NORTHROP

STORMWATER MANAGEMENT REPORT

IC3 Super West

17-23 Talavera Road, Macquarie Park NSW

Ref: SY170095-02-CV-RP05
Rev: 1
Date: 20 Oct 2021

PREPARED FOR
Macquarie Data Pty Ltd
Level 15, 2 Market St
Sydney NSW 2000

Civil Report

Revision Information

Project:	IC3 West 17 Talavera Road Macquarie Park
Document Title:	Civil Report
Client:	GIDDIS Project Management Services
Revision:	1
Status:	Issue for Review
Revision Date:	20 Oct 2021
Author:	Sarah Ford
Verifier:	Stephen Fryer

Northrop Consulting Engineers Pty Ltd

ACN 064 775 088 | ABN 81 094 433 100

Level 11, 345 George Street, Sydney NSW 2000

02 9241 4188 | sydney@northrop.com.au | www.northrop.com.au

1. Introduction

Northrop Consulting Engineers have been appointed by Macquarie Data Centres (MDC) to undertake the civil engineering design for the proposed development of the Macquarie Park Data Centre Campus IC3 Super West site at 17-23 Talavera Road, Macquarie Park.

This Civil Engineering Report serves to support the State Significant Development Application (SSDA) relating to the proposed development.

This report is to be read in conjunction with the following reports and documents:

1. Response to SEARs – 17 -23 Talavera Road Macquarie Park Data Centre – SSD- 24299707 letter prepared by City of Ryde dated 10 August 2021.
2. City of Ryde's Stormwater and Floodplain Technical Manual
3. City of Ryde's Development Control Plan (DCP) 2014
4. City of Ryde's Macquarie Park Public Domain Technical Manual

This Civil Engineering Report has been prepared by Northrop Consulting Engineers on behalf of Macquarie Data Centres (MDC) C/- GIDDIS Project Management.

The following Civil Engineering Report has been produced to support the Environmental Impact Statement (EIS) prepared by Willowtree Planning PTY Ltd (Willowtree Planning).

The EIS has been submitted to the New South Wales (NSW) Department of Planning, Industry and Environment (DPIE), in support of an application for State Significant Development (SSD), for the construction and operation of a data centre, involving earth works, provision of infrastructure and expansion of an existing data centre at 17 – 23 Talavera Road, Macquarie Park (Lot 527 DP 752035).

The proposal represents an extension to the approved data centre (LDA/2018/0322) to allow for additional data storage capacity at the subject site, improving the overall operational efficiencies and provision of technology services to customers and the wider locality.

The proposal involves the construction and operation of an expansion to an existing data centre located at 17-23 Talavera Road, Macquarie Park (Lot 527 in DP 752035), comprising:

- a five-storey building
- ancillary office space and staff amenities
- a back-up power system
- associated infrastructure, car parking, loading docks and landscaping

The subject site is located within the City of Ryde Local Government Area (LGA). The proposal seeks to operate 24 hours per day, seven (7) days per week.

The particulars of this proposal are summarised below:

- Minor earthworks involving cut and fill works
- Infrastructure comprising civil works and utilities servicing
- Construction of a five (5) storey building extension, comprising up to:

    - 14 data halls
    - 18 back up generators
    - Fitout of the building for use as a data centre (on an as-needs basis)

2. Site Description

The site is described as Lot 527 DP 752035, commonly known as 17 – 23 Talavera Road, Macquarie Park. The site has a total area of approximately 20,000m2, with access achieved via Talavera Road.

The site forms part of the Macquarie Park Corridor, which is the strategic centre of Macquarie Park, being a health and education precinct and an important economic and employment powerhouse in Sydney's North District.

The site is described through its current commercial setting as an existing Data Centre (LDA/2018/0322), adjoining surrounding commercial premises along Talavera Road, and forming part of the wider Macquarie Park Corridor.

The site is situated approximately 12.5 km northwest of the Sydney CBD and 11.3 km northeast of Parramatta. It is within close proximity to transport infrastructure routes (predominantly the bus and rail networks), as well as sharing direct links with the wider regional road network, including Talavera Road, Lane Cove Road, Epping Road and the M2 Motorway.

These road networks provide enhanced connectivity to the subject site and wider locality. Additionally, the site is located within close proximity to active transport links, such as bicycle routes, providing an additional mode of accessible transport available to the subject site

Figure 1: The site 17 – 23 Talavera Road, Macquarie Park, being Lot 527 DP 752035.

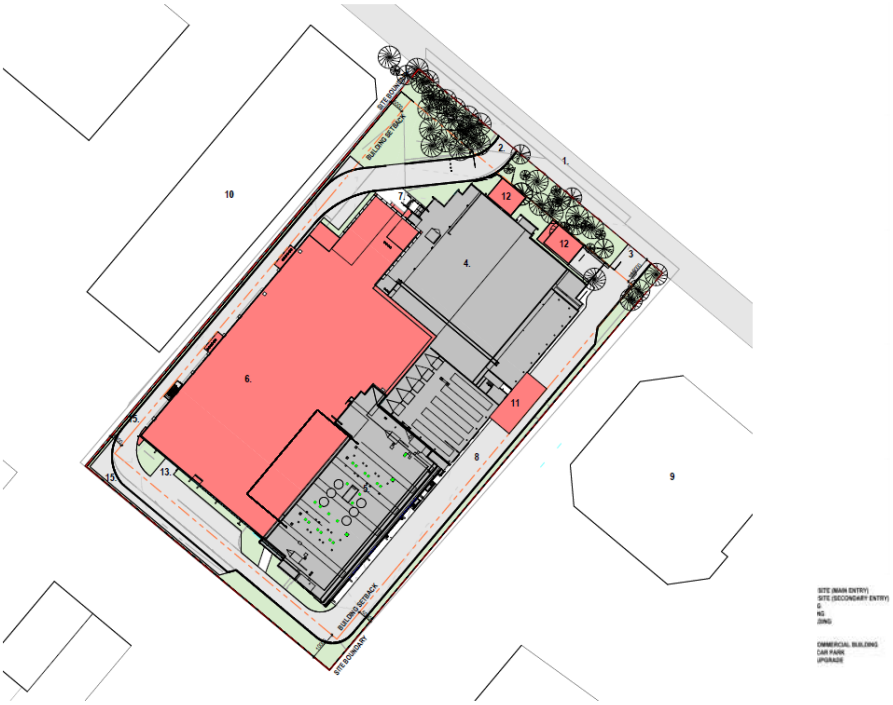


Figure 2: Proposed Extent of Works

The site falls within the Industrial Creek catchment. Industrial Creek generally flows south to North discharging into the Lane Cove River. Industrial Creek has been built over during development of Macquarie Park and now consists mainly of below ground pipes and culverts. Industrial Creek flows through an Ø1800 pipeline located with the site.

3. Secretary's Environmental Assessment Requirements

This Civil Engineering Report is prepared in accordance with the Secretary's Environmental Assessment Requirements (SEARs). The SEARs for the proposal outline Key Issues to be addressed as part of this EIS and includes:

The following Secretaries Environmental Assessment Requirements (SEARS) are addressed within Table 1 of this report.

Table 1

SEARs Items	Secretary's Environmental Assessment Requirements	Response
Soils and Water	• details of all existing and proposed surface, stormwater and wastewater management systems (including on-site detention and/or reuse), and an assessment of any associated water quality treatment options • a description of the proposed erosion and sediment controls during construction	*Appendix 17 – Stormwater Management Report.*

4. Existing Stormwater Conditions

The site falls within the Industrial Creek catchment. Industrial Creek generally flows south to North discharging into the Lane Cove River. Industrial Creek has been built over during development of Macquarie Park and now consists mainly of below ground pipes and culverts. Industrial Creek alignment is located within the site. Wider catchment stormwater runoff follows the alignment of Industrial Creek. Stormwater runoff is generally conveyed through the site via a Ø1800 reinforced concrete pipeline at a depth of 4 – 6m below the existing site surface levels. This pipeline is contained within a 3.5m wide easement for drainage benefitting the City of Ryde.

In larger rainfall events, typically the 1%AEP the site is affected by overland flow. Flood waters inundate the site, entering near the southeast corner and discharging to Talavera via the northern boundary. Northrop's Trunk Drainage System Report and Northrop Flood Assessment Report supporting the SSDA provide greater detail Council's the trunk drainage system and flooding impacts.

Easements for drainage benefitting the properties to the east and west of the site run parallel to the rear boundary connecting 3.5m wide easement benefitting Council.

The proposed development does not require any change to the existing easements

4.1 Existing Site Drainage System

The site consists of two (2) on-site detention tanks. OSD tank 1 with a volume of 90m^3 is located adjacent to the northern boundary and collects stormwater runoff from the IC2 building roof and hardstand areas on the eastern side of the site. A gross pollutant trap (GPT) and 22 stormwater filter cartridges treat stormwater runoff prior to discharge from the site. This treatment system has been over sized to compensate for treatment of flows from OSD Tank 2.

OSD Tank 2 is located in the under croft area of the IC3 East building. This tank has a capacity of approximately 203m^3. This tank was oversized in anticipation of the additional flows to be detained from the IC3 West building works. This tank currently collects stormwater runoff from the roof areas of IC3 East.

Stormwater runoff from the western hardstand areas drains to the outlet pipe from OSD Tank via an GPT and connecting to Council's Ø1800 pipe adjacent to the front boundary.

Figure 3 shows the location key stormwater drainage features on the site.

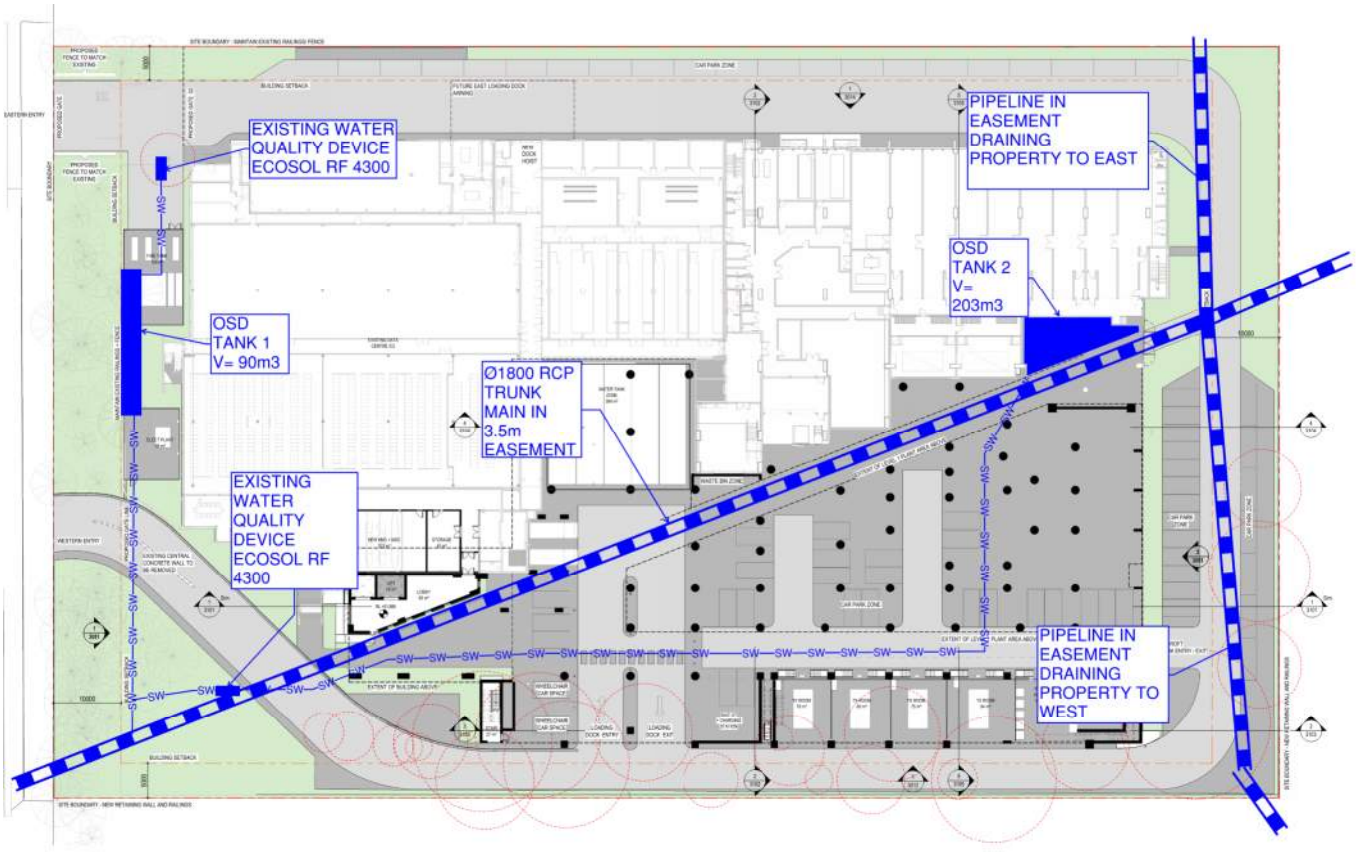


Figure 3 – Key Stormwater Drainage Components

5. Stormwater Quantity Management

5.1 Requirement for On-site Detention

The City of Ryde DCP: Part 8.2 – Stormwater and Floodplain Management provides guidance on the requirement for On-site detention for development within the LGA. The proposed development is covered by this policy (applies to *all land within the City of Ryde.*) Section 1.4.1 of the Stormwater Management Technical Manual details instances to which OSD does not apply, with specific reference to:

- *Condition (f) – It is demonstrated that the property is subject to significant inundation (say over 50%) inundation of the site due to a 100yr ARI storm event) or that is id impractical to provide an OSD storage facility out of or above this flow when the site is partially inundated OR OSD will not be required where the site of the development is located within a Council established 1 in 100 year ARI floodplain and that it can be demonstrated that lesser storm events will also flood the site. Otherwise it will be necessary to provide OSD to control the runoff for the minor storm events.*

Noting this, it has been inferred that OSD is not required for the development. The proposed development is located within the:

- Lower reaches of the Macquarie Park Catchment,
- Extent of the 100yr ARI Flood event as described by the flood report prepared by Northrop (Figure 4).

