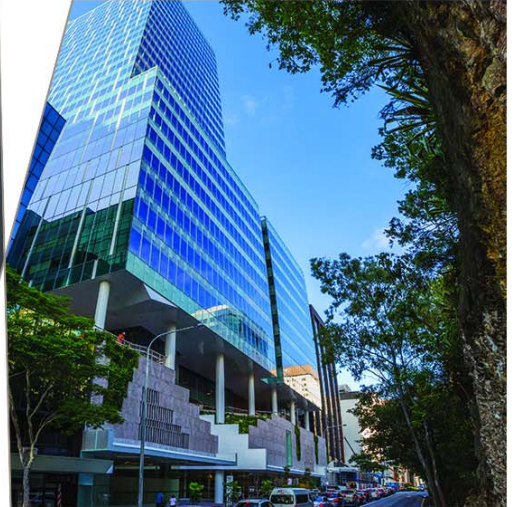

Infrastructure & Stormwater Concept Plan

Cardno

Infrastructure Concept Plan

Barangaroo South - MOD10 Planning
Submission

NA50613044



Prepared for
NSW Department of Planning, Industry and
Environment
31 January 2020

Contact Information

Cardno (NSW/ACT) Pty Ltd
ABN 95 001 145 035

Level 9 - The Forum
203 Pacific Highway
St Leonards NSW 2065
Australia

www.cardno.com

Phone +61 2 9496 7700

Fax +61 2 9439 5170

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Author(s):

Pak Lau
Senior Civil Engineer

Effective Date 31/01/2020

Approved By:

Garry Neville
Senior Civil Engineer/Team Leader

Date Approved 31/01/2020

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Document History

| Version | Effective Date | Description of Revision | Prepared by | Reviewed by |
|---------|----------------|---|-------------|-------------|
| 1 | 16/09/2019 | Issued for Approval | PL | GN |
| 2 | 25/09/2019 | Minor amendment in Section 1, Issued for Approval | PL | GN |
| 3 | 27/09/2019 | Minor amendment in Section 1, Issued for Approval | PL | GN |
| 4 | 10/12/2019 | Issued for Approval | PL | GN |
| 5 | 12/12/2019 | Issued for Approval | PL | GN |
| 6 | 31/01/2020 | Issued for Approval | PL | GN |

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Appendix A Relevant drawings

1 Project Appreciation

1.1 Introduction

This report supports a Section 75W Modification to Concept Plan Approval MP06_0162 (known as Modification 10) pursuant to clause 3C, Schedule 2 of *Environmental Planning and Assessment (Savings, Transitional and Other Provisions) Regulation 2017* (Savings and Transitional Regulation).

1.2 Background

The 22 hectare Barangaroo site has been divided into three distinct redevelopment areas (from north to south) – Barangaroo Reserve, Central Barangaroo and Barangaroo South.

1.3 Overview of Proposed Modification

Concept Plan (Mod 10) seeks to increase the height of the Building Envelope Plan for R4B to RL 235 and increase the GFA of Blocks 4A and 4B by a total of 8,000m².

In order to support the above changes, the following modifications are proposed:

- increase the Concept Plan maximum GFA for Block 4A from 86,979m² to 92,629m² and the State Significant Precincts SEPP (SSP SEPP) Block 4A maximum GFA from 94,740m² to 100,390m²;
- increase the Concept Plan maximum GFA for Block 4B from 19,158m² to 21,508m² and the State Significant Precincts SEPP (SSP SEPP) Block 4B maximum GFA from 20,970m² to 23,320m²;
- increase the Concept Plan residential maximum GFA of Block 4A from 86,166m² to 91,816m²;
- increase the Concept Plan residential maximum GFA of Block 4B from 18,287m² to 20,637m²; and
- increase the Concept Plan maximum height on the Building Envelope Plan for R4B from RL 210 to RL 235, noting Block 4A currently provides for a maximum height of RL 250 under the SSP SEPP.

This Modification also seeks to amend the condition to align the time for delivery of Key Worker Housing at Barangaroo South and off site. This is to reflect that it will be completed prior to the issue of the occupation certificate for Building R5.

The changes described above necessitate modifications to the existing Instrument of Approval, Statement of Commitments and Barangaroo South Built Form Principles and Urban Design Controls for the Concept Plan as well as the relevant provisions of the State Significant Precinct SEPP.

1.4 Purpose of this Report

This report has been prepared to accompany the Project Application for the MOD10 planning submission at Barangaroo South.

This document should be used as reference during the detailed design development of utilities provision to the Barangaroo South development including buildings and public domain. Future and separate project applications will be required to address service provision to each building or development area.

The following general comments apply:

- a. A desktop services investigation (Dial Before You Dig), survey and Ground Penetrating Radar (GPR) have been used as source data for the information contained in this document, and
- b. The attached plans, refer **Appendix A**, are to be developed through consultation with the appropriate utilities providers.

1.5 Site Location

Barangaroo is located on the north western edge of Central Sydney, bounded by Sydney Harbour to the west and north, the historic precinct of Millers Point (for the northern half), The Rocks and the Sydney Harbour Bridge approach to the east; and King Street Wharf to the south.

The Barangaroo site has been divided into three distinct redevelopment areas (from north to south) – the Barangaroo Reserve, Central Barangaroo and Barangaroo South. Concept Plan (Mod 10) relates to Barangaroo South only.

1.6 Relevant Report and Documentations

This report shall be read in conjunction with the following documents:

1. Infrastructure Concept Plan, Barangaroo South – Mod8 Planning Submission (MP06_0162 MOD8), March 2015, prepared by Cardno;
2. Stormwater Concept Report, Barangaroo South – MOD8 Planning Submission (MP06_0162 MOD8), September 2014, prepared by Cardno;
3. Mod 10 Masterplan SEPP Maps – Building Envelop Maps (Drawing B10_AMP_08_0071);
4. Mod 10 Masterplan SEPP Maps– Building Envelop Development Block 4A (Drawing B10_AMP_09_0093);
5. Mod 10 Masterplan SEPP Maps– Building Envelop Development Block 5 (Drawing B10_AMP_09_0094);
6. Barangaroo South Concept Plan Mod 10 - Indicative Staging Plan (Drawing BB2_ASK_DD_CO_0226);
7. Stormwater Management and Infrastructure Servicing prepared for Residential Building R4B State Significant Development Application (SSD 6965) by Cardno (2016); and
8. Stormwater Management and Infrastructure Servicing prepared for Residential Building R5 State Significant Development Application (SSD 6966) by Cardno (2016).

The relevant drawings are shown in Appendix A and outlined below:

- B1B CD 2000002 (14) – Stage 1B Public Domain Works General Arrangement Plan;
- Sheet 1 Case Number 154199PW – Watermain Extension Barangaroo Stage 1B;
- B1B CD 2100001 (18) – Stage 1B Public Domain Works Service Coordination Plan Sheet 1;
- B1B CD 2100001 (18) – Stage 1B Public Domain Works Service Coordination Plan Sheet 2;
- B1B CD 2100001 (18) – Stage 1B Public Domain Works Service Coordination Plan Sheet 3;

2 Stormwater Services

2.1 Existing stormwater services

The existing stormwater network is characterised by a series of in ground piped stormwater systems (typically between 300mm to 1200mm in diameter) draining Hickson Road and other external catchments through the Barangaroo site directly to the Harbour. Refer **Figure 2-1** for details.

