construct geotextile filter pit surround around all existing pits and 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.

Date generated - 14/12/2023 5:55:48 PM U:\TRANSITION\ENSTRUCT\CAD\J-5900\5988\CIVIL\AUTOCAD\WARRAWONG - REF\5988-CV-10101

rev	date	description	drn	ch'k
02	18/03/24	ISSUE FOR REF	BEJ	TAH
01	15/12/23	ISSUE FOR REF	BEJ	TAH

rev	date	description	drn	ch'k

NSW GOVERNMENT Health Infrastructure

enstruct group pty ltd

Level 4, 2 Glen Street
Milsons Point NSW 2061
Australia

Telephone (02) 8904 1444
Facsimile (02) 8904 1555
www.enstruct.com.au

enstruct

project
WARRAWONG COMMUNITY HEALTH CENTRE - REF SUBMISSION

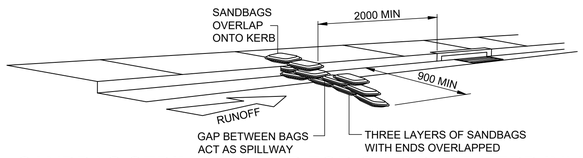
91 Cowper St, Warrawong, NSW 2052

drawing title
EROSION AND SEDIMENT CONTROL PLAN

status
ISSUE FOR REF

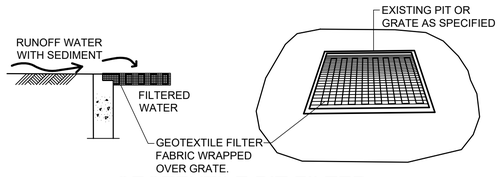
scale at A1	drawn	checked	approved
1:200	ALA	TAH	TAH

project no.	drawing no.	rev.
5988	5988-CV-10101	02



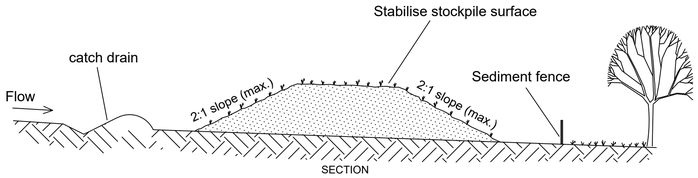
SANDBAG SEDIMENT TRAP FOR ON-GRADE KERB INLET PITS

NTS



GEOTEXTILE PIT FILTER

NTS

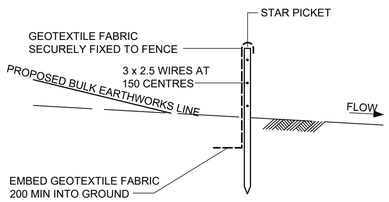


Construction Notes

1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS. COORDINATE WITH ARBORIST IF REQUIRED.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP
5. CONSTRUCT EARTH BANKS (TYP) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (TYP) 1 TO 2 METRES DOWNSLOPE. REFER TO TYPICAL DETAILS

STOCKPILES

NTS



NOTE
ENDS OF SILTATION FENCE TO RETURNED
UP SLOPE TO PREVENT RUNOFF

SILTATION FENCE DETAIL

SCALE 1:20

rev	date	description	drn	ch'k
02	18/03/24	ISSUE FOR REF	BEJ	TAH
01	15/12/23	ISSUE FOR REF	BEJ	TAH

rev	date	description	drn	ch'k

NSW GOVERNMENT Health Infrastructure

enstruct group pty ltd

Level 4, 2 Glen Street
Milsons Point NSW 2061
Australia

Telephone (02) 8904 1444
Facsimile (02) 8904 1555
www.enstruct.com.au

enstruct

project
WARRAWONG COMMUNITY HEALTH CENTRE - REF SUBMISSION

91 Cowper St, Warrawong, NSW 2052

drawing title
EROSION AND SEDIMENT CONTROL DETAIL SHEET

status
ISSUE FOR REF

scale at A1	drawn	checked	approved
AS SHOWN	ALA	TAH	TAH

project no.	drawing no.	rev.
5988	5988-CV-10110	02