With this considered, following review of relevant peak flood levels associated with Industrial Creek within the development site and comparison with the site-specific stormwater outlet peak flow hydrograph (outlet EX01/07) – any inclusion of OSD on the site would (Figure 4 below):

- Negatively impact flood levels within the vicinity of the development, as well as;
- Reduce the ability of the proposed stormwater network to drain the sit effectively in a range of storm events.

Figure 5 demonstrates the time difference between the time difference between the peak flood level of the receiving water body (Industrial Creek) and the peak outlet discharge rate from the proposed stormwater network. The inclusion of any OSD system would further delay the peak discharge (shown in red), inducing a higher tail-water effect (imposed by the flood level) on the system.

Note: The flood levels were obtained from Northrop for the proposed scenario and compared with the results of the outlet flow calculated by 12d 1D Dynamic drainage analysis for the largest outflow location.

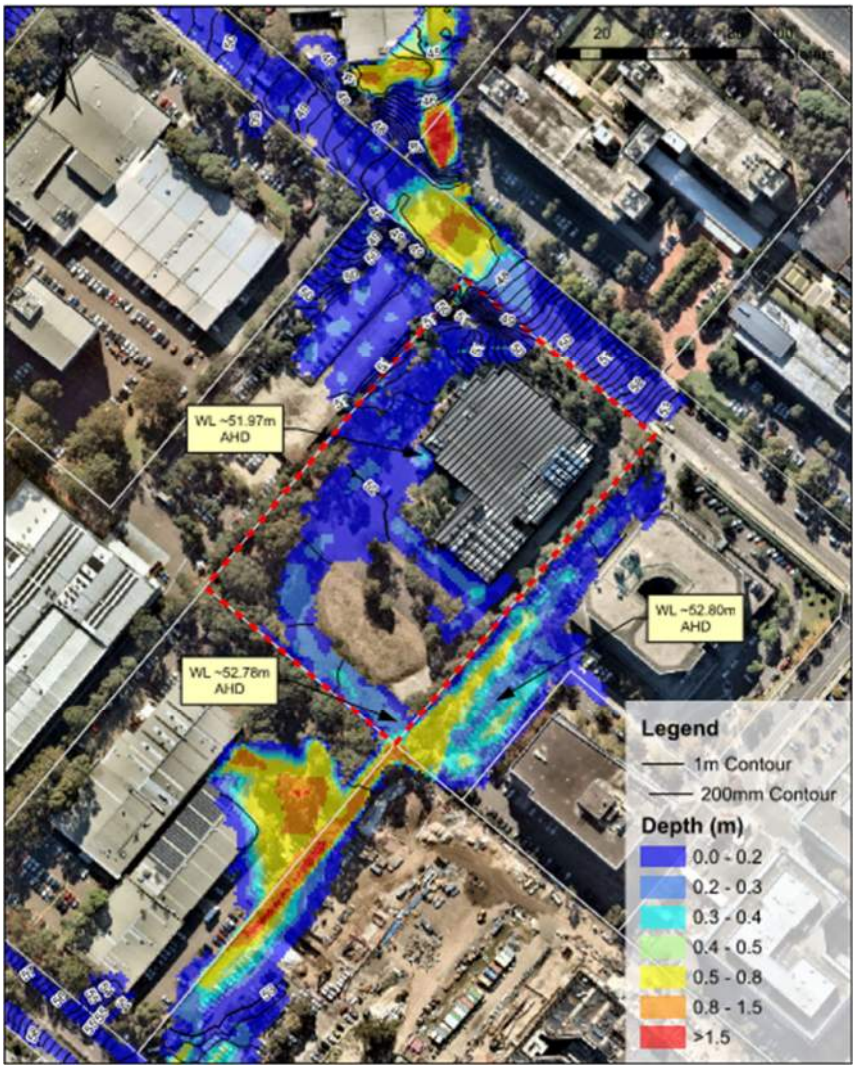


Figure 4 – Map of the Flood Extents of the 100yr ARI Flood event

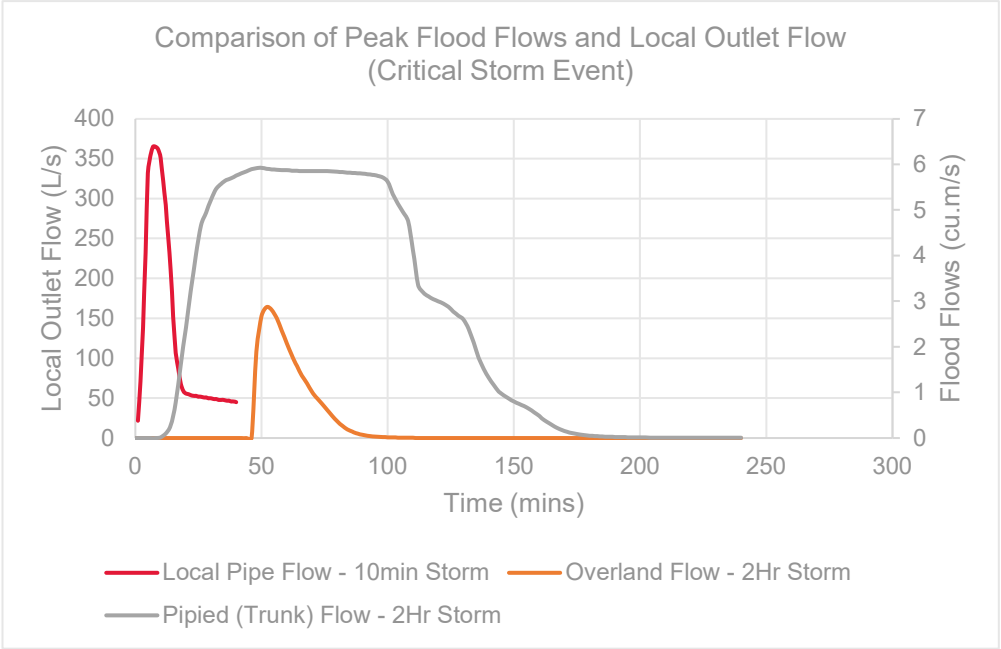


Figure 5 – Comparison of the Peak Flood Flows and Local Outlet Flow for the Critical Storm

5.2 Internal Stormwater Drainage System Design

The proposed internal site drainage is designed to convey all runoff from the 20 year design ARI event via a below ground pit and pipe network inclusive of an existing OSD tank. All new proposed roof areas are to drain via internal and external pipework to new above ground OSD tanks and subsequently connect into the localised site stormwater network prior to discharging to Council's stormwater system. The proposed pit and pipe network drains the site to the existing council stormwater network on Talavera Road.

The development proposes to use existing site drainage infrastructure. This can be achieved as the new building generally extends over existing hardstand area. Thus the runoff from the new roof area is similar to it falling directly onto ground level paved areas.

To maintain consistency with the drainage system approved under LDA2018/0322 the same total roof area will be directed to OSD Tanks 1 and 2.

This is an area similar to the previously approved roof area and has been considered in the 12d model. The remainder of the roof runoff will bypass the existing OSD. It will be conveyed directly into the existing stormwater network via a pit and pipe network.

The external paved and landscaped area are also conveyed into the existing stormwater system via a proposed and existing pit and pipe network. A small area of the site (360 m^2) bypasses the proposed pit and piped network and will sheet flow into the adjacent Talavera Road.

Stormwater models for the proposed stormwater network have been produced in 12d 1D Dynamic Drainage Software (ILSAX) to determine the hydraulic performance of the post development network under a range of storms. Rainfall intensity duration and frequency data was adopted from the 2016 version of Australian Rainfall and Runoff. The model adopts the following parameters:

- Paved (impervious) area depression storage = 1mm
- Supplementary area depression storage = 0mm
- Grassed (pervious) area depression storage = 5mm
- Soil Type = 3
- AMC = 3

The proposed internal site drainage is designed to convey all runoff from the 20 year design ARI event via a below ground pit and pipe network inclusive of an existing OSD tank. All new proposed roof areas are to drain via internal and external pipework to new above ground OSD tanks and subsequently connect into the localised site stormwater network prior to discharging to Council's stormwater system. The proposed pit and pipe network drains the site to the existing council stormwater network on Talavera Road.

The existing underground network is proposed to extend upstream to suit development works with new pits and pipes being constructed, while a portion of the network is to be removed. Water tanks are to be retained. The majority of the existing outdoor car parking catchment enters the internal stormwater network prior to entering an existing OSD tank which receives flow from the stormwater system along the south-west boundary of the site and the current roof catchment. All new roof areas will drain directly into a new OSD tanks and the existing roof area will drain to a water quality treatment chamber prior to discharging to an OSD tank.

6. Stormwater Quality Management

City of Ryde requires a Water Sensitive Urban Design strategy to be submitted for land located in mixed use business zone or industrial zone with development area greater than 1,500 m^2.

The *City of Ryde Development Control Plan Section 8.2.3.3 WSUD Controls* specifies the pollutant load reductions required for stormwater runoff for the required new developments. These values are shown in Table 1 below.

Table 1 – City of Ryde's specified Pollutant Load Reductions

Pollutant	% Pollutant Reduction
Gross Pollutants	90%
Total Suspended Solids	85%
Total Phosphorus	60%
Total Nitrogen	45%

To achieve these targets a treatment train has been designed using MUSIC software for the site consisting of a few WSUD treatment measures to capture and retain pollutants.

The treatment train consists of:

- Existing Ecosol Gross Pollutant Traps
- EviroPod 200 Pit inserts
- OceanProtect PSORB (MMC) StormFilter Cartridges

Note – the system has been designed so the low flows at the splitter pit located at EX01/06 are directed to the Water Quality Chamber (containing PSORB StormFilter Cartridges) whilst high flows bypass this chamber. We note 400 m^2 of paved area and 1.050 m^2 of landscaped area bypasses the proposed treatment train however, this has been included within the MUSIC Model.

Figure 6 provides a depiction of the treatment train design adopted in MUSIC stormwater quality modelling software. The results of the MUSIC model presented in Table 3 demonstrate that the stormwater quality measures will achieve the water quality targets stated in the Council DCP.

Pollutant	Source	Residual Load	% Reduction	Objective	Compliance
Gross Pollutants	308	9.29	97	90%	OK
Total Suspended Solids	1280	191	85.1	85%	OK
Total Phosphorus	3.04	0.865	71.6	60%	OK
Total Nitrogen	25.8	10.6	58.8	45%	OK

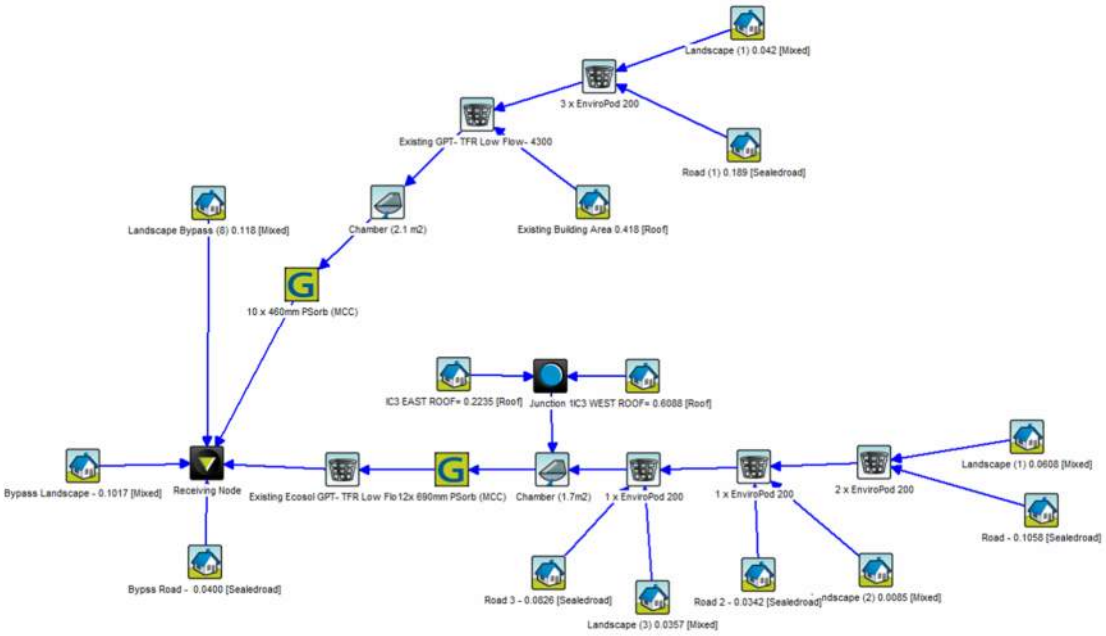


Figure 6 – Stormwater Treatment Train design for the site in MUSIC

The proposed drainage system will maintain all the existing water quality treatment elements being 22 x Ocean Protect 460 filter cartridges, 2 x Ecosol RF4300 gross pollutant traps and pit inserts. This existing system will be supplemented with additional, 16 x PSORB filter cartridges and Enviropod 200 pit inserts to achieve the treatment rates nominated by Council.

7. Erosion and Sediment Control

An erosion and sediment control plan has been prepared for the proposed development. The works will be undertaken in areas where extensive hardstand pavement is already in place. Extensive excavation of the site is not required to achieve site levels. Excavation is generally limited to the southwest corner where excavation depth ranges from 200 to 600mm.

The erosion and sediment control plan considers these conditions and consists of system of downstream sediment fences, wire mesh and gravel inlet filters and drop inlet sediment traps to prevent sediment entering the stormwater drainage system.

Erosion is also prevented by the existing pavements on site that will remain in place for the duration of construction. The erosion and sediment control plan is presented in Appendix A of this report.

8. Conclusion

Northrop Consulting Engineers (Northrop) has prepared this report to support the proposed data centre development at 17-21 Talavera Road, Macquarie Park.

Stormwater models have been produced in 12D 1D Dynamic Drainage Software (ILSAX) to determine the hydraulic performance of the post development network under a range of flood events (20 and 100 yr ARI). The modelling indicates that the proposed OSD tanks will preserve the permissible site discharge rates from new roof catchment areas for the range of ARI's as required by City of Ryde Council's Stormwater and Floodplain Management Technical Manual. For further detailed design refer to Northrop's Civil Engineering Drawings presented in Appendix A of this report.