Figure 1-1 Existing Stormwater Network Before Development Work

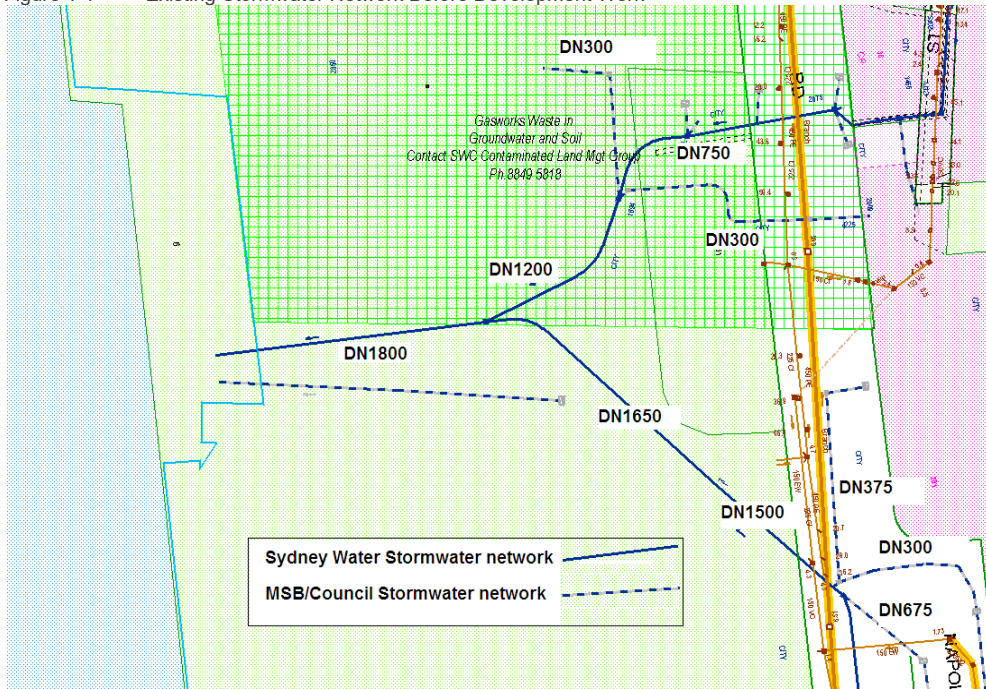


Figure 2-1 Existing stormwater network before development work

2.2 Recently constructed stormwater services

Diversion of the existing stormwater assets traversing the Barangaroo South site has been designed with input from Sydney Water Corporation and the Infrastructure NSW (acting as the Roads Authority for Hickson Road). These works include the following main components:

- Stage 1A Deviation Works: A concrete pipe and box culvert diversion to the south with 100 year ARI capacity to improve existing flooding to Hickson Road in the vicinity of the Sussex Hotel.
- Stage 1B Deviation Works: A concrete pipe and box culvert diversion to the south under Watermans Quay with 100 year ARI capacity to convey stormwater runoff in Hickson Road in the vicinity of The Bond Residential building and The Bond Commercial building.

The Stage 1A and Stage 1B stormwater deviation works have been constructed and are in operation. The proposed Mod 10 works will not change the stormwater diversion strategy.

3 Potable Water Services

3.1 Existing potable water services

A Sydney Water owned 300mm watermain is located on the western side of Hickson Road and extends for the full frontage of the Barangaroo South development. Sydney Water has confirmed, through approval of the "Site Servicing Strategy – Barangaroo South" prepared by Cardno and dated March 2013, this main has adequate capacity to provide potable water to the development.

All existing supplies to the development site, serving buildings and other structures that have been demolished, are to be capped off and disused or removed.

3.2 Proposed potable water services

Supply of potable water to the development has been addressed through the Site Servicing Strategy as agreed with Sydney Water.

Connections will be made to the existing 300mm watermain described above. From these connections:

Stage 1A, a 250mm potable water main will be constructed along Shelley St, Lime Street, and Globe Street to provide potable water supply to the Stage 1A Barangaroo South development. The new potable water main has been laid above the podium level structural slab. It is intended Sydney Water will own and maintain the new assets.

Stage 1B, a 250mm potable main will be constructed along Watermans Quay, Barangaroo Ave to provide potable water supply to the Stage 1B Barangaroo development. The potable watermain has been designed and approved by Sydney Water.

The hydraulic engineer (Warren Smith and Partners) has confirmed Modification No.10 would not change the potable water demand, therefore, there would be no changes to the design of the proposed potable main in Stage 1B.

A design of the Stage 1B potable watermain is shown in Appendix A – Sheet 1 Barangaroo Stage 1B – Watermain Extension

4 Recycled Water Services

4.1 Existing recycled water services

The recycled water sources for Barangaroo South are supplied from a central Recycled Water Treatment Plant (RWP) treating waste water from Barangaroo and waste water sourced through mining Sydney Water sewer in Hickson Road. The water is treated in compliance with Australian Recycled Water guidelines and reticulated through Barangaroo for non-potable use.

The system is operating with a backup water supply connected to the Sydney Water potable water supply system serving Barangaroo South. At Barangaroo South, the recycled water mains are generally to be located within the Barangaroo South Basements; reticulating to customer recycled water meters located within the basement and extending to a termination point at the northern boundary of the Stage 1B site for future extension to service the Barangaroo Central development to a maximum of 60,000m² GFA.

The recycled water system for the Barangaroo South development has been constructed as part of Barangaroo Stage 1A works.

4.2 Proposed recycled water services

The hydraulic consultants have revised the water balance for Mod 10 and confirm the new flow rate will not affect the design of the recycled water plant. The changes from Mod. 8 to Mod. 10 would not alter the recycled water services.

5 Wastewater services

5.1 Existing wastewater services

The local sewerage network is owned by Sydney Water and consists of 225mm and 450mm gravity drainage in Hickson Road. This network drains to existing Sydney Water owned Sewage Pump Station SP1129 located north of Barangaroo South.

The existing pump station serves catchments extending to Sussex Street, Kent Street and includes the catchment served by SP0014 located at Barangaroo Reserve. SP0014 will be disused as part of the approved Barangaroo Reserve works with flows diverted to SP1129.

All existing supplies to the development site, serving buildings and other structures that have been demolished, are to be capped off and disused or removed.

5.2 Proposed wastewater services

Provision of wastewater services to the development has been addressed through the Site Servicing Strategy as agreed with Sydney Water. Internal sewerage reticulation within Barangaroo South will be privately owned.

A RWP has been installed within the Barangaroo South development. The RWP is owned and operated under the Water Industry Competition Act. The RWP provides recycled water to the Barangaroo South development

and, through sewer mining, it has been designed to provide sufficient recycled product for export to external customers.

Additional storage within the local sewerage network is required to offset the peak load from the development if the RWP is offline. This has been achieved through re-use of the Stage 1A temporary stormwater diversion pipework as emergency wastewater storage.

The changes from Mod.8 to Mod.10 would not alter the wastewater services.

6 Electrical services

6.1 Existing electrical services

Existing electrical services in Hickson Road include:

- Disused Railcorp 33KV feeder 746 and 745. Advice has been received confirming these assets "...are old gas cables and no longer required for Railcorp's rail network purposes and are to be de commissioned". Railcorp have advised that these assets are to be treated as live. This service is located in close proximity to the eastern kerb alignment of Hickson Road;
- Existing HV supply and concrete encased bank of conduits feeding "The Bond". The bank of conduits is believed to consist of 150mm conduits laid in 4 rows of 4 conduits generally between 0.8m and 1.2m depth;
- Existing HV supplies to substations serving the previous site use which are to be disused and removed;
- Existing temporary HV supplies to temporary substations providing construction supply; and
- Various LV services for street lighting, parking ticket machines and other purposes.

6.2 Proposed electrical services

The electrical loading has been reviewed due to the proposed changes in Mod 10 and concluded that the capacity of the utility connection can cover the assessed peak load of Stage 1B development site including the increased area. The changes from Mod.8 to Mod.10 would not alter the electrical services.

7 Telecommunications services

7.1 Existing telecommunications services

The Kent Street telephone exchange is located relatively close to the site. A number of telecommunications carriers have existing cables in the vicinity of the site.

All telecommunications infrastructure previously existing within the basement footprint has now been capped off at the boundary and removed.

7.2 Proposed telecommunications services

Future development under the Concept Plan will be provided with telecommunications services through a pit and pipe network to allow multiple carriers to access the site at two diverse entry points; from Shelley Street at the south and from Hickson Road at the north. This may be via NBN Co services or those of another telecommunications network provider. Connection point(s) will be the subject of detailed design, which will be covered by future applications and approvals under the Concept Plan.

Reticulation within the site will generally be in dedicated carrier cable trays at a high level in the basements and will provide diverse paths from site entry points to individual building node rooms to allow for a high level of network resilience. Cable tray and conduit zones are subject to detailed design.

The changes from Mod. 8 to Mod. 10 would not alter the telecommunication services.

8 Natural gas services

8.1 Existing natural gas services

There is an existing 110mm low pressure 7kPa nylon gas main along Hickson Road and a high pressure gas main located at the corner of Sussex and Napoleon Streets. There is no existing high pressure main connection serving the Barangaroo site, however there are small low pressure connections. These connections shall be decommissioned and capped off at the site footprint boundary and removed.

8.2 Proposed natural gas services

Natural gas service is provided by Jemena, who have deemed it suitable to offer a low pressure (maximum 7kPa) service to Barangaroo South. Subject to a separate application and approval by Jemena, there is also potential to connect the site or part of the site to a high pressure service should it be required. This could be delivered throughout the site via services within existing and proposed roads.

The changes from Mod.8 to Mod.10 would not alter the gas services.

9 Chilled water services

9.1 Existing chilled water services

The Harbour Heat Rejection Plant (HHR) and associated reticulation of chilled water, was approved in August 2013 as part of the MP10_0023 MOD5 planning application

Subsequently, the District Cooling Plant (DCP) and the HHR have been constructed as part of the Barangaroo Stage 1A development. Chilled water is reticulated throughout the Barangaroo South development within a privately owned pipework

9.2 Proposed chilled water services

The HHR and DCP in Barangaroo Stage 1A site have also been designed to service the proposed Stage 1B Barangaroo Development. Chilled water reticulation pipes will be constructed to service the proposed development site. Changes in the thermal load due to Mod 10 have been assessed. The existing DCP has capacity for the increased load. The assessment also considered the carbon parity of the HHR that supports the DCP.

The changes from Mod. 8 to Mod. 10 would not alter the chilled water services.

10 Conclusion

This report has been prepared to describe the infrastructure management strategy for the Barangaroo South development to accompany the Section 75W Modification to the Barangaroo Concept Plan (Modification No. 10). The completed design will ensure adequate infrastructure provisions to the development that is integrated into the ground plane design.

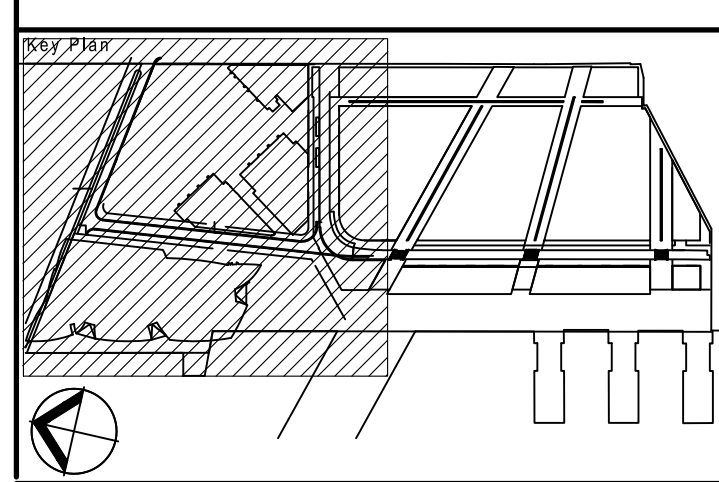
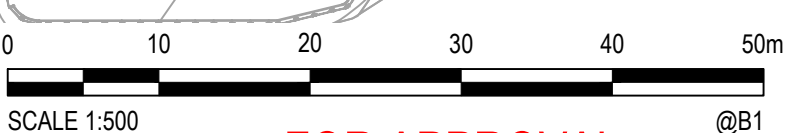
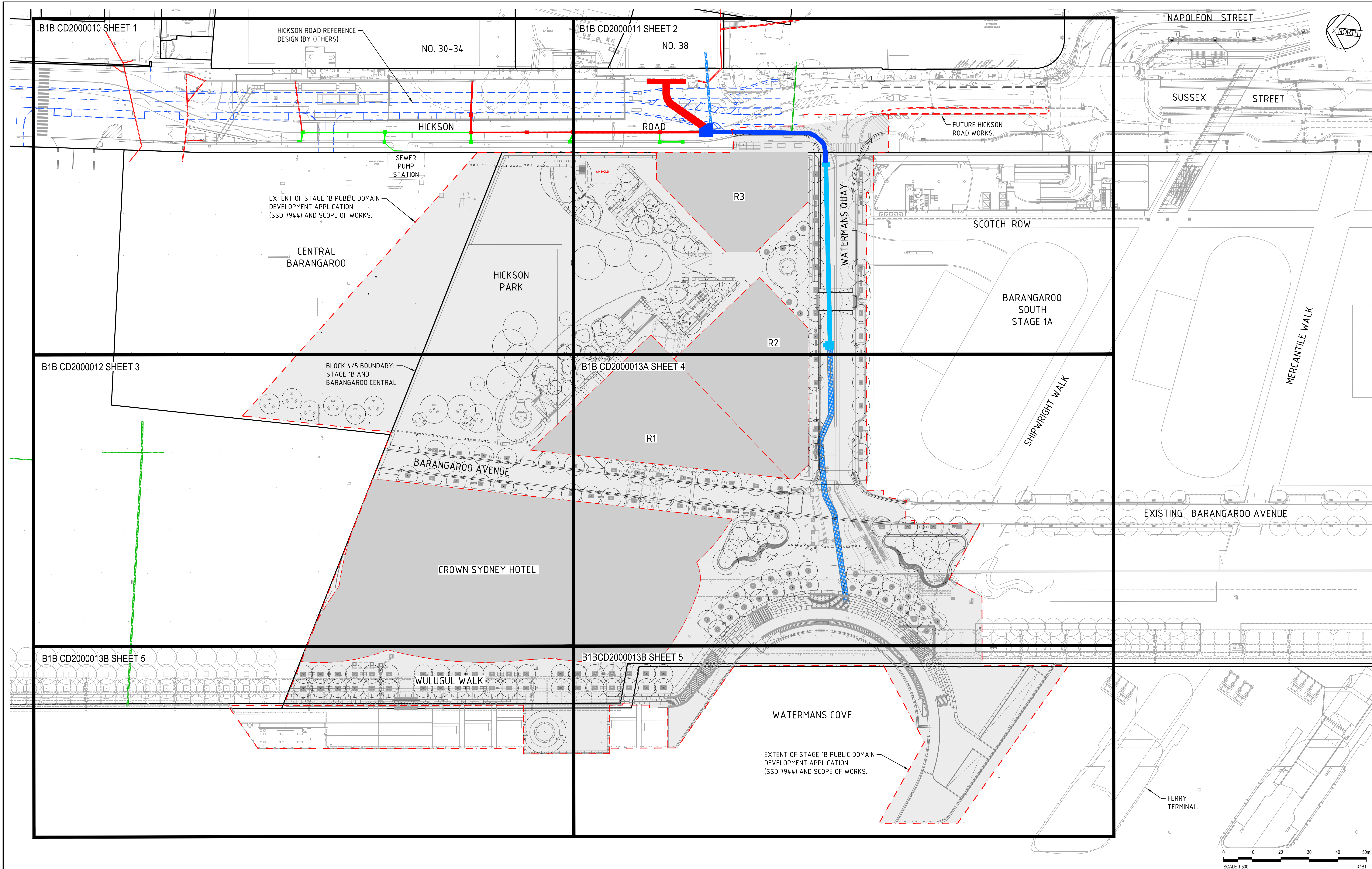
The main changes to the Concept Plan from the approved Modification No. 8 to No. 10 are the increase in GFA due to the modification of the building heights and the minor changes to the footprint of Building R5. Based on the assessments as described above, the utility servicing strategy proposed for Mod.8 is adequate to service the proposed changes in Mod 10. The proposed building footprint for R5 has no impact to the ground plane utility alignments.

Adequate utility services and any necessary approvals for the site will be obtained. Consultants with relevant accreditation with utility authorities have been engaged to provide detailed design services, for example a Water Servicing Coordinator and Level 3 accredited electrical designed.