In accordance with Council's Development Control Plan (DCP), the site is required to achieve stormwater pollutant load reductions. A treatment train has been developed using MUSIC software to demonstrate stormwater quality objectives and pollutant load reduction targets are satisfied as per City of Ryde's Water Sensitive Urban Design (WSUD) Guidelines. Northrop note that the stormwater system will require the incorporation of new proprietary treatment devices (as outlined earlier in the report) in conjunction with existing stormwater quality measures in order to sufficiently remove pollutants.

Appendix

Civil Engineering Drawings

IC3 WEST DATA CENTER 17-23 TALAVERA ROAD, MACQUARIE PARK

CIVIL ENGINEERING PACKAGE
DEVELOPMENT APPLICATION

LOCALITY PLAN

SOURCE: NEARMAPS 2021

CIVIL DRAWING SCHEDULE

DWG No.	DRAWING TITLE
DAC01.01	COVER SHEET, DRAWING SCHEDULE AND LOCALITY PLAN
DAC01.02	SPECIFICATION NOTES
DAC02.01	SEDIMENT AND SOIL EROSION CONTROL PLAN
DAC02.11	SEDIMENT AND SOIL EROSION CONTROL DETAILS
DAC04.01	SITEWORKS AND STORMWATER MANAGEMENT PLAN
DAC04.21	STORMWATER LONGITUDINAL SECTIONS - SHEET 01
DAC04.22	STORMWATER LONGITUDINAL SECTIONS - SHEET 02
DAC04.23	STORMWATER LONGITUDINAL SECTIONS - SHEET 03
DAC04.31	STORMWATER MANAGEMENT DEVICES
DAC04.41	STORMWATER CALCULATIONS TABLE - SHEET 01
DAC04.42	STORMWATER CALCULATIONS TABLE - SHEET 02
DAC04.51	STORMWATER CATCHMENTS PLAN
DAC10.01	DETAILS SHEET

DRAWN: M. MAI DESIGNED: J. GRINSELL JOB MANAGER: S. FRYER VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	AF		SF	21.10.21

CLIENT: macquarie DATA CENTRES

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: HDR

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK.
NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.
THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE

SCALE 1:5000@ A1 (0 50 100 150 200 250m)

NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: IC3 WEST DATA CENTER 17-23 TALAVERA ROAD, MACQUARIE PARK

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
COVER SHEET, DRAWING SCHEDULE AND LOCALITY PLAN

JOB NUMBER: 170095-02
DRAWING NUMBER: DAC01.01
REVISION: 01
DRAWING SHEET SIZE = A1

Plotted By: ANGUS FALLINS Date: 16.04.2020 2:24 PM Found: T:\2017 Jobs\170095-02 - IC3 West 17-23 Talavera Road Macquarie Park\D-Drawings\C-Civil\170095-02-CAD\01-DA\170095-02_DAC01.01.dwg

NOTE: ALL CIVIL ENGINEERING CONSTRUCTION WORKS TO BE CARRIED OUT IN ACCORDANCE WITH CITY OF RYDE DEVELOPMENT GUIDELINES .THE AFOREMENTIONED GUIDELINES INCLUSIVE OF ALL SPECIFICATIONS TAKE PRECEDENCE OVER NOTES PROVIDED BELOW.

GENERAL NOTES

THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH OTHER SUCH WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS ARE IN MILLIMETRES & ALL LEVELS ARE IN METRES, UNO (UNLESS NOTED OTHERWISE).

NO DIMENSION SHALL BE OBTAINED BY SCALING THE DRAWINGS.

ALL LEVELS AND SETTING OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE CHECKED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORK.

DETAIL SURVEY DATA WAS SUPPLIED BY LINKER SURVEYING, DRAWING DATED 27/03/18.

EXISTING SERVICES WHERE SHOWN HAVE BEEN PLOTTED FROM SUPPLIED DATA AND SUCH THEIR ACCURACY CAN NOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.

ON COMPLETION OF STORMWATER INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL CONDITION, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS, UNLESS DIRECTED OTHERWISE.

ALL STORMWATER MANAGEMENT MEASURES SHOWN ON THIS DRAWING HAVE BEEN PREPARED FOR DEVELOPMENT APPLICATION PURPOSES TO DEMONSTRATE FEASIBILITY. ALL MEASURES WILL BE SUBJECT TO DETAIL DESIGN AT THE CONSTRUCTION CERTIFICATE STAGE AND MAY BE SUBJECT TO VARIATION PROVIDED THAT THE DESIGN INTENT IS MAINTAINED.

STORMWATER DRAINAGE

1. ALL DRAINAGE LINES SHALL BE UPVC (CLASS SN4) SEWER GRADE DRAINAGE PIPE, U.N.O.
2. ALL DRAINAGE LINES SHALL BE LAID AT 1% MIN. FALL, UNO.
3. ALL LEVELS ARE AUSTRALIAN HEIGHT DATUM (AHD).
4. ALL DOWNPIPES GUTTERS TO BE DESIGNED IN ACCORDANCE WITH AS/NZS 3500.3.2 - 2003 'STORMWATER' DRAINAGE.
5. THE STORMWATER DRAINAGE DESIGN HAS BEEN CARRIED OUT IN ACCORDANCE WITH AS/NZS 3500.3.2-2003 'STORMWATER' DRAINAGE.
6. ANY VARIATIONS TO THE NOMINATED LEVELS SHALL BE REFERRED TO ENGINEER IMMEDIATELY.
7. SUBSOIL DRAINAGE SHALL BE PROVIDED TO ALL RETAINING WALLS & EMBANKMENTS, WITH THE LINES FEEDING INTO THE STORMWATER DRAINAGE SYSTEM.
8. ALL GRATES TO BE GALVANISED STEEL WITH HINGES AND CHILD PROOF LOCK.
9. ALL GRATES TO BE HEEL SAFE WITHIN AGED CARE DEVELOPMENTS.
10. THE STORMWATER DRAINAGE IS DESIGNED IN ACCORDANCE WITH CITY OF RYDE COUNCIL'S STORMWATER AND FLOODPLAIN MANAGEMENT TECHNICAL MANUAL..

DESIGN SUMMARY

LGA = CITY OF RYDE COUNCIL

WATER QUALITY:

MUSIC MODEL SUMMARY (REFER NORTHROP REPORT FOR FURTHER DETAILS).

TREATMENT NODES:

- OCEANPROTECT 690 PSORB STORMFILTER CARTRIDGES
- OCEANPROTECT 200 MICRON OCEANGUARD PIT INSERTS
- ECOSOL GPT

TREATMENT STANDARDS:

POLLUTANT	REDUCTION STANDARDS	REDUCTION ACHIEVED
GROSS POLLUTANTS	90%	97%
TOTAL SUSPENDED SOLIDS	85%	85.2%
TOTAL PHOSPHORUS	65%	71.2%
TOTAL NITROGEN	45%	59%

MUSIC MODEL PARAMETERS IN ACCORDANCE WITH CITY OF RYDE COUNCILS WATER SENSITIVE URBAN DESIGN GUIDELINES 2015.

CONCEPT SOIL & WATER MANAGEMENT

1. ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH RELEVANT ORDINANCES AND REGULATIONS; NOTE IN PARTICULAR THE REQUIREMENTS OF LANDCOMS MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION' (THE 'BLUE BOOK'). THIS SOIL AND WATER MANAGEMENT PLAN DETAILS THE ACTIONS TO BE TAKEN FOR THE MANAGEMENT AND DEWATERING OF STORMWATER DURING CONSTRUCTION OF THE PROPOSED BUILDING.
2. INSTALL SEDIMENT PROTECTION FILTERS ON ALL NEW AND EXISTING STORMWATER INLET PITS IN ACCORDANCE WITH EITHER THE MESH AND GRAVEL INLET FILTER DETAIL SD6-11 OR THE GEOTEXTILE INLET FILTER DETAIL SD6-12 OF THE 'BLUE BOOK'.
3. ESTABLISH ALL REQUIRED SEDIMENT FENCES IN ACCORDANCE WITH DETAIL SD6-8 OF THE 'BLUE BOOK'.
4. INSTALL SEDIMENT FENCING AROUND INDIVIDUAL BUILDING ZONES/AREAS AS REQUIRED AND AS DIRECTED BY THE SUPERINTENDENT.
5. ALL TRENCHES INCLUDING ALL SERVICE TRENCHES AND SWALE EXCAVATION SHALL BE SIDE-CAST TO THE HIGH SIDE AND CLOSED AT THE END OF EACH DAYS WORK.
6. THE CONTRACTOR SHALL ENSURE THAT ALL VEGETATION (TREE, SHRUB & GROUND COVER) WHICH IS TO BE RETAINED SHALL BE PROTECTED DURING THE DURATION OF CONSTRUCTION. REFER ARCHITECTS PLANS FOR TREES TO BE KEPT.
7. ALL VEGETATION TO BE REMOVED SHALL BE MULCHED ONSITE AND SPREAD/STOCKPILED AS DIRECTED BY THE SUPERINTENDENT.
8. STRIP TOPSOIL IN AREAS DESIGNATED FOR STRIPPING AND STOCKPILE FOR RE-USE AS REQUIRED. ANY SURPLUS MATERIAL SHALL BE REMOVED FROM SITE AND DISPOSED OF IN ACCORDANCE WITH EPA GUIDELINES.
9. CONSTRUCT AND MAINTAIN ALL MATERIAL STOCKPILES IN ACCORDANCE WITH DETAIL SD4-1 OF THE 'BLUE BOOK' (INCLUDING CUT-OFF SWALES TO THE HIGH SIDE AND SEDIMENT FENCES TO THE LOW SIDE).
10. ENSURE STOCKPILES DO NOT EXCEED 2.0m HIGH. PROVIDE WIND AND RAIN EROSION PROTECTION AS REQUIRED IN ACCORDANCE WITH THE 'BLUE BOOK'.
11. PROVIDE WATER TRUCKS OR SPRINKLER DEVICES DURING CONSTRUCTION AS REQUIRED TO SUPPRESS DUST.
12. ONCE CUT/FILL OPERATIONS HAVE BEEN FINALIZED ALL DISTURBED AREAS THAT ARE NOT BEING WORKED ON SHALL BE RE-VEGETATED AS SOON AS IS PRACTICAL.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING A DETAILED WRITTEN RECORD OF ALL EROSION & SEDIMENT CONTROLS ON-SITE DURING THE CONSTRUCTION PERIOD. THIS RECORD SHALL BE UPDATED ON A DAILY BASIS & SHALL CONTAIN DETAILS ON THE CONDITION OF CONTROLS AND ANY/ ALL MAINTENANCE, CLEANING & BREACHES. THIS RECORD SHALL BE KEPT ON-SITE AT ALL TIMES AND SHALL BE MADE AVAILABLE FOR INSPECTION BY THE PRINCIPAL CERTIFYING AUTHORITY AND THE SUPERINTENDENT DURING NORMAL WORKING HOURS.
14. GROUNDWATER SEEPAGE RATES AND QUALITY TO BE MONITORED AND TREATED IF REQUIRED DURING CONSTRUCTION IN ACCORDANCE WITH REQUIREMENTS OF SUPERVISING GEOTECHNICAL ENGINEER.

DRAWN: M. MAI DESIGNED: J. GRINSELL JOB MANAGER: S. FRYER VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	AF		SF	21.10.21

CLIENT: macquarie DATA CENTRES

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: HDR

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK.
NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.
THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE

NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

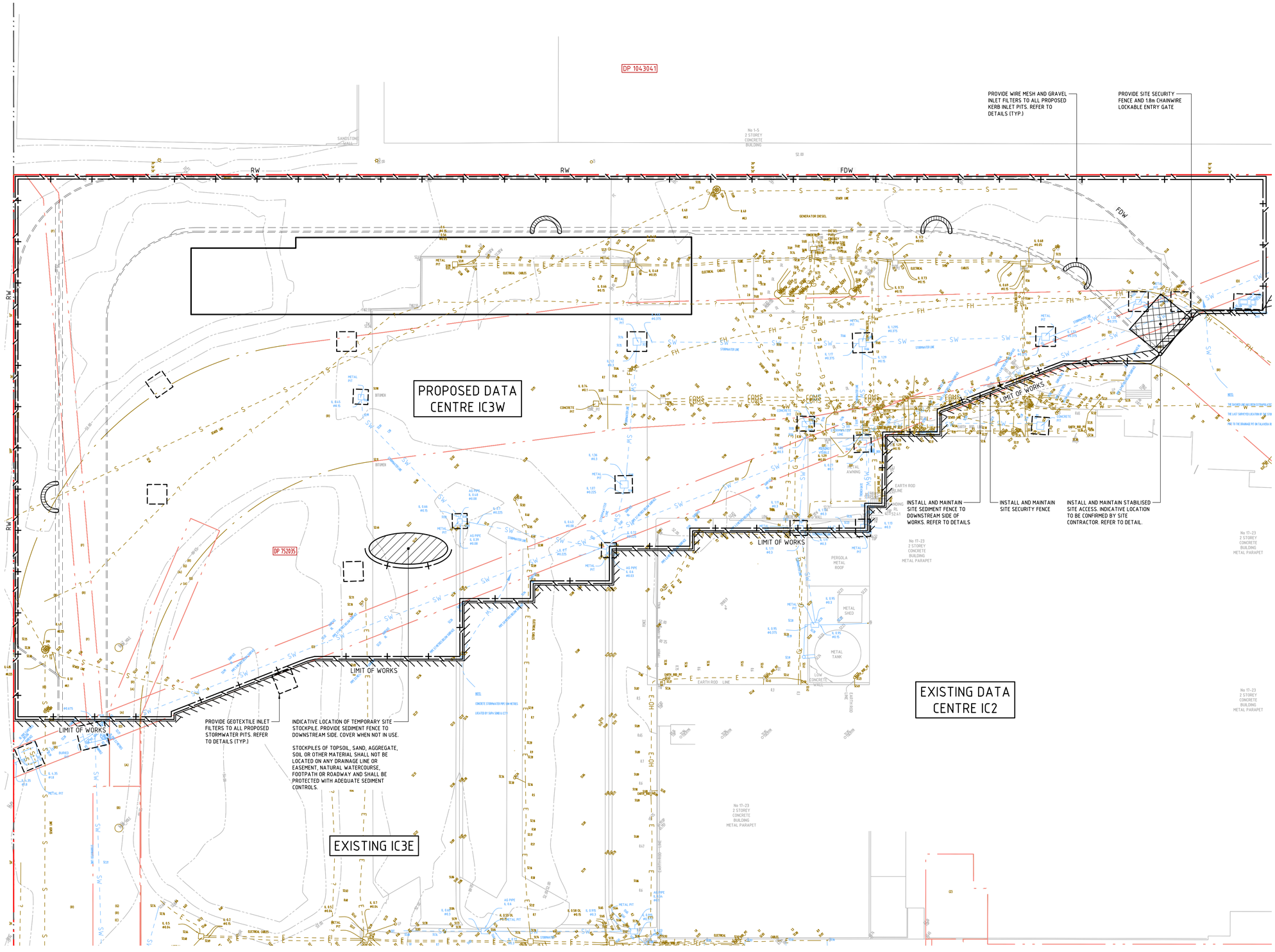
PROJECT: IC3 WEST DATA CENTER
17-23 TALAVERA ROAD,
MACQUARIE PARK

DRAWING TITLE: CIVIL ENGINEERING PACKAGE

SPECIFICATION NOTES

JOB NUMBER: 170095-02
DRAWING NUMBER: DAC01.02
REVISION: 01
DRAWING SHEET SIZE = A1

Plotted By : ANGUS FALLINS Found : T:\2017 Jobs\170095-02 - IC3 West 17-23 Talavera Road Macquarie Park\D-Drawings\C-Civil\170095-02-CAD\01-DA\170095-02_DAC01.02.dwg
Date :16.04.2020 2:24 PM