APPENDIX

A

RELEVANT DRAWINGS





| Rev | Item | Revision Description | Date | Rev | Item | Revision Description | Date |
|-----|------|--------------------------------------|----------|-----|------|----------------------|------|
| 14 | | AFC ISSUE | 19.08.28 | | | | |
| 13 | | AFC ISSUE | 19.07.19 | | | | |
| 12 | | 100% IFT | 22.03.19 | | | | |
| 11 | | 95% IFT (RE-ISSUED FOR COORDINATION) | 15.03.19 | | | | |
| 10 | | 95% IFT (FOR COORDINATION) | 12.03.19 | | | | |
| 09 | | 90% IFT (RE-ISSUED) | 19.12.18 | | | | |
| 08 | | 90% IFT | 03.12.18 | | | | |
| 07 | | 50% IFT | 03.10.18 | | | | |
| 06 | | STAGE 4A ISSUE | 13.04.18 | | | | |
| 05 | | STAGE 4A DRAFT ISSUE | 06.04.18 | | | | |
| 04 | | ISSUED FOR DEVELOPMENT APPLICATION | 17.03.17 | | | | |
| 03 | | INCORPORATING MINOR AMENDMENTS | 30.11.16 | | | | |
| 02 | | INCORPORATING CLIENT REVIEW | 15.11.16 | | | | |
| 01 | | ISSUE FOR SSD 7944 | 25.10.16 | | | | |

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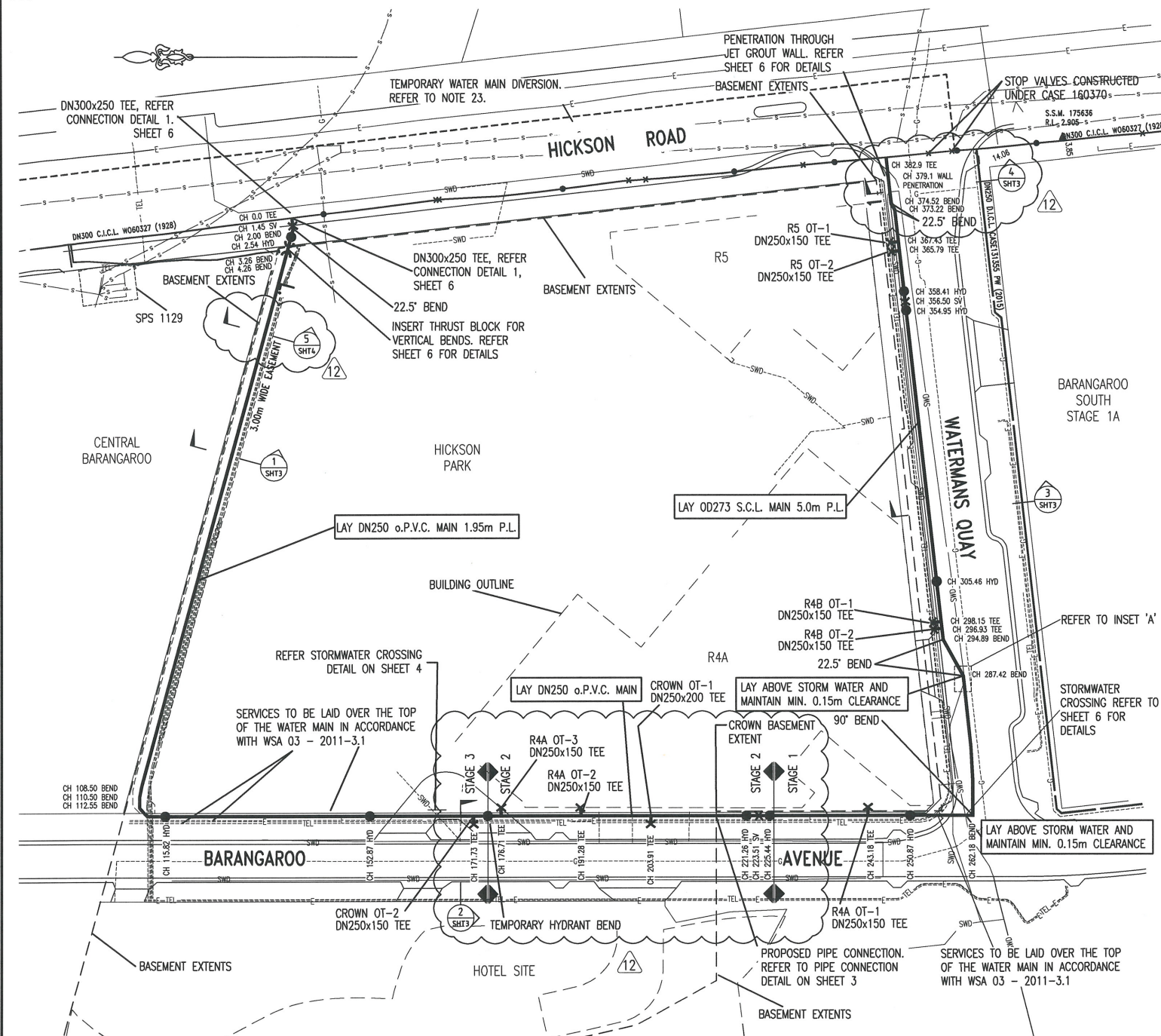


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Cardno (NSW/ACT) Pty Ltd | ABN 95 001 145 035
Level 9, The Forum, 203 Pacific Highway
St Leonards, NSW 2065
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

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| NOT TO BE USED FOR CONSTRUCTION PURPOSES | | | | | | | | | | |
| Lead Architects | | RSHP Australia Pty Ltd Ivan Harbord Principal Architect RAIA NSW ARB 8484 Sydney NSW 2000 | | Principal |  | | Project | STAGE 1B - PUBLIC DOMAIN WORKS GENERAL ARRANGEMENT PLAN | | |
| Collaborating Architects | | Lend Lease Graham W Jones Principal Architect FRAIA NSW ARB 4005 ABN 97 000 098 162 | | Developer | Lend Lease | |  | Drawn By Designed Checked Approved By Date MDH MV TM OCT '15 | | |
| | | | | Project Management & Construction | | Lend Lease | | Scale 1:500 | | |
| | | | | Design | | Lend Lease | | | | |
| Consultant | | | | 30 The Bond 30 Hickson Road Miffers Point NSW 2000 www.lendlease.com | | | | Project No. Site No. Drawing No. Revision 161804 B1B CD2000002 14 | | |
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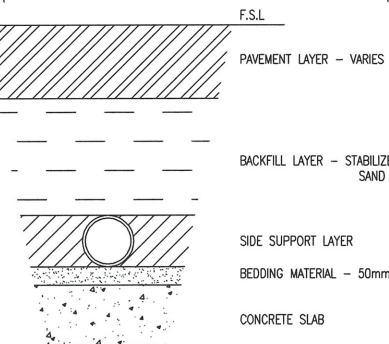
NOTE:

- 1. LARGE WATER MAIN CONNECT APPLICATIONS TO BE DONE AS PART OF FUTURE BUILDING APPLICATIONS.
- 2. TEES AND VALVES INSTALLED UP FRONT TO AVOID FUTURE UNDER PRESSURE CUT-INS OR MAIN SHUTDOWN.
- 3. DEVELOPER TO ENSURE THERE ARE NO TREES, LIGHT POLES OR ANY OTHER STRUCTURE WITHIN THE EASEMENT OR PLACED NEAR THE MAIN THAT MAY CAUSE DAMAGE TO THE SYDNEY WATER ASSET.
- 4. DEVELOPER TO ENSURE NOTHING OVER HANGING THE AREA ABOVE THE MAIN THAT MAY MAKE IT DIFFICULT FOR EQUIPMENT TO CONDUCT MAINTENANCE WORK.
- 5. DEVELOPER TO ENSURE NO FLOWER BEDS OVER WATER MAIN.

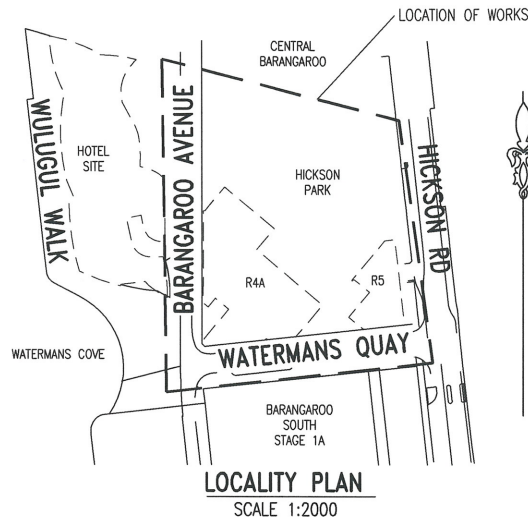
| | | | |
|----|--|----|----------|
| 10 | PENETRATION THROUGH JETGROUT WALL | AC | 23/08/18 |
| 9 | UPDATE LONG SECTION | AC | 21/06/18 |
| 8 | UPDATE FITTING LOCATIONS | TC | 05/03/18 |
| 7 | INSET A ADDED TO SHEET 1 | AC | 14/02/18 |
| 6 | AMENDED NOTES | AC | 13/02/18 |
| 5 | HYDRANT ADDED | AC | 09/02/18 |
| 4 | THRUST BLOCK & STRUCTURAL SLAB REMOVED | AC | 19/01/17 |
| 3 | STORMWATER CROSSING AMENDMENT | AC | 16/10/17 |
| 2 | DRAFTING UPDATES TO SHEET 1 | AC | 01/08/17 |
| 1 | ISSUE FOR APPROVAL | AC | 15/06/17 |

Cardno (NSW/ACT) Pty Ltd
ABN 95 001 145 035
PLAN FOR CONSTRUCTION
Date 14/01/19

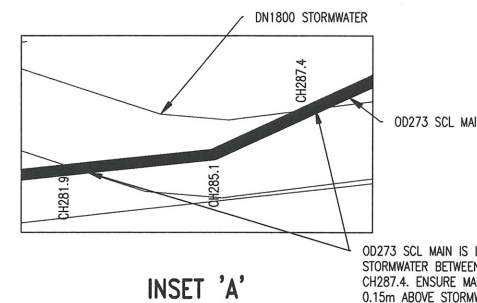
TRENCH ARRANGEMENT TO BE IN ACCORDANCE WITH WAT-1201



TYPICAL TRENCH DETAIL-OVER STRUCTURAL SLAB
N.T.S.

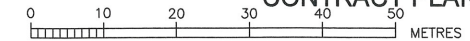


| WATERMAIN SETOUT TABLE | | | |
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| 1.45 | 333748.655 | 6251660.808 | STOP VALVE |
| 2.00 | 333748.106 | 6251660.744 | 22.5° BEND |
| 2.54 | 333747.585 | 6251660.886 | HYDRANT |
| 3.26 | 333746.890 | 6251661.077 | 22.5° VERTICAL BEND |
| 4.26 | 333745.926 | 6251661.341 | 22.5° VERTICAL BEND |
| 108.50 | 333645.289 | 6251688.793 | 11.25° BEND |
| 110.50 | 333643.289 | 6251688.793 | 45° BEND |
| 112.55 | 333641.799 | 6251687.380 | 45° BEND |
| 115.82 | 333641.797 | 6251684.104 | HYDRANT |
| 152.87 | 333641.784 | 6251647.049 | HYDRANT |
| 171.73 | 333641.777 | 6251628.192 | DN250x150 TEE |
| 176.71 | 333641.775 | 6251623.209 | DN250x150 TEE |
| 191.28 | 333641.770 | 6251608.638 | DN250x150 TEE |
| 203.91 | 333641.766 | 6251596.007 | DN250x200 TEE |
| 221.26 | 333641.759 | 6251578.655 | HYDRANT |
| 223.51 | 333641.759 | 6251576.403 | STOP VALVE |
| 225.44 | 333641.758 | 6251574.463 | HYDRANT |
| 243.18 | 333641.751 | 6251556.715 | DN250x150 TEE |
| 250.87 | 333641.749 | 6251549.021 | HYDRANT |
| 262.18 | 333641.745 | 6251537.703 | 90° BEND |
| 287.42 | 333666.911 | 6251539.357 | 22.5° BEND |
| 294.89 | 333673.478 | 6251542.973 | 22.5° BEND |
| 296.93 | 333675.512 | 6251543.192 | DN250x150 TEE |
| 298.15 | 333676.733 | 6251543.334 | DN250x150 TEE |
| 305.46 | 333684.004 | 6251544.136 | HYDRANT |
| 354.95 | 333733.200 | 6251549.595 | HYDRANT |
| 356.50 | 333734.732 | 6251549.758 | STOP VALVE |
| 358.41 | 333736.642 | 6251549.991 | HYDRANT |
| 365.79 | 333743.982 | 6251550.800 | DN250x150 TEE |
| 367.43 | 333745.620 | 6251550.979 | DN250x150 TEE |
| 373.22 | 333751.379 | 6251551.622 | 22.5° BEND |
| 374.52 | 333752.521 | 6251552.248 | 22.5° BEND |
| 382.90 | 333760.855 | 6251553.135 | DN300x250 TEE |



INSET 'A'
SCALE 1:10

CONTRACT PLAN



NOTES:

1. WATER SERVICE COORDINATOR & DESIGNER:
CARDNO (NSW/ACT) PTY LTD
LEVEL 1, 47 BURELLI STREET, PO BOX 1285
WOLLONGONG NSW 2500
PH: (02)4228 4133
2. DEVELOPER:
LEND LEASE MILLERS POINT P/L
30 HICKSON ROAD,
MILLERS POINT NSW 2000
PH: (02) 9263 6800
3. THE WORKS DETAILED HEREON TO BE CONSTRUCTED IN ACCORDANCE WITH THE WATER SUPPLY CODE OF AUSTRALIA WS03-2011-3.1 SYDNEY WATER EDITION 2014 & SYDNEY WATER POTABLE WATER DEEMED TO COMPLY DRAWINGS. THE CONTRACTOR MUST HAVE A COPY OF THESE DOCUMENTS ON SITE AT ALL TIMES.
4. THE MINIMUM NUMBER OF FIELD COMPACTION TESTS COMPLETED TO SATISFY SECTION 19.3.3 & 19.3.4 OF THE STANDARD SPECIFICATION.
NOTE: IF TRENCH IS BACKFILLED WITH STABILISED SAND NO COMPACTION TESTS REQUIRED
PIPE EMBEDMENT ZONE - 2
TRENCH FILL ZONE - 0 (TRAFFICABLE)
TRENCH FILL ZONE - 0 (NON-TRAFFICABLE)

COMPACTION TEST NUMBERS ABOVE TO BE USED AS A GUIDE ONLY. NUMBER OF TESTS TO BE CONFIRMED BY A SUITABLY QUALIFIED FIELD TESTER. STABILISED SAND TO BE USED FOR TRENCH FILL IN ALL LOCATIONS

5. i) HORIZONTAL BENDS IN IN-SITU AREAS (DN300 OR LESS) TO BE ANCHORED IN ACCORDANCE WITH DTC-1110 OR DTC-1111
ii) VERTICAL BENDS & HYDRANT BENDS IN IN-SITU AREAS (DN150 OR LESS) TO BE ANCHORED IN ACCORDANCE WITH DTC-1114.
iii) TEES IN IN-SITU AREAS (DN300 OR LESS) TO BE ANCHORED IN ACCORDANCE WITH DTC-1113.
iv) THRUST BLOCKS IN IN-SITU AREAS OTHER THAN THOSE DETAILED ON PLANS SHALL BE PROVIDED FOR ALL UNSECURED BENDS, TAPERS AND TEES IN ACCORDANCE WITH DTC-1110 & 1114, U.N.O.
6. THE CONSTRUCTOR SHALL SUBMIT A SAFE WORK PLAN TO THE WATER SERVICING COORDINATOR FOR REVIEW PRIOR TO COMMENCING THE WORKS.
9. THE CONSTRUCTOR SHALL SUBMIT AN ENVIRONMENTAL MANAGEMENT PLAN TO THE WATER SERVICING COORDINATOR FOR REVIEW PRIOR TO COMMENCING THE WORKS.
11. POSITION AND LEVEL OF EXISTING MAIN TO BE VERIFIED WITH PROJECT MANAGER PRIOR TO COMMENCEMENT OF PIPE LAYING.
15. THE CONSTRUCTOR SHALL COORDINATE WITH THE CIVIL WORKS CONTRACTOR TO ENSURE ALL SURFACE FITTINGS ARE SUITABLE FOR THE PROPOSED FINISHED SURFACE AND ARE INSTALLED TO SYDNEY WATER'S REQUIREMENTS. REFER WAT-1303-V & WAT-1304-V AND WAT-1305-V & WAT-1306-V.
16. LOCATION OF SERVICES SHOWN ARE APPROXIMATE ONLY AND HAVE BEEN LOCATED FROM INFORMATION PROVIDED BY RELEVANT AUTHORITY & FIELD INVESTIGATIONS AND DESIGNS. THESE MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION WORK TAKING PLACE.
16. CONTRACTOR TO VERIFY EXACT LOCATION OF ALL EXISTING SERVICES WITH RELEVANT AUTHORITIES PRIOR TO COMMENCEMENT OF CONSTRUCTION AND REPORT ANY DISCREPANCIES TO THE PROJECT MANAGER. ANY DAMAGE TO EXISTING SERVICES TO BE RECTIFIED AT THE CONTRACTOR'S EXPENSE.
18. PRIOR TO COMMENCEMENT OF WORK, 2 WORKING DAYS NOTICE SHALL BE GIVEN TO WSC & SYDNEY WATER.
19. THE NOMINATED CONSTRUCTION COMPANY MUST HAVE AN ACCREDITED/APPROVED PERSON ON SITE AT ALL TIMES DURING CONSTRUCTION.
20. 1% SOLUTION OF SODIUM OR CALCIUM HYPOCHLORITE TO BE USED ON ALL JOINTS IMMEDIATELY PRIOR TO INSTALLATION DURING CONNECTION OF MAIN.
21. CONSTRUCTOR TO PROVIDE WORK AS CONSTRUCTED INFORMATION IN DIGITAL FORMAT AND RED PEN MARKUP TO THE SATISFACTION OF THE WSC, PRIOR TO COMMISSIONING INSPECTIONS WITH SYDNEY WATER.
22. ALL CONCRETE TO BE 40MPa IN ACCORDANCE WITH SYDNEY WATER'S CIVIL SPECIFICATIONS.
23. TEMPORARY ABOVE GROUND DN150PE MAIN CONSTRUCTED UNDER CASE 160370 TO FACILITATE REMEDIATION ACTIVITIES. CASE 154199PW CANNOT CONNECT TO THE EXISTING DN300 CONSTRUCTED UNDER W060327 UNTIL THE 10P IS DECOMMISSIONED.
24. THE FOLLOWING DTC'S ARE TO BE USED FOR CONSTRUCTION OF THE MAIN:-