LEGEND

- SITE BOUNDARY
- ADJOINING BOUNDARY LINE
- EASEMENT LINE
- EXISTING STORMWATER
- EXISTING ELECTRICITY
- EXISTING COMMUNICATIONS
- EXISTING GAS
- EXISTING SEWER
- EXISTING FIRE HYDRANT
- EXISTING UNKNOWN SERVICE
- DESIGN LINEWORK
- EXISTING CONTOURS
- SITE SECURITY GATE
- SEDIMENT FENCE
- SECURITY FENCE
- WIRE MESH AND GRAVEL INLET FILTERS
- DROP INLET SEDIMENT TRAP
- STABILISED SITE ACCESS
- STOCKPILE
- LIMIT OF WORKS

NOTES

1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
2. ALL SEDIMENT AND EROSION CONTROL MEASURES TO BE INSTALLED IN ACCORDANCE WITH THE 'BLUE BOOK'. CONTRACTOR TO ENSURE THESE MEASURES ARE IN PLACE AND MAINTAINED AT ALL TIMES DURING CONSTRUCTION WORKS.

NOT FOR CONSTRUCTION

DRAWN: M. MAI
DESIGNED: J. GRINSELL
JOB MANAGER: S. FRYER
VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	AF		SF	21.10.21

CLIENT: macquarie DATA CENTRES
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: HDR

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE

SCALE 1:250@ A1 (0 2 4 6 8 10 12m)

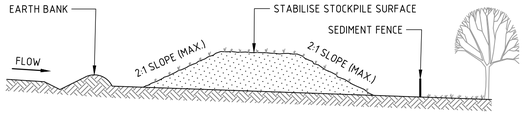
NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: IC3 WEST DATA CENTER
17-23 TALAVERA ROAD,
MACQUARIE PARK

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
SEDIMENT AND SOIL EROSION CONTROL PLAN

JOB NUMBER: 170095-02
DRAWING NUMBER: DAC02.01
REVISION: 01
DRAWING SHEET SIZE = A1

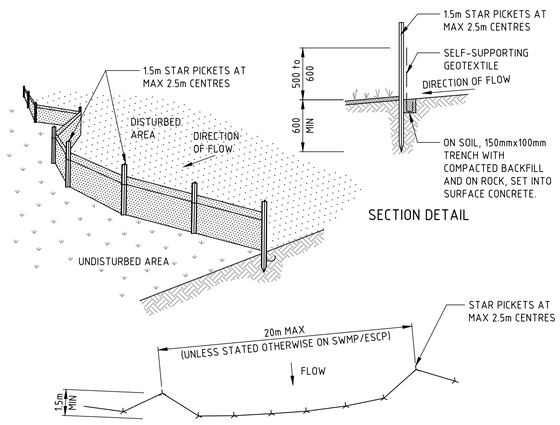
Plotted By: ANGUS FALLINS
Date: 16.04.2020 2:24 PM
Found: T:\2017 Jobs\170095-02 - IC3 West 17-23 Talavera Road Macquarie Park\D-Drawings\C-Civil\170095-02-CAD\01-DA\170095-02_DAC02.01.dwg



CONSTRUCTION NOTES

1. PLACE STOCKPILES MORE THAN 2m (PREFERABLY 5m) FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (STANDARD DRAWING 6-8) 1 TO 2m DOWNSLOPE.

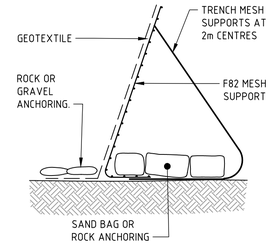
STOCKPILE



CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUND AT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

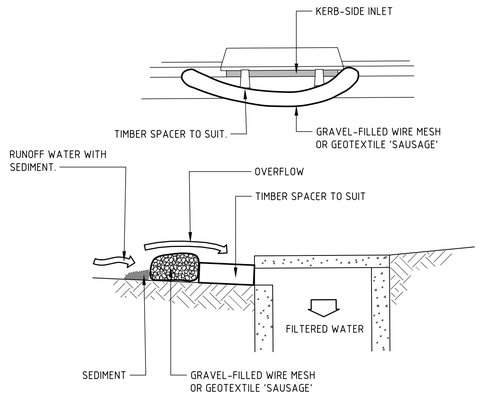
SEDIMENT FENCE - IMPERVIOUS AREAS



CONSTRUCTION NOTES

1. INSTALL THIS TYPE OF SEDIMENT FENCE WHEN USE OF SUPPORT POSTS IS NOT DESIRABLE OR NOT POSSIBLE. SUCH CONDITIONS MIGHT APPLY, FOR EXAMPLE, WHERE APPROVAL IS GRANTED FROM THE APPROPRIATE AUTHORITIES TO PLACE THESE FENCES IN HIGHLY SENSITIVE ESTUARINE AREAS.
2. USE BENT TRENCH MESH TO SUPPORT THE F82 WELDED MESH FACING AS SHOWN ON THE DRAWING ABOVE. ATTACH THE GEOTEXTILE TO THE WELDED MESH FACING USING UV RESISTANT CABLE TIES.
3. STABILISE THE WHOLE STRUCTURE WITH SANDBAG OR ROCK ANCHORING OVER THE TRENCH MESH AND THE LEADING EDGE OF THE GEOTEXTILE. THE ANCHORING SHOULD BE SUFFICIENTLY LARGE TO ENSURE STABILITY OF THE STRUCTURE IN THE DESIGN STORM EVENT, USUALLY THE 10 -YEAR EVENT.

SEDIMENT FENCE - PERVIOUS AREAS

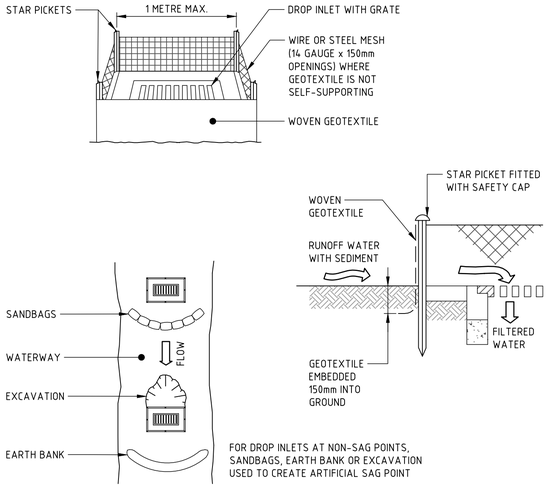


NOTE:THIS PRACTICE ONLY TO BE USED WHERE SPECIFIED IN APPROVED SWMP/ESCP.

CONSTRUCTION NOTES

1. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
2. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
6. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

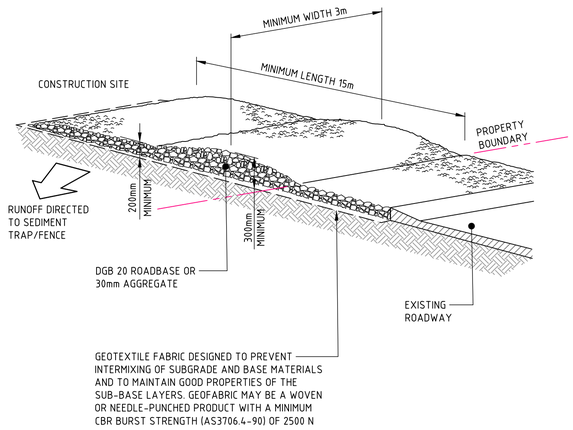
WIRE MESH AND GRAVEL INLET FILTER



CONSTRUCTION NOTES

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. FOLLOW STANDARD DRAWING 6-7 AND STANDARD DRAWING 6-8 FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1 METRE CENTRES.
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER TRAPS



CONSTRUCTION NOTES

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm AGGREGATE.
4. ENSURE THE STRUCTURE IS AT LEAST 15 METRES LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METRES WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

STABILISED SITE ACCESS

DESIGNED: J. GRINSELL
DRAWN: M. MAI
JOB MANAGER: S. FRYER
VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	AF		SF	21.10.21

CLIENT: macquarie DATA CENTRES
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: HDR
THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK.
NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.
THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE

NOT TO SCALE

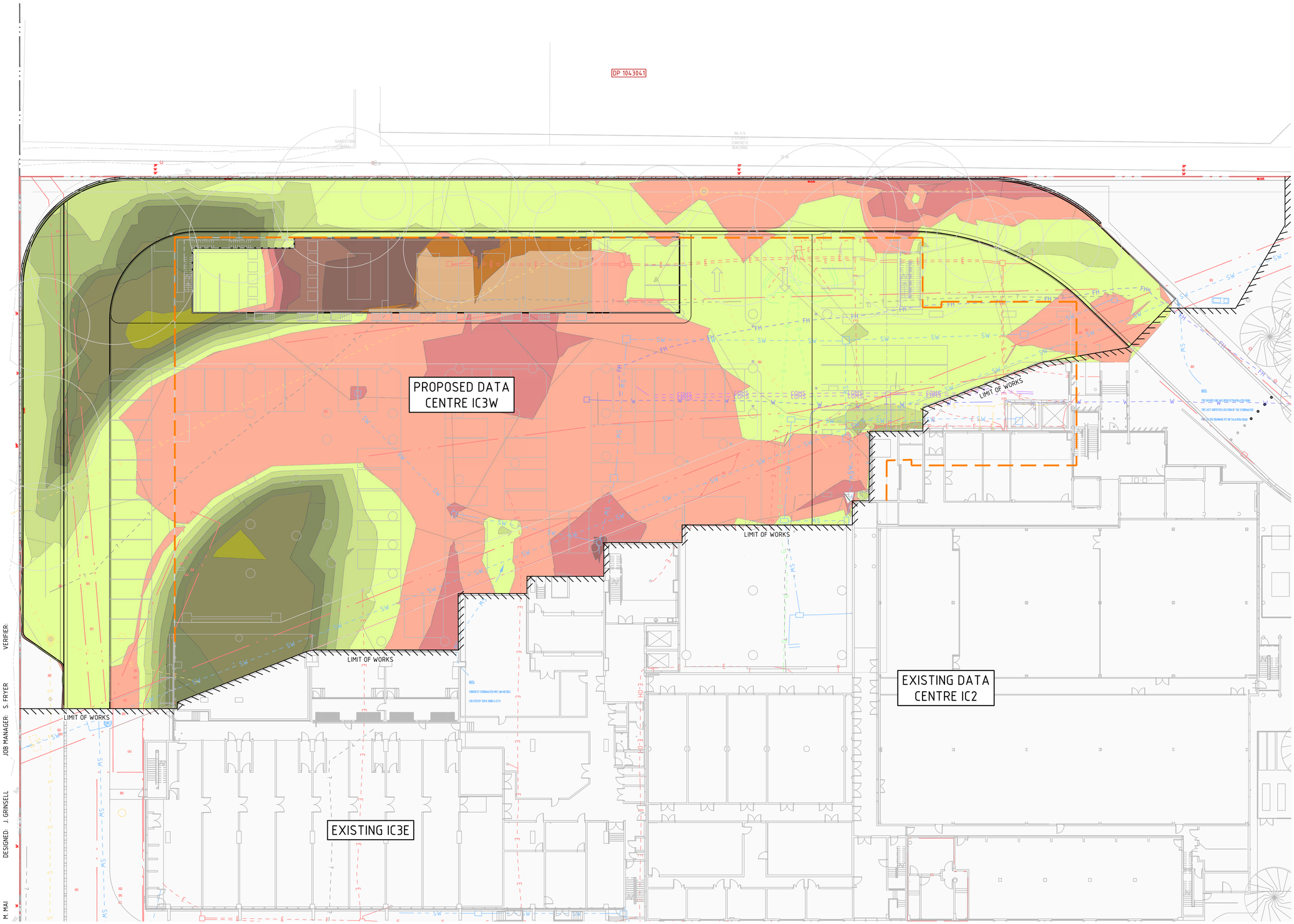
NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: IC3 WEST DATA CENTER
17-23 TALAVERA ROAD,
MACQUARIE PARK

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
SEDIMENT AND SOIL EROSION CONTROL DETAILS

JOB NUMBER: 170095-02
DRAWING NUMBER: DAC02.11
REVISION: 01
DRAWING SHEET SIZE = A1

Found: T:\2017 Jobs\170095-02 - IC3 West 17-23 Talavera Road Macquarie Park\D-Drawings\C-Civil\170095-02-CAD\01-DA\170095-02_DAC02.11.dwg
Plotted By: ANGUS FALLINS
Date: 16.04.2020 2:24 PM