| DTC No. | DESCRIPTION |
|----------|--|
| DTC 1110 | THRUST BLOCK DETAILS DICT AND PVC WATER MAINS <300. HORIZONTAL BENDS TYPE 1. REV A |
| DTC 1111 | THRUST BLOCK DETAILS DICT AND PVC WATER MAINS <300. HORIZONTAL BENDS TYPE 2. REV B |
| DTC 1113 | THRUST BLOCK DETAILS DICT AND PVC WATER MAINS <300. TEES. REV B |
| DTC 1115 | ANCHORAGE DETAILS DICT AND PVC WATER MAINS < DN300. STOP VALVES. REV B |
| DTC 1145 | WATER MAIN PN16 FLANGE CONNECTION DETAILS. DN100 TO DN750 - SHEET 1 OF 2. REV A |
| DTC 1146 | WATER MAIN PN16 FLANGE CONNECTION DETAILS. DN100 TO DN750 - SHEET 2 OF 2. REV A |
| DTC 1151 | STEEL WATER MAINS 150-DN<1200 STEEL PIPE JOINTING. WELDED - PLAIN ENDS. REV A |

CONSTRUCTION STAGING NOTES:

1. HYDRANT BENDS TO BE INSTALLED AT ENDS OF STAGES 1 & 2 AS PER TEMPORARY FLUSHING BEND DETAIL ON SHEET 3.
2. STAGES TO BE TESTED AND CHLORINATED SEPARATELY.

| CONSTRUCTION STAGING TABLE | |
|--|--------------------|
| STAGE 1 - EST. COMMISSION APRIL 2019 | CH 226.28 - 382.90 |
| STAGE 2 - TEMP PROTECTION - EST. COMMISSION APRIL 2019 | CH 174.38 - 226.28 |
| STAGE 3 - EST. COMMISSION MAY 2020 | CH 0.00 - 174.38 |

BARANGAROO STAGE 1B - WATERMAIN EXTENSION

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|----------------------|------|----------|--------------------------|----------|-----------------------------------|-----------------------------|--|--------------------------|--|---------------|--|-------------|--|----------------------------|-------------------------|--------|---|--------|--------------------------|---|-------------|---|-----------|---|-----------------|
| AMENDMENT DESCRIPTION | | | | | | | | | | BY | DATE | TY | WALL PENETRATION UPDATED | AC | 09/10/18 | | | | | | | | | | | | | | | | | | | | |
| PLAN TO BE READ IN CONJUNCTION WITH CURRENT SYDNEY WATER STANDARDS SYDNEY WATER CORPORATION | | | | | | | | | | UTILITIES | | | | | WORK AS CONSTRUCTED CERTIFICATION | | | | | PIPE SCHEDULE | | | | | AUSTRALIAN HEIGHT DATUM | | NO AMENDMENTS ARE TO BE MADE TO THIS PLAN WITHOUT REFERENCE TO SYDNEY WATER. THIS PLAN IS NOT NECESSARILY UP TO DATE OR CORRECT AND SYDNEY WATER ACCEPTS NO RESPONSIBILITY. | | SYDNEY WATER CORPORATION | | | | | | |
| | | | | | | | | | | TYPE | | DATE | | REF. | | TYPE | | DATE | | REF. | | DEVELOPER | | WATER SERVICE CO-ORDINATOR | | | | | | | CONSTRUCTOR | | COMPLETED | | W.A.C. PREPARED |
| PRIOR TO COMMENCEMENT OF EXCAVATION FOR PROPOSED AND EXISTING SERVICES CONTACT :- DIAL BEFORE YOU DIG Ph. 1100 ELECTRICITY Ph. GAS Ph. TELECOMMUNICATIONS Ph. GIVING AT LEAST 48 HOURS NOTICE. | | | | | | | | | | PROP. STORMWATER SWD | | 01/07/16 | | (CDNO) | | EXISTING INTEGRAL ENERGY: E | | E 01/07/16 | | CARDNO | | 250 o.P.V.C | | PN16 | | 233.16 | | RRJ | | SCALES PLAN 1:500 SECTION { HOR. 1:250 VERT. 1:125 CROSS SECTIONS - - - - - NATURAL LENGTHS, DEPTHS & LEVELS ARE IN METRES. | | U.S. DIRECTORY SYDNEY 41st ED MAP C L13 | | WATERMAIN EXTENSION BARANGAROO STAGE 1B BARANGAROO CITY OF SYDNEY | |
| | | | | | | | | | | PROP. GAS: | | G | | 01/07/16 | | (CDNO) | | EXISTING STORMWATER: SWD | | SWD 01/07/16 | | CARDNO | | 00273 S.C.L. | | SPL | | 137.31 | | | | | | | |
| | | | | | | | | | | PROP. TELSTRA: | | TEL | | 01/07/16 | | (CDNO) | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | PROP. ELECTRICAL: | | E | | 01/07/16 | | (CDNO) | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | ELECTRICAL: | | E | | 01/07/16 | | (CDNO) | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | WATER: | | W | | 01/07/16 | | (CDNO) | | | | | | | | | | | | | | | | | | | |
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EXISTING SERVICES LEGEND

- SERVICES
- W WATER SERVICES
 - W WATER LEAD IN LINE
 - E ELECTRICAL SERVICES
 - S SEWER SERVICES
 - T TELSTRA AND OPTICAL FIBRE SERVICES
 - OP OPTUS SERVICE
 - G GAS SERVICES
 - SW STORMWATER SERVICES
 - RS RTA SERVICES
 - EXISTING SYDNEY WATER STORMWATER

SERVICES DENOTED BY "S" HAS BEEN COMPILED FROM "CARDNO A.U.S." INFORMATION.
SEWER DENOTED BY "H" HAS BEEN COMPILED BY "RYGATE SURVEYORS".
STORMWATER DENOTED BY "S" HAS BEEN COMPILED BY "CARDNO SURVEYORS AND ORIGINAL DATA BASE INFORMATION SUPPLIED BY SYDNEY CITY COUNCIL".
ALL OTHER DATA HAS BEEN COMPILED FROM DIAL BEFORE YOU DIG INFORMATION.
D ESTIMATED DEPTHS FROM EXISTING SURFACE LEVEL
IL INVERT OF PIPE OR CONDUIT
OL OBVERT OF PIPE OR CONDUIT

PROPOSED SERVICES LEGEND

- PROPOSED SERVICES
- 1 PROPOSED COMMUNICATIONS
 - 2 PROPOSED WIRELESS ACCESS POINT
 - DS PROPOSED DIGITAL SIGN
 - CP PROPOSED COMMUNICATIONS PIT
 - ICN PROPOSED ICN RACK
 - PROPOSED POTABLE WATER
 - PROPOSED FIRE
 - PROPOSED WATER ACCESS POINT
 - PROPOSED STORMWATER
 - PROPOSED GAS (BY OTHERS)
 - PROPOSED RECYCLED WATER
 - PROPOSED NATURAL GAS
 - PROPOSED FIRE SERVICE
 - PROPOSED DISTRICT COOLING PLANT WATER
 - PROPOSED LIGHTING CONTROL CABLEWAY
 - PROPOSED SEWER
 - PROPOSED IRRIGATION LINE PIPEWORK
 - PROPOSED IRRIGATION OUTLET
 - C50 PROPOSED IRRIGATION OUTLET
 - 63 PROPOSED RECYCLED WATER IRRIGATION LINE
 - DEC PROPOSED IRRIGATION DECODER CABLE
 - C50 PROPOSED IRRIGATION CONDUIT
 - C100 PROPOSED IRRIGATION CONDUIT
 - 75 PROPOSED IRRIGATION POTABLE WATER
 - PROPOSED ELECTRICAL AND LIGHTING
 - PROPOSED ELECTRICAL DISTRIBUTION BOARD
 - PROPOSED LIGHTING
 - PROPOSED ELECTRICAL OUTLET
 - EP PROPOSED ELECTRICAL PIT
 - DF PROPOSED ELECTRICAL DRINKING FOUNTAIN
 - PROPOSED SOIL ACCESS PIT

FOR INFORMATION ONLY

THIS PLAN HAS BEEN PREPARED TO SHOW EXISTING AND PROPOSED SERVICES ONLY FOR COORDINATION PURPOSES ONLY AND IS NOT TO BE USED FOR CONSTRUCTION. REFER TO SERVICE SPECIFIC DRAWINGS FOR DETAILS OF EACH PROPOSED SERVICE.