LEGEND

- SITE BOUNDARY
- ADJOINING BOUNDARY LINE
- E — EXISTING ELECTRICITY
- COMS — EXISTING COMMUNICATIONS
- G — EXISTING GAS
- S — EXISTING SEWER
- FH — EXISTING FIRE HYDRANT
- SW — EXISTING STORMWATER
- ? — EXISTING UNKNOWN SERVICE

DEPTH OF CUT

- GREATER THAN -2.0m
- - 2.0m TO - 1.5m
- - 1.5m TO - 1.25m
- - 1.25m TO - 1.0m
- - 1.0m TO - 0.75m
- - 0.75m TO - 0.5m
- - 0.5m TO - 0.25m
- - 0.25m TO - 0.0m

DEPTH OF FILL

- 0.0m TO 0.25m
- 0.25m TO 0.5m
- 0.5m TO 0.75m
- 0.75m TO 1.0m
- 1.0m TO 1.25m
- 1.25m TO 1.5m
- 1.5m TO 2.0m
- GREATER THAN 2.0m

DESIGNED: J. GRINSELL
DRAWN: M. MAI
JOB MANAGER: S. FRYER
VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	AF		SF	21.10.21

CLIENT
macquarie DATA CENTRES
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT
HDR

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK.
NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.
THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE

SCALE 1:250@ A1 — 0 2 4 6 8 10 12m

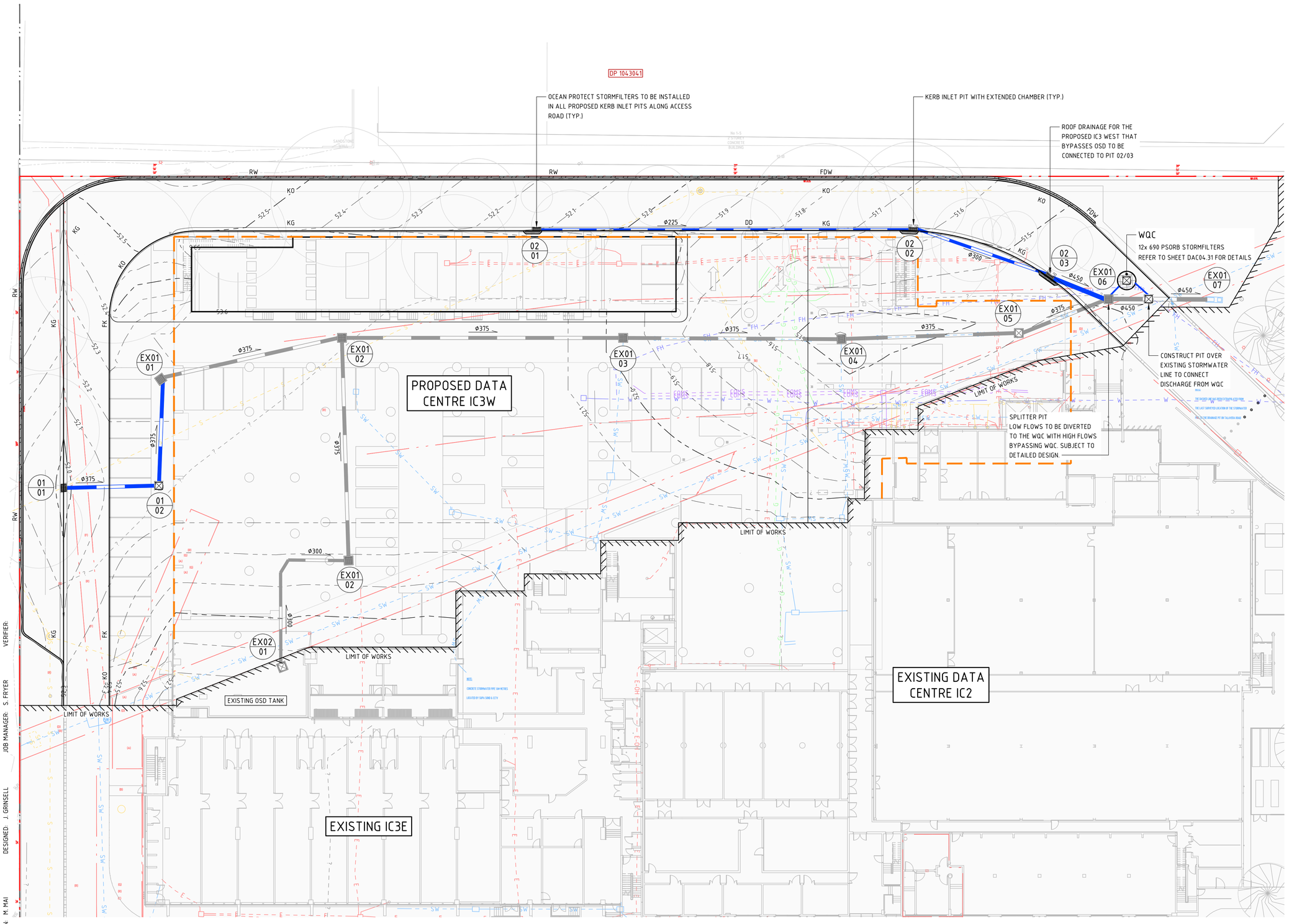
NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT
IC3 WEST DATA CENTER
17-23 TALAVERA ROAD,
MACQUARIE PARK

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
LEVEL DIFFERENCE PLAN

JOB NUMBER 170095-02
DRAWING NUMBER DAC03.01
REVISION 01
DRAWING SHEET SIZE = A1

Plotted By : ANGUS FALLINS
Found : T:\2017 Jobs\170095-02 - IC3 West 17-23 Talavera Road Macquarie Park\D-Drawings\C-Civil\170095-02-CAD\01-DA\170095-02_DAC03.01.dwg
Date : 16.04.2020 2:24 PM



LEGEND

- SITE BOUNDARY
- ADJOINING BOUNDARY LINE
- EASEMENT LINE
- ROOF OUTLINE
- E — EXISTING ELECTRICITY
- COMS — EXISTING COMMUNICATIONS
- G — EXISTING GAS
- S — EXISTING SEWER
- FH — EXISTING FIRE HYDRANT
- SW — EXISTING STORMWATER
- ? — EXISTING UNKNOWN SERVICE
- DESIGN LINEWORK
- KG — KERB AND GUTTER
- KO — KERB ONLY
- FK — FLUSH KERB
- DD — DISH DRAIN
- FDW — FLOOD DIVERSION WALL
- ØXX — STORMWATER PIPE
- ØXX — EXISTING STORMWATER PIPE
- GRATED INLET PIT (NEW / EXISTING)
- KERB INLET PIT (NEW / EXISTING)
- JUNCTION PIT (NEW / EXISTING)
- WQC — WATER QUALITY CHAMBER
- X / XX — STORMWATER PIT TAG LINE ID / STRUCTURE No
- XX.XX — CONTOURS
- XX.XX — EXISTING CONTOURS
- BATTERS
- LIMIT OF WORKS — LIMIT OF WORKS

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	AF		SF	21.10.21

CLIENT: macquarie DATA CENTRES

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: HDR

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK.
NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.
THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE

SCALE 1:250@A1 — 0 2 4 6 8 10 12m

NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

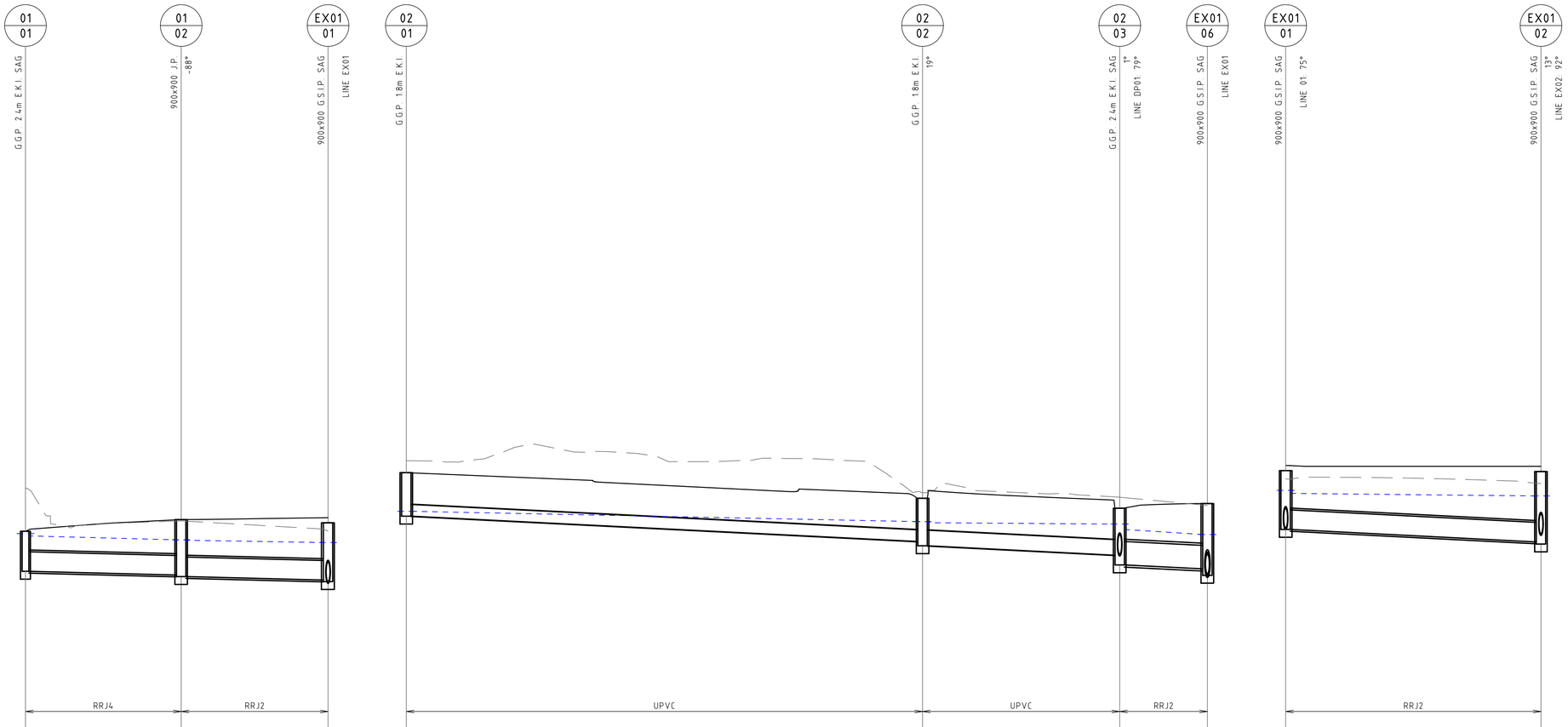
PROJECT: IC3 WEST DATA CENTER
17-23 TALAVERA ROAD,
MACQUARIE PARK

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
SITEWORKS AND STORMWATER MANAGEMENT PLAN

JOB NUMBER: 170095-02
DRAWING NUMBER: DAC04.01
REVISION: 01
DRAWING SHEET SIZE = A1

DRAWN: M. MAI
DESIGNED: J. GRINSELL
JOB MANAGER: S. FRYER
VERIFIER:

Date: 16.04.2020 2:24 PM
Plotted By: ANGUS FALLINS
Found: T:\2017 Jobs\170095-02 - IC3 West 17-23 Talavera Road Macquarie Park\D-Drawings\IC-Civil\170095-02-CADD\T-DA\170095-02_DAC04.01.dwg



	LINE 01			LINE 02			LINE EX01	
PIPE CLASS	RRJ4	RRJ2		UPVC	UPVC	RRJ2	RRJ2	
PIPE GRADE (%)	0.5%	0.5%		1.0%	1.0%	1.0%	1.0%	
PIPE SIZE (mm)	375	375		225	300	450	375	
MINIMUM COVER (m)	0.39	0.68		0.60	0.60	0.60	0.81	
Vf - FULL PIPE VELOCITY (m/s)	Vf=0.82	Vf=1.01		Vf=0.90	Vf=0.80	Vf=1.34	Vf=0.99	
Q - PIPE FLOW (L/s)	Q=76	Q=74		Q=16	Q=35	Q=213	Q=89	
DATUM RL	45.0			44.0			44.0	
H.G.L. (5% A.E.P.)	51.911 51.865	51.791 51.791	51.783	51.336 51.338	51.140 51.140	51.119	51.739 51.739	51.681 51.632 51.632
FINISHED SURFACE	51.955	52.179	52.217	52.080	51.587	51.397	51.486	52.217 52.200
NATURAL SURFACE	52.766	52.154	51.958	52.307	51.694	51.608	51.450	51.958 51.871
PIPE INVERT LEVEL	51.187	51.116 51.086	51.020	51.244	50.758 50.677	50.495 50.369	50.234	50.110 50.990 50.750
DEPTH TO INVERT	0.769	1.063 1.093	1.197	0.835	0.829 0.910	0.902 1.087	1.252	1.376 1.227 1.450
CO-ORDINATED SETOUT	E326536.042 N6260510.275	E326545.629 N6260521.720	E326535.053 N6260530.888	E326551.804 N6260581.301	E326583.585 N6260619.251	E326599.741 N6260628.991	E326606.987 N6260633.172	E326535.053 N6260530.888 E326546.175 N6260552.648
CHAINAGE	0.000	14.931	29.014	0.000	49.500	68.402	76.810	0.000 24.482

SCALE: 1:50V - 1:250H

DRAWN: M. MAI
DESIGNED: J. GRINSELL
JOB MANAGER: S. FRYER
VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	AF		SF	21.10.21

CLIENT: macquarie DATA CENTRES

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: HDR

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK.
NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.
THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE.

SCALE 1:50@A1 0.0 0.5 1.0 1.5 2.0 2.5m
SCALE 1:250@A1 0 2 4 6 8 10 12m

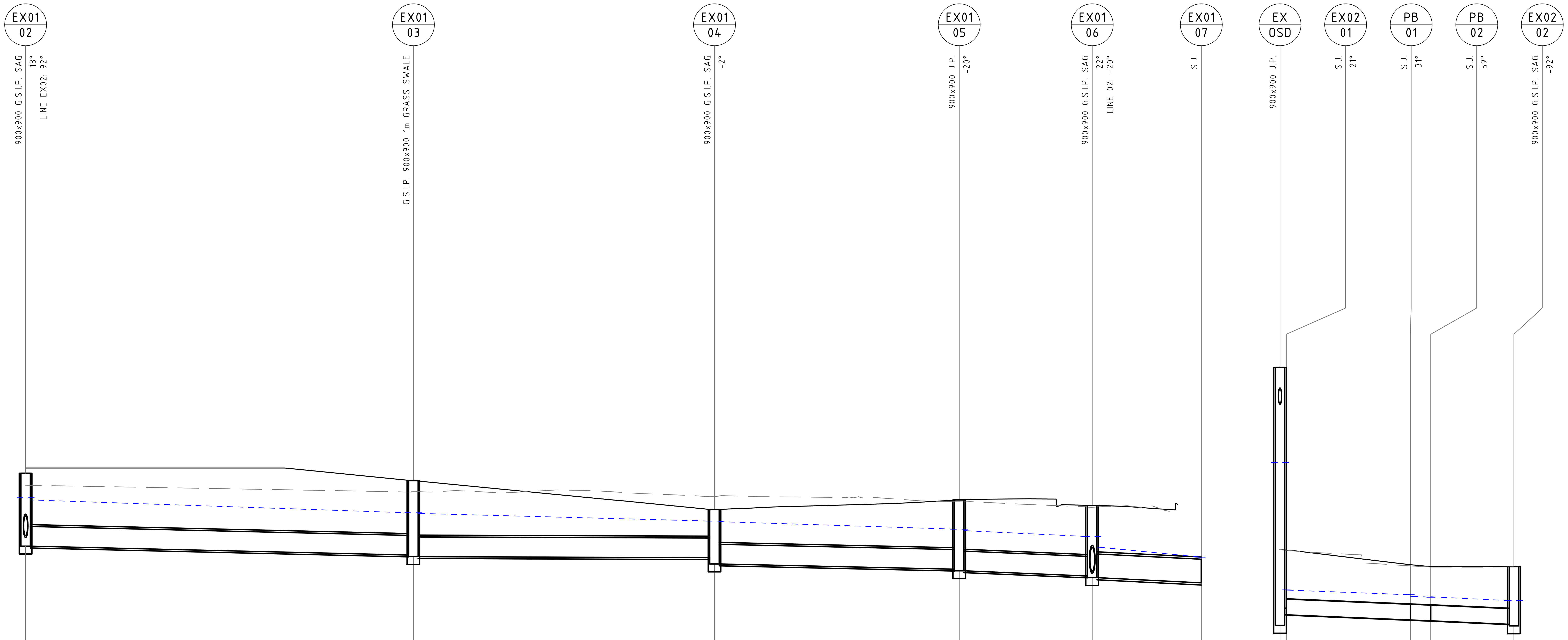
NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: IC3 WEST DATA CENTER
17-23 TALAVERA ROAD,
MACQUARIE PARK

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
STORMWATER LONGITUDINAL SECTIONS - SHEET 01

JOB NUMBER: 170095-02
DRAWING NUMBER: DAC04.21
REVISION: 01
DRAWING SHEET SIZE = A1

Plotted By: ANGUS FALLINS Date: 16.04.2020 2:24 PM
Found: T:\2017 Jobs\170095-02 - IC3 West 17-23 Talavera Road Macquarie Park\D-Drawings\C-Civil\170095-02-CAD\01-DA\T170095-02_DAC04.21.dwg



LINE EX01

	EX01/02 to EX01/03	EX01/03 to EX01/04	EX01/04 to EX01/05	EX01/05 to EX01/06	EX01/06 to EX01/07
PIPE CLASS	RRJ2	RRJ2	RRJ2	RRJ2	RRJ2
PIPE GRADE (%)	0.5%	0.1%	0.4%	0.8%	1.0%
PIPE SIZE (mm)	375	375	375	375	450
MINIMUM COVER (m)	1.01	0.51	0.63	0.88	
Vf - FULL PIPE VELOCITY (m/s)	Vf=1.15	Vf=1.16	Vf=1.20	Vf=1.21	Vf=2.01
Q - PIPE FLOW (L/s)	Q=128	Q=128	Q=133	Q=134	Q=320

DATUM RL 44.0

	EX01/02	EX01/03	EX01/04	EX01/05	EX01/06	EX01/07
H.G.L. (5% A.E.P.)	51.632 51.632 / 51.591	51.346 51.346 / 51.334	51.188 51.188 / 51.177	51.035 51.035 / 51.006	50.893 50.893 / 50.694	50.500 50.500 / 50.500
FINISHED SURFACE	52.200	51.959	51.407	51.592	51.486	50.461
NATURAL SURFACE	51.871	51.747	51.653	51.555	51.450	50.461
PIPE INVERT LEVEL	50.750 / 50.710	50.540 / 50.510	50.490 / 50.370	50.270 / 50.240	50.140 / 50.110	50.011 / 50.011
DEPTH TO INVERT	1.450 / 1.490	1.419 / 1.449	0.917 / 1.037	1.322 / 1.352	1.346 / 1.376	0.450 / 0.450
CO-ORDINATED SETOUT	E326546.175 N6260552.648	E326569.915 N6260580.980	E326588.452 N6260602.890	E326602.818 N6260621.264	E326606.987 N6260633.172	E326613.693 N6260641.116
CHAINAGE	24.482	61.445	90.145	113.468	126.147	136.544

SCALE: 1:50V - 1:250H

LINE EX02

	EX OSD to EX02/01	EX02/01 to PB/01	PB/01 to PB/02	PB/02 to EX02/02
PIPE CLASS	CHNL	UPVC	UPVC	UPVC
PIPE GRADE (%)	-0.0%	0.8%	0.8%	0.9%
PIPE SIZE (mm)	128	300	300	300
MINIMUM COVER (m)	1.11	0.75	0.73	0.73
Vf - FULL PIPE VELOCITY (m/s)	Vf=0.00	Vf=0.85	Vf=0.84	Vf=1.07
Q - PIPE FLOW (L/s)	Q=56	Q=56	Q=56	Q=57

DATUM RL 46.0

	EX OSD	EX02/01	PB/01	PB/02	EX02/02
H.G.L. (5% A.E.P.)	54.304 / 54.304	54.304 51.876 / 51.873	51.783 51.783 / 51.755	51.736 51.736 / 51.744	51.672 51.672
FINISHED SURFACE	52.645	52.633	52.356	52.319	52.320
NATURAL SURFACE	52.645	52.633	52.333	52.311	52.315
PIPE INVERT LEVEL	51.200 / 51.400	51.400 / 51.400	51.302 / 51.302	51.286 / 51.286	51.220
DEPTH TO INVERT	1.245	1.233 / 1.233	1.054 / 1.054	1.034 / 1.034	1.100
CO-ORDINATED SETOUT	E326574.284 N6260518.871	E326573.715 N6260519.061	E326564.651 N6260526.653	E326564.027 N6260528.497	E326569.162 N6260534.532
CHAINAGE	0.000	0.600	12.423	14.370	22.294

NOT FOR CONSTRUCTION

DRAWN: M. MAI DESIGNED: J. GRINSELL JOB MANAGER: S. FRYER VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	AF		SF	21.10.21

CLIENT: macquarie DATA CENTRES

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: HDR

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY. THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE

SCALE 1:50@ A1 (0.0 0.5 1.0 1.5 2.0 2.5m)
SCALE 1:250@ A1 (0 2 4 6 8 10 12m)

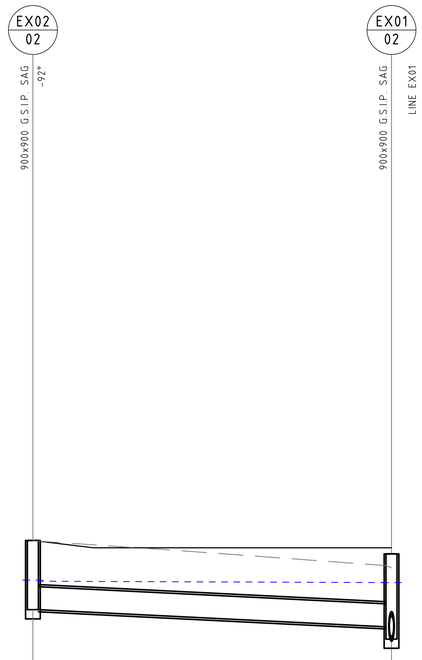
NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: IC3 WEST DATA CENTER, 17-23 TALAVERA ROAD, MACQUARIE PARK

DRAWING TITLE: CIVIL ENGINEERING PACKAGE — STORMWATER LONGITUDINAL SECTIONS - SHEET 02

JOB NUMBER: 170095-02
DRAWING NUMBER: DAC04.22 REVISION: 01
DRAWING SHEET SIZE = A1

Date :16.04.2020 2:24 PM Plotted By : ANGUS FALLINS Found : T:\2017 Jobs\170095-02 - IC3 West 17-23 Talavera Road Macquarie Park\D-Drawings\C-Civil\170095-02-CAD\01-DA\170095-02_DAC04.22.dwg



PIPE CLASS		RRJ2
PIPE GRADE (%)		1.0%
PIPE SIZE (mm)		375
MINIMUM COVER (m)		0.64
Vf - FULL PIPE VELOCITY (m/s)		Vf=1.33
Q - PIPE FLOW (L/s)		Q=67
DATUM RL		44.0
H.G.L. (5% A.E.P.)	51.672 51.672	51.654 51.632 51.632 51.591
FINISHED SURFACE	52.320	52.200
NATURAL SURFACE	52.315	51.871
PIPE INVERT LEVEL	51.220	51.190 50.910 50.710
DEPTH TO INVERT	1.100	1.130 1.290 1.490
CO-ORDINATED SETOUT	E326569.162 N6260534.532	E326546.175 E326552.648 N6260552.648
CHAINAGE	22.294	51.562

SCALE: 1:50V - 1:250H

LINE EX02

DRAWN: M. MAI
DESIGNED: J. GRINSELL
JOB MANAGER: S. FRYER
VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	AF		SF	21.10.21

CLIENT: macquarie DATA CENTRES

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: HDR

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK.
NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.
THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE.

SCALE 1:50@A1
SCALE 1:250@A1
0.0 0.5 1.0 1.5 2.0 2.5m
0 2 4 6 8 10 12m

NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

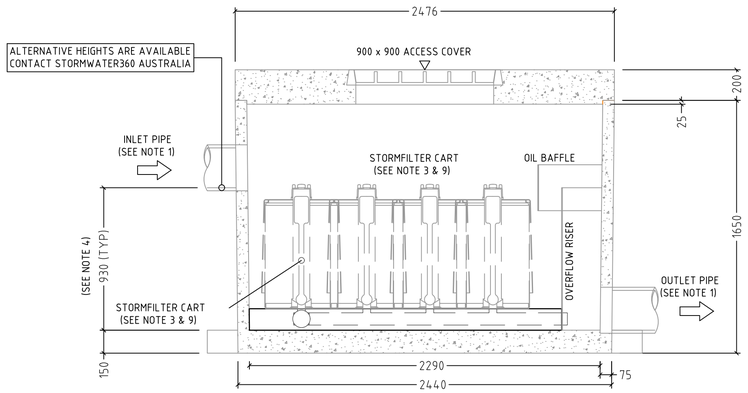
PROJECT: IC3 WEST DATA CENTER
17-23 TALAVERA ROAD,
MACQUARIE PARK

DRAWING TITLE: CIVIL ENGINEERING PACKAGE

STORMWATER LONGITUDINAL SECTIONS - SHEET 03

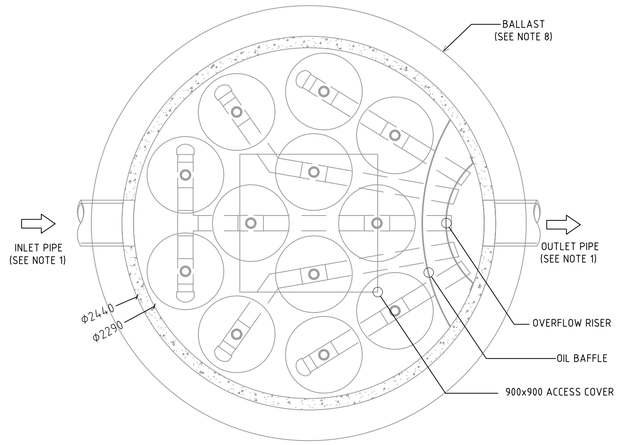
JOB NUMBER: 170095-02
DRAWING NUMBER: DAC04.23
REVISION: 01
DRAWING SHEET SIZE = A1

Plotted By: ANGUS FALLINS
Found: T:\2017 Jobs\170095-02 - IC3 West 17-23 Talavera Road Macquarie Park\D-Drawings\C-Civil\170095-02-CAD\01-DA\T\170095-02_DAC04.23.dwg
Date: 16.04.2020 2:24 PM



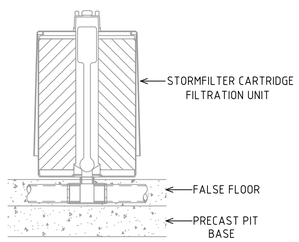
MANHOLE STORMFILTER SECTION

SCALE 1:20



MANHOLE STORMFILTER PLAN

SCALE 1:20



STORMFILTER CARTRIDGE DETAIL

SCALE 1:20

DRAWN: M. MAI
DESIGNED: J. GRINSELL
JOB MANAGER: S. FRYER
VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	AF		SF	21.10.21

CLIENT: macquarie DATA CENTRES

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: HDR

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK.
NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.
THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE

SCALE 1:20@A1 0.0 0.2 0.4 0.6 0.8 1.0m

NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: **IC3 WEST DATA CENTER 17-23 TALAVERA ROAD, MACQUARIE PARK**

DRAWING TITLE: **CIVIL ENGINEERING PACKAGE**

STORMWATER MANAGEMENT DEVICES

JOB NUMBER: **170095-02**

DRAWING NUMBER: **DAC04.31** REVISION: **01**

DRAWING SHEET SIZE = A1

Plotted By: ANGUS FALLINS Date: 16.04.2020 2:24 PM Found: T:\2017 Jobs\170095-02 - IC3 West 17-23 Talavera Road Macquarie Park\D-Drawings\C-Civil\170095-02-CAD\01-DA\170095-02_DAC04.31.dwg