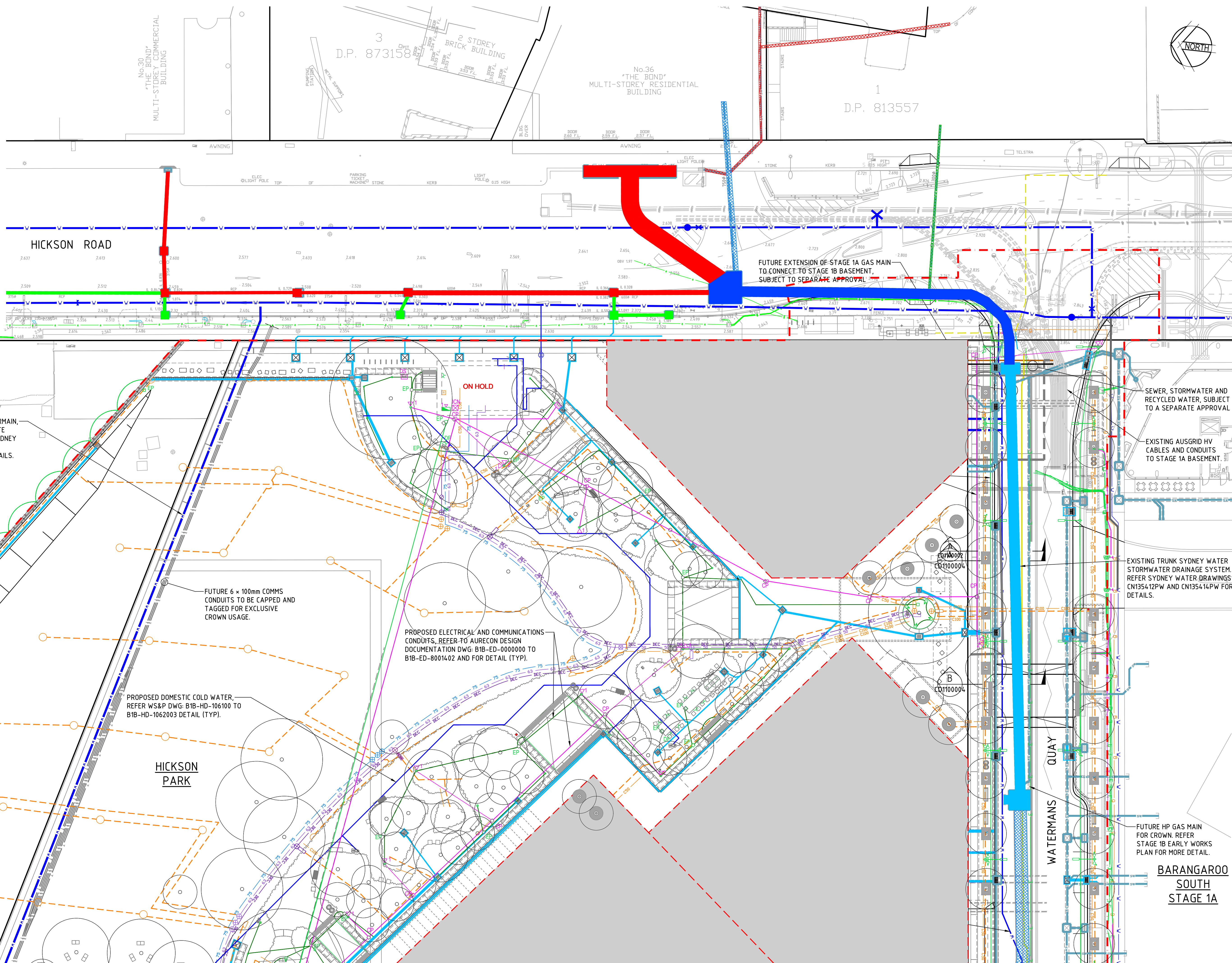
GROUND CONDITIONS AND SITE CONSTRAINTS VARY AND AFFECT THE ACCURACY OF THE VERTICAL TOLERANCE FOR THE SERVICES SHOWN. WHILE REASONABLE CARE HAS BEEN TAKEN IN THE PREPARATION OF INFORMATION WITH RESPECT TO ALIGNMENT AND DEPTH, CARDNO DOES NOT WARRANT THE ACCURACY OF THIS INFORMATION AND IT SHOULD ONLY BE USED TO INFORM DESIGN. CARDNO RECOMMENDS THAT CONFIRMATION OF ALL SERVICE DEPTHS BY PHYSICAL LOCATION BE PERFORMED FOR ALL CRITICAL SERVICES. SERVICES CROSSINGS AND/OR CLASHES WHERE DESIGN REQUIRES GREATER ACCURACY. ALL SERVICES SHOULD BE PHYSICALLY CONFIRMED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

NOTES

- ANY SERVICE THROUGH THE DIAPHRAGM WALL WILL NEED TO BE COORDINATED WITH THE RELEVANT SERVICE AUTHORITIES, STRUCTURAL AND GEOTECHNICAL ENGINEERS.
- SERVICES SHOWN CONCEPTUALLY AS PER ARCHITECTS SERVICE ALLOCATIONS.
- SERVICES WITHIN WULUGUL WALK AND ADJACENT TO WATERMANS COVE SUBJECT TO DESIGN DEVELOPMENT.
- FEATURE LIGHTING NOT SHOWN FOR CLARITY.

NOTES

SERVICE COORDINATION PLAN ISSUED FOR INFORMATION ONLY. WE DON'T GUARANTEE THE LOCATION OF ANY SERVICES.



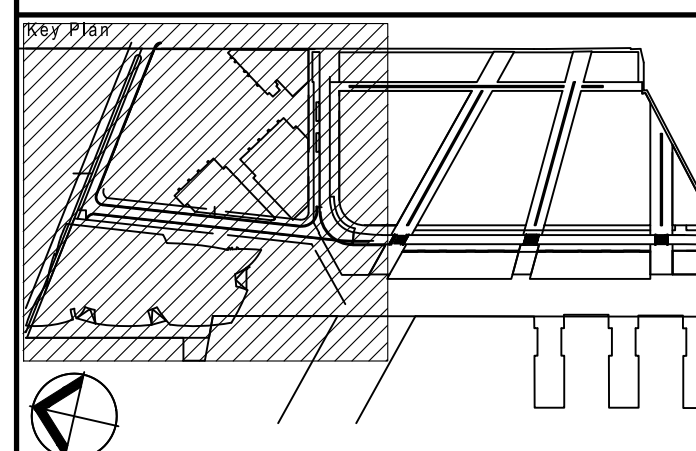
REFER DRAWING B1B CD2100002 FOR CONTINUATION

REFER DRAWING B1B CD2100003 FOR CONTINUATION

NOTE:
REFER DRAWING PACKAGE DWG: B1B CD1000000 TO B1B CD1800012 FOR CONSTRUCTED EARLY WORKS SERVICES

0 5 10 15 20 25m
SCALE 1:250 @B1

FOR APPROVAL
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| Rev | Item | Revision Description | Date | Rev | Item | Revision Description | Date |
|-----|---------------------------------------|----------------------|----------|-----|--------------------------------------|----------------------|----------|
| 14 | 95% IFT (FOR COORDINATION) | | 12.03.19 | | | | |
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| 02 | INCORPORATING CLIENT REVIEW | | 15.11.16 | 16 | 100% IFT | | 22.03.19 |
| 01 | ISSUE FOR SSD 7944 | | 25.10.16 | 15 | 95% IFT (RE-ISSUED FOR COORDINATION) | | 15.03.19 |

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Cardno (NSWACT) Pty Ltd | ABN 95 001 145 035
Level 9, The Forum, 203 Pacific Highway
St Leonards, NSW 2065
Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

| | |
|--------------------------|--|
| Lead Architects | RSHP Australia Pty Ltd Ivan Harbison Principal Architect RAA NSW ARB 8484 Sydney NSW 2000 |
| Collaborating Architects | Lend Lease Graham W Jones Principal Architect FRAIA NSW ARB 4005 ABN 97 000 098 162 |
| Consultant | |

| | |
|-----------------------------------|------------|
| Principal | Lend Lease |
| Developer | Lend Lease |
| Project Management & Construction | Lend Lease |
| Design | Lend Lease |

| | |
|-------------|--------------------------------|
| Project | BARANGAROO SOUTH |
| Site | MP |
| Stage | STAGE 1B - PUBLIC DOMAIN WORKS |
| Service | SERVICE COORDINATION PLAN |
| Sheet | SHEET 1 |
| Drawn By | MDH |
| Designed | MV |
| Checked | GN |
| Approved By | |
| Date | 0CT'16 |
| Scale | 1:250 |
| Project No. | 161804 |
| Site No. | B1B |
| Drawing No. | CD2100001 |
| Revision | 18 |

EXISTING SERVICES LEGEND

| | |
|----|------------------------------------|
| W | WATER SERVICES |
| W | WATER LEAD IN LINE |
| E | ELECTRICAL SERVICES |
| S | SEWER SERVICES |
| T | TELSTRA AND OPTICAL FIBRE SERVICES |
| OP | OPTUS SERVICE |
| GS | GAS SERVICES |
| SW | STORMWATER SERVICES |
| RS | RTA SERVICES |
| | EXISTING SYDNEY WATER STORMWATER |

SERVICES DENOTED BY "C" HAS BEEN COMPILED FROM "CARDNO A.U.S." INFORMATION.
SEWER DENOTED BY "H" HAS BEEN COMPILED BY "RYGATE SURVEYORS".
STORMWATER DENOTED BY "S" HAS BEEN COMPILED BY "CARDNO SURVEYORS AND ORIGINAL DATA BASE INFORMATION SUPPLIED BY SYDNEY CITY COUNCIL".
ALL OTHER DATA HAS BEEN COMPILED FROM DIAL BEFORE YOU DIG INFORMATION.
D ESTIMATED DEPTHS FROM EXISTING SURFACE LEVEL
IL INVERT OF PIPE OR CONDUIT
OL OVERTOP OF PIPE OR CONDUIT

PROPOSED SERVICES LEGEND

| | |
|------|---|
| 1 | PROPOSED COMMUNICATIONS |
| 2 | PROPOSED WIRELESS ACCESS POINT |
| DS | PROPOSED SECURITY CAMERA |
| CP | PROPOSED DIGITAL SIGN |
| ICN | PROPOSED COMMUNICATIONS PIT |
| ICN | PROPOSED ICN RACK |
| | PROPOSED POTABLE WATER |
| | PROPOSED FIRE |
| | PROPOSED WATER ACCESS POINT |
| | PROPOSED STORMWATER |
| | PROPOSED GAS (BY OTHERS) |
| | PROPOSED RECYCLED WATER |
| | PROPOSED NATURAL GAS |
| | PROPOSED FIRE SERVICE |
| | PROPOSED DISTRICT COOLING PLANT WATER |
| | PROPOSED LIGHTING CONTROL CABLEWAY |
| | PROPOSED SEWER |
| | PROPOSED IRRIGATION LINE PIPEWORK |
| | PROPOSED IRRIGATION OUTLET |
| C50 | PROPOSED IRRIGATION OUTLET |
| 63 | PROPOSED RECYCLED WATER IRRIGATION LINE |
| DEC | PROPOSED IRRIGATION DECODER CABLE |
| C50 | PROPOSED IRRIGATION CONDUIT |
| C100 | PROPOSED IRRIGATION CONDUIT |
| 75 | PROPOSED IRRIGATION POTABLE WATER |
| | PROPOSED ELECTRICAL AND LIGHTING |
| | PROPOSED ELECTRICAL DISTRIBUTION BOARD |
| | PROPOSED LIGHTING |
| EP | PROPOSED ELECTRICAL OUTLET |
| EP | PROPOSED ELECTRICAL PIT |
| DF | PROPOSED ELECTRICAL DRINKING FOUNTAIN |
| DF | PROPOSED SOIL ACCESS PIT |

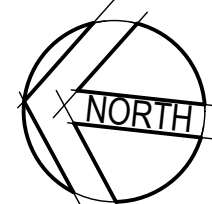
FOR INFORMATION ONLY

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GROUND CONDITIONS AND SITE CONSTRAINTS VARY AND AFFECT THE ACCURACY OF THE VERTICAL TOLERANCE FOR THE SERVICES SHOWN. WHILE REASONABLE CARE HAS BEEN TAKEN IN THE PREPARATION OF INFORMATION WITH RESPECT TO ALIGNMENT AND DEPTH, CARDNO DOES NOT WARRANT THE ACCURACY OF THIS INFORMATION AND IT SHOULD ONLY BE USED TO INFORM DESIGN. CARDNO RECOMMENDS THAT CONFIRMATION OF ALL SERVICE DEPTHS BY PHYSICAL LOCATION BE PERFORMED FOR ALL CRITICAL SERVICES. SERVICES CROSSINGS AND/OR CLASHES WHERE DESIGN REQUIRES GREATER ACCURACY. ALL SERVICES SHOULD BE PHYSICALLY CONFIRMED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

NOTES

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- SERVICES SHOWN CONCEPTUALLY AS PER ARCHITECTS SERVICE ALLOCATIONS.
- SERVICES WITHIN WULLUGUL WALK AND ADJACENT TO WATERMANS COVE SUBJECT TO DESIGN DEVELOPMENT
- FEATURE LIGHTING NOT SHOWN FOR CLARITY.



REFER DRAWING B1B CD2100001 FOR CONTINUATION

HICKSON PARK

R1

BARANGAROO AVENUE

PROPOSED ELECTRICAL AND COMMUNICATIONS CONDUITS, REFER TO AURECON DESIGN DOCUMENTATION DWG: B1B-ED-0000000 TO B1B-ED-80014.02 AND FOR DETAIL (TYP).

CROWN SYDNEY HOTEL

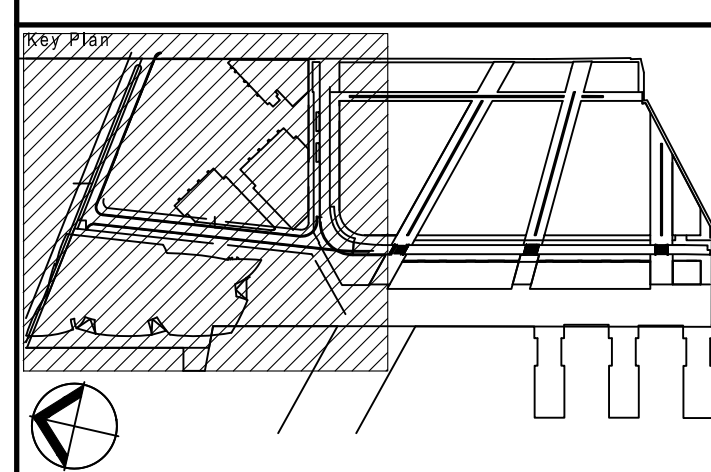
FORMER SPIRIT OF TASMANIA DOCK

PROPOSED DOMESTIC COLD WATER, REFER WS&P DWG: B1B-HD-106100 TO B1B-HD-1062003 DETAIL (TYP).

NOTE:
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SCALE 1:250 @B1

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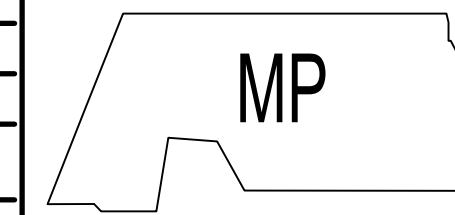


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