DATA

Pit						Pipe											Catchment				Catchment Set 1		Catchment Set 2		Catchment Set 3	
Pit	Pit	Surface	Pit	Major Event	Minor Event	Pipe			Pipe	U/S	D/S		Pipe	Pipe	Pipe	Roughness	Catchment	Area	Impervious	Pervious	Impervious	Pervious	Impervious	Pervious	Impervious	Pervious
Name	Type	RL	Max Ku	Inlet Capacity	Inlet Capacity	Name	From	To	Length	IL	IL	Slope	Type	Diameter	Roughness	Type	Name		Percentage	Percentage	Tc	Tc	Tc	Tc	Tc	Tc
		(m)		%	%			(m)	(m)	(m)	(%)		(mm)				(Ha)	(%)	(%)	(min)	(min)	(min)	(min)	(min)	(min)	(min)	
01\01	G.G.P. 2.4m E.K.I. SAG	51.955	4.500	50.000	100.000	01\01 to 01\02	01\01	01\02	14.156	51.187	51.116	0.500	RRJ4	375.000	0.013	Manning	01\01	0.173	80.000	20.000	5.000	8.222				
01\02	900x900 J.P.	52.179	2.130	80.000	100.000	01\02 to EX01\01	01\02	EX01\01	13.184	51.086	51.020	0.500	RRJ2	375.000	0.013	Manning	01\02		0.000	0.000						
EX01\01	900x900 G.S.I.P. SAG	52.117		50.000	100.000												EX01\01	0.048	100.000	0.000	5.000	8.222				
02\01	G.G.P. 1.8m E.K.I.	52.080	7.000	80.000	100.000	02\01 to 02\02	02\01	02\02	48.600	51.244	50.758	1.000	UPVC	225.000	0.013	Manning	02\01	0.036	85.000	15.000	5.000	8.222				
02\02	G.G.P. 1.8m E.K.I.	51.587	9.700	80.000	100.000	02\02 to 02\03	02\02	02\03	18.002	50.677	50.495	1.008	UPVC	300.000	0.013	Manning	02\02	0.039	85.000	15.000	5.000	8.222				
02\03	G.G.P. 2.4m E.K.I. SAG	51.397	2.490	50.000	100.000	02\03 to EX01\06	02\03	EX01\06	7.509	50.309	50.234	1.000	RRJ2	450.000	0.013	Manning	02\03	0.041	85.000	15.000	5.000	8.222				
EX01\06	900x900 G.S.I.P. SAG	51.486		50.000	100.000												EX01\06		0.000	0.000						
DP01\01	900x900 J.P.	51.553	5.820	80.000	100.000	DP01\01 to 02\03	DP01\01	02\03	2.463	50.539	50.515	1.000	RRJ2	375.000	0.013	Manning	DP01\01	0.368	100.000	0.000	5.000	8.222				
02\03	G.G.P. 2.4m E.K.I. SAG	51.397		50.000	100.000												02\03	0.041	85.000	15.000	5.000	8.222				
EX01\01	900x900 G.S.I.P. SAG	52.117	2.480	50.000	100.000	EX01\01 to EX01\02	EX01\01	EX01\02	23.582	50.990	50.750	1.018	RRJ2	375.000	0.013	Manning	EX01\01	0.048	100.000	0.000	5.000	8.222				
EX01\02	900x900 G.S.I.P. SAG	52.100	2.020	50.000	100.000	EX01\02 to EX01\03	EX01\02	EX01\03	36.063	50.710	50.540	0.471	RRJ2	375.000	0.013	Manning	EX01\02		0.000	0.000						
EX01\03	G.S.I.P. 900x900 1m GRASS SWALE	51.959	0.220	80.000	100.000	EX01\03 to EX01\04	EX01\03	EX01\04	27.800	50.510	50.490	0.072	RRJ2	375.000	0.013	Manning	EX01\03		0.000	0.000						
EX01\04	900x900 G.S.I.P. SAG	51.407	0.600	50.000	100.000	EX01\04 to EX01\05	EX01\04	EX01\05	22.423	50.370	50.270	0.446	RRJ2	375.000	0.013	Manning	EX01\04	0.011	100.000	0.000	5.000	8.222				
EX01\05	900x900 J.P.	51.592	1.590	80.000	100.000	EX01\05 to EX01\06	EX01\05	EX01\06	11.779	50.240	50.140	0.849	RRJ2	375.000	0.013	Manning	EX01\05		0.000	0.000						
EX01\06	900x900 G.S.I.P. SAG	51.486	1.560	50.000	100.000	EX01\06 to EX01\07	EX01\06	EX01\07	9.946	50.110	50.011	1.000	RRJ2	450.000	0.013	Manning	EX01\06		0.000	0.000						
EX01\07	S.J.	50.461															EX01\07									
EX OSD	900x900 J.P.	56.120	0.000	80.000	100.000	EX OSD to EX02\01	EX OSD	EX02\01	0.150	51.400	51.400	0.000	CHNL	128.000	0.013	Manning	EX OSD	0.511	100.000	0.000	5.000	8.222				
EX02\01	S.J.	56.120	2.650	80.000	100.000	EX02\01 to PB01	EX02\01	PB01	11.823	51.400	51.302	0.830	UPVC	300.000	0.013	Manning	EX02\01		0.000	0.000						
PB01	S.J.	51.602	1.880	80.000	100.000	PB01 to PB02	PB01	PB02	1.947	51.302	51.286	0.830	UPVC	300.000	0.013	Manning	PB01		0.000	0.000						
PB02	S.J.	51.586	2.350	80.000	100.000	PB02 to EX02\02	PB02	EX02\02	7.474	51.286	51.220	0.879	UPVC	300.000	0.013	Manning	PB02		0.000	0.000						
EX02\02	900x900 G.S.I.P. SAG	52.320	2.130	50.000	100.000	EX02\02 to EX01\02	EX02\02	EX01\02	28.368	51.190	50.910	0.987	RRJ2	375.000	0.013	Manning	EX02\02		0.000	0.000						
EX01\02	900x900 G.S.I.P. SAG	52.100		50.000	100.000												EX01\02		0.000	0.000						
EX OSD	900x900 J.P.	56.120	0.000	80.000	100.000	EX OSD to OVERFLOW	EX OSD	OVERFLOW	1.261	55.420	55.420	0.000	UPVC	300.000	0.013	Manning	EX OSD	0.511	100.000	0.000	5.000	8.222				
OVERFLOW	S.J.	55.720															OVERFLOW									

DRAWN: M. MAI DESIGNED: J. GRINSELL JOB MANAGER: S. FRYER VERIFIER:

Plotted By: ANGUS FALLINS Found: T:\2017 Jobs\170095-02 - IC3 West 17-23 Talavera Road Macquarie Park\D-Drawings\C-Civil\170095-02-CADD\1-DA\170095-02_DAC04.41.dwg Date: 16.04.2020 2:24 PM

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	AF		SF	21.10.21

CLIENT: macquarie DATA CENTRES

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: HDR

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK.
NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.
THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE

NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: IC3 WEST DATA CENTER
17-23 TALAVERA ROAD,
MACQUARIE PARK

DRAWING TITLE: CIVIL ENGINEERING PACKAGE

STORMWATER CALCULATIONS
TABLE - SHEET 01

JOB NUMBER: 170095-02

DRAWING NUMBER: DAC04.41

REVISION: 01

DRAWING SHEET SIZE = A1

RESULTS

Pit							Pipe					Overflow					
Pit	Approach	Captured	Bypass	Max	Ponding	Pit	Pipe	Max	Max	Max U/S	MAX D/S	From	To	Flow	Flow	Flow	VxD
Name	Flow	Flow	Flow	HGL	Depth	Freeboard	Name	Flow	Velocity	HGL	HGL			Width	Depth	Velocity	Ratio
(m3/s)	(m3/s)	(m3/s)	(m)	(m)	(m)		(m3/s)	(m/s)	(m)	(m)			(m)	(m)	(m/s)		
01\01	0.076	0.076	0.000	51.911	0.055	0.045	01\01 to 01\02	0.076	0.820	51.865	51.791	01\01	EX01\01	0.000	0.055	0.000	0.000
01\02	0.000	0.000	0.000	51.791	0.000	0.388	01\02 to EX01\01	0.074	1.010	51.783	51.739	01\02	EX01\01	0.000	0.000	0.000	0.000
EX01\01	0.023	0.022	0.000	51.739	0.023	0.378						EX01\01	EX01\02	0.000	0.023	0.000	0.000
02\01	0.016	0.016	0.000	51.336	0.000	0.742	02\01 to 02\02	0.016	0.900	51.338	51.140	02\01	02\02	0.000	0.000	0.000	0.000
02\02	0.017	0.017	0.000	51.140	0.000	0.447	02\02 to 02\03	0.035	0.800	51.119	51.093	02\02	02\03	0.000	0.000	0.000	0.000
02\03	0.019	0.007	0.011	51.093	0.013	0.300	02\03 to EX01\06	0.213	1.340	50.989	50.893	02\03	LOST	3.999	0.013	0.000	0.000
EX01\06	0.000	0.000	0.000	50.893	0.000	0.593						EX01\06	LOST	0.000	0.000	0.000	0.000
DP01\01	0.176	0.176	0.000	51.488	0.000	0.065	DP01\01 to 02\03	0.174	1.570	51.135	51.093	DP01\01	02\03	0.000	0.000	0.000	0.000
02\03	0.019	0.007	0.011	51.093	0.013	0.300						02\03	LOST	3.999	0.013	0.000	0.000
EX01\01	0.023	0.022	0.000	51.739	0.023	0.378	EX01\01 to EX01\02	0.089	0.990	51.681	51.632	EX01\01	EX01\02	0.000	0.023	0.000	0.000
EX01\02	0.000	0.000	0.000	51.632	0.000	0.468	EX01\02 to EX01\03	0.128	1.150	51.591	51.346	EX01\02	EX01\03	0.000	0.000	0.000	0.000
EX01\03	0.000	0.000	0.000	51.346	0.000	0.613	EX01\03 to EX01\04	0.128	1.160	51.334	51.188	EX01\03	EX01\04	0.000	0.000	0.000	0.000
EX01\04	0.005	0.005	0.000	51.188	0.008	0.219	EX01\04 to EX01\05	0.133	1.200	51.177	51.035	EX01\04	02\03	0.000	0.008	0.000	0.000
EX01\05	0.000	0.000	0.000	51.035	0.000	0.556	EX01\05 to EX01\06	0.134	1.210	51.006	50.893	EX01\05	DP01\01	0.000	0.000	0.000	0.000
EX01\06	0.000	0.000	0.000	50.893	0.000	0.593	EX01\06 to EX01\07	0.320	2.010	50.694	50.500	EX01\06	LOST	0.000	0.000	0.000	0.000
EX01\07	0.000	0.000		50.500	0.000	-0.490						EX01\07			0.000		
EX OSD	0.244	0.244	0.000	54.304	0.000	1.816	EX OSD to EX02\01	0.056		54.304	54.304	EX OSD	LOST	0.000	0.000	0.000	0.000
EX02\01	0.000	0.000		51.876	0.000	4.244	EX02\01 to PB01	0.056	0.850	51.873	51.783	EX02\01			0.000		
PB01	0.000	0.000		51.783	0.000	10.417	PB01 to PB02	0.056	0.840	51.755	51.736	PB01			0.000		
PB02	0.000	0.000		51.736	0.000	9.850	PB02 to EX02\02	0.057	1.070	51.744	51.672	PB02			0.000		
EX02\02	0.000	0.000	0.000	51.672	0.000	0.633	EX02\02 to EX01\02	0.067	1.330	51.654	51.632	EX02\02	EX01\02	0.000	0.000	0.000	0.000
EX01\02	0.000	0.000	0.000	51.632	0.000	0.468						EX01\02	EX01\03	0.000	0.000	0.000	0.000
EX OSD	0.244	0.244	0.000	54.304	0.000	1.816	EX OSD to OVERFLOW	0.000	0.000	55.420	55.420	EX OSD	LOST	0.000	0.000	0.000	0.000
OVERFLOW	0.000	0.000		55.420	0.000	0.000						OVERFLOW			0.000		

DRAWN: M. MAI
DESIGNED: J. GRINSELL
JOB MANAGER: S. FRYER
VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR?	XX			X.X.21

CLIENT: macquarie DATA CENTRES
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: HDR
THE COPYRIGHT OF THIS DRAWING REMAINS WITH NORTHROP CONSULTING ENGINEERS PTY LTD

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK.
NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.
THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE

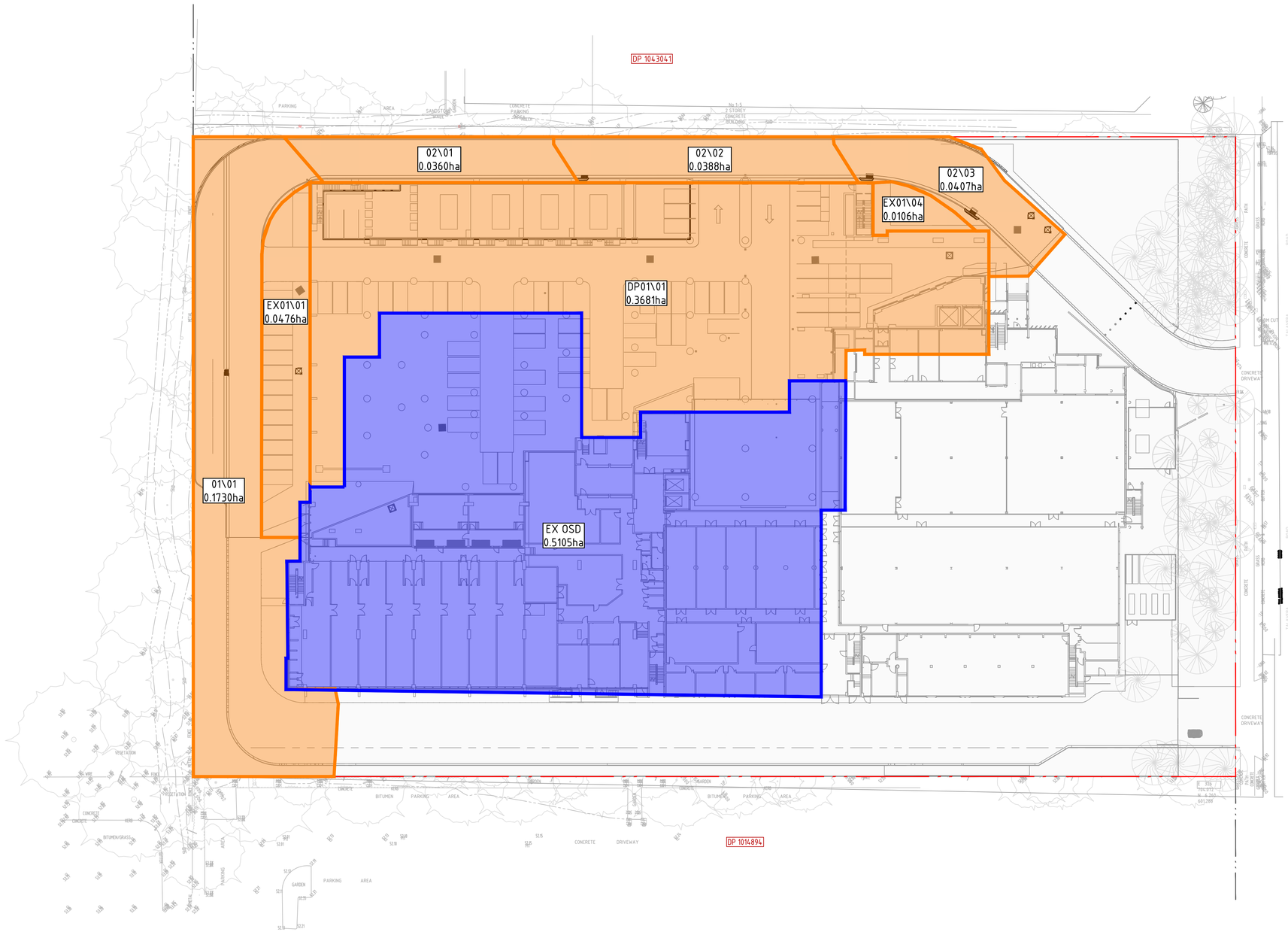
NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: IC3 WEST DATA CENTER
17-23 TALAVERA ROAD,
MACQUARIE PARK

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
STORMWATER CALCULATIONS TABLE

JOB NUMBER: 170095-02
DRAWING NUMBER: DAC04.41
REVISION: 01
DRAWING SHEET SIZE = A1

Plotted By: ANGUS FALLINS
Date: 16.04.2020 2:24 PM
Found: T:\2017 Jobs\170095-02 - IC3 West 17-23 Talavera Road Macquarie Park\0-Drawings\C-Civil\170095-02-CAD\01-DA\170095-02_DAC04.42.dwg



LEGEND

- SITE BOUNDARY LINE
- ADJOINING BOUNDARY LINE
- EASEMENT LINE
- GRATED INLET PIT (NEW / EXISTING)
- KERB INLET PIT (NEW)
- JUNCTION PIT (NEW / EXISTING)
- CATCHMENT AREA BYPASSING OSD
- CATCHMENT AREA DRAINING TO OSD

DRAWN: M. MAI
DESIGNED: J. GRINSELL
JOB MANAGER: S. FRYER
VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	AF		SF	21.10.21

CLIENT: macquarie DATA CENTRES

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: HDR

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK.
NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.
THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE

SCALE 1:400@ A1 — 0 4 8 12 16 20m

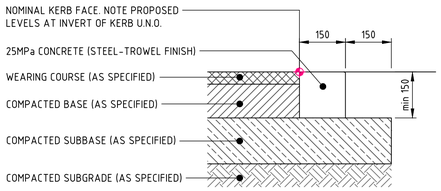
NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: IC3 WEST DATA CENTER
17-23 TALAVERA ROAD,
MACQUARIE PARK

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
STORMWATER CATCHMENTS PLAN

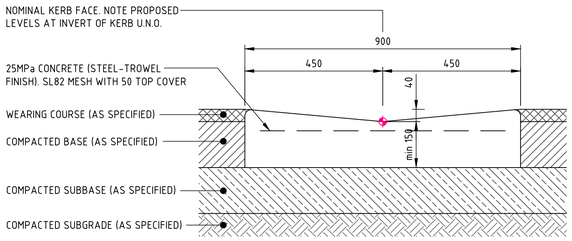
JOB NUMBER: 170095-02
DRAWING NUMBER: DAC04.51
REVISION: 01
DRAWING SHEET SIZE = A1

Plotted By : ANGUS FALLINS
Date : 18.04.2020 2:24 PM
Found : T:\2017 Jobs\170095-02 - IC3 West 17-23 Talavera Road Macquarie Park\3D-Drawings\C-Civil\170095-02-DAD01-DA\170095-02_DAC04.51.dwg



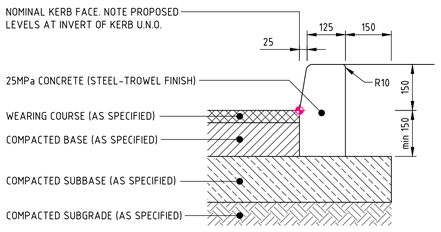
FLUSH KERB 'FK'

EXPANSION JOINTS @ MAX 12m CTRS / TOOL JOINTS @ MAX 3m CTRS
ALL RADII TO BE 5mm U.N.O.
SCALE 1:10



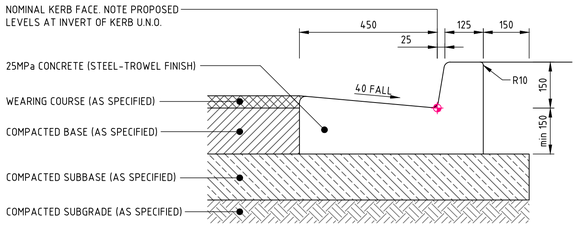
DISH DRAIN - 900 WIDE 'DD'

EXPANSION JOINTS @ MAX 12m CTRS / TOOL JOINTS @ MAX 3m CTRS
ALL RADII TO BE 20mm U.N.O.
SCALE 1:10



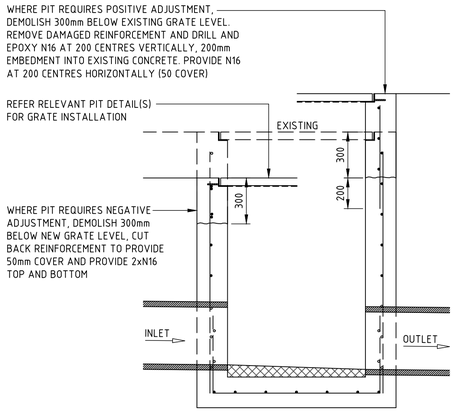
KERB ONLY 'KO'

EXPANSION JOINTS @ MAX 12m CTRS / TOOL JOINTS @ MAX 3m CTRS
ALL RADII TO BE 20mm U.N.O.
SCALE 1:10



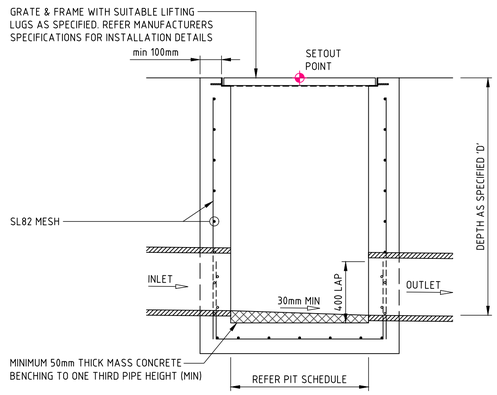
KERB & GUTTER 'KG'

EXPANSION JOINTS @ MAX 12m CTRS / TOOL JOINTS @ MAX 3m CTRS
ALL RADII TO BE 20mm U.N.O.
SCALE 1:10



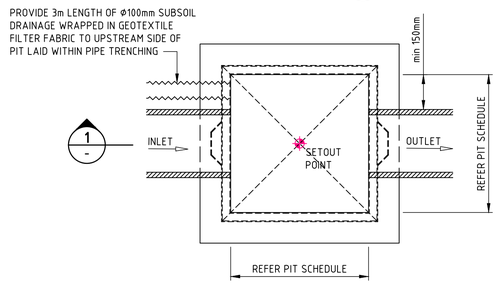
DRAINAGE PIT - LEVEL ADJUSTMENTS

ENSURE NEAT FINISH IS ACHIEVE AT INTERFACE WITH EXISTING. REFER RELEVANT PIT DETAIL(S) FOR GRATE INSTALLATION
SCALE 1:20



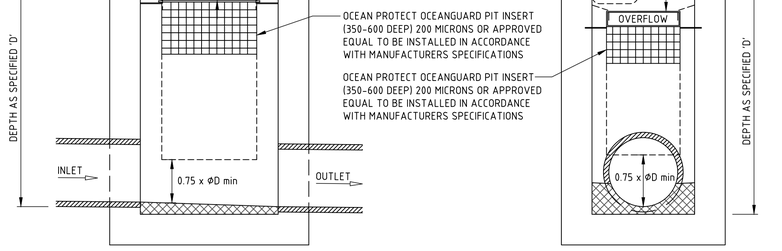
SECTION 1 / -

SCALE 1:20



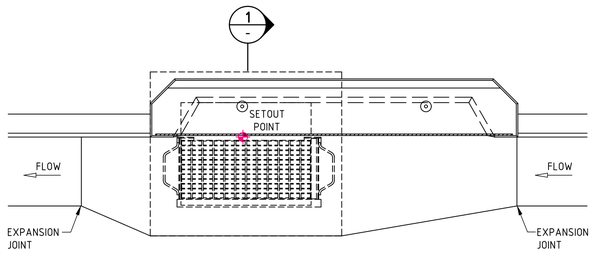
PLAN
SURFACE INLET 'SIP' / JUNCTION PIT 'JP'

PIT STRUCTURE TO BE 200mm THICK UNLESS SHOWN OTHERWISE. DRILL AND EPOXY PLASTIC PROPRIETARY STEP IRONS IN ACCORDANCE WITH AUSTRALIAN STANDARDS AND MANUFACTURERS SPECIFICATIONS (PITS > 1000mm DEPTH).
REFER PIT INTERFACE DETAIL 'F' FOR CORNER REINFORCEMENT
SCALE 1:20



'OCEANGUARD' PIT INSERTS

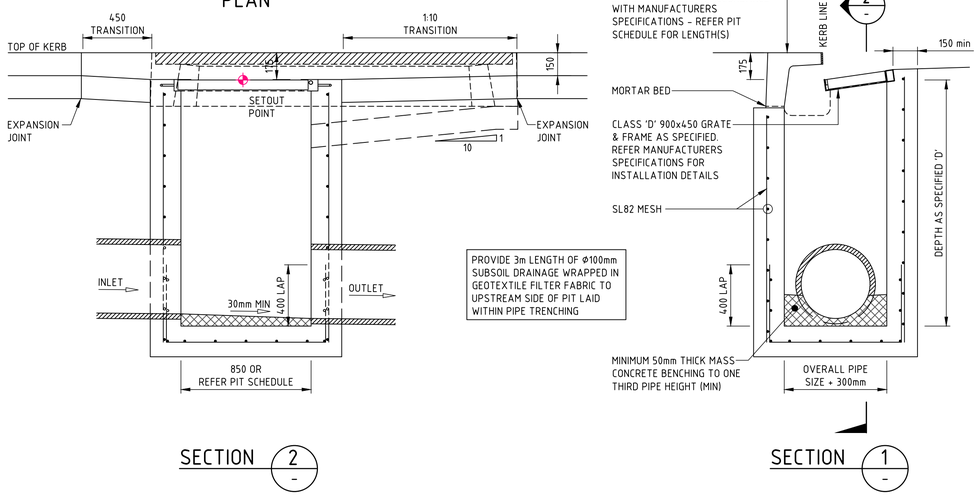
ENSURE MINIMUM 70mm CLEARANCE ACHIEVED BETWEEN OCEAN PROTECT CAGE AND PIT WALLS / FLOORS.
SCALE 1:20



PLAN

FOR SAG PITS, ENSURE PIT LINTEL IS LOCATED CENTRAL TO PIT GRATE AND FRAME AND 1:10 CHUTE IS CONSTRUCTED TO BOTH SIDES OF PIT

REFER EXTENDED CHAMBER PIT DETAIL FOR PIPEWORK IN EXCESS OF ø450 AND WHERE REQUIRED



SECTION 2 / -

SECTION 1 / -

KERB INLET PIT 'KIP'

PIT STRUCTURE TO BE 200mm THICK UNLESS SHOWN OTHERWISE. DRILL AND EPOXY PLASTIC PROPRIETARY STEP IRONS IN ACCORDANCE WITH AUSTRALIAN STANDARDS AND MANUFACTURERS SPECIFICATIONS (PITS > 1000mm DEPTH).
REFER PIT INTERFACE DETAIL 'F' FOR CORNER REINFORCEMENT
SCALE 1:20

DRAWN: M. MAI
DESIGNED: J. GRINSELL
JOB MANAGER: S. FRYER
VERIFIER:

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
01	ISSUED FOR SSDA	AF		SF	21.10.21

CLIENT: macquarie DATA CENTRES

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: HDR

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK.
NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.
THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE.

SCALE 1:10 @ A1 — 0.0 0.1 0.2 0.3 0.4 0.5m
SCALE 1:20 @ A1 — 0.0 0.2 0.4 0.6 0.8 1.0m

NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

PROJECT: IC3 WEST DATA CENTER
17-23 TALAVERA ROAD,
MACQUARIE PARK

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
DETAILS SHEET

JOB NUMBER: 170095-02
DRAWING NUMBER: DAC10.01
REVISION: 01
DRAWING SHEET SIZE = A1

Plotted By: ANGUS FALLINS
Found: T:\2017 Jobs\170095-02 - IC3 West 17-23 Talavera Road Macquarie Park\D-Drawings\C-Civil\170095-02-CAD\01-DA\170095-02_DAC10.01.dwg
Date: 16.04.2020 2:24 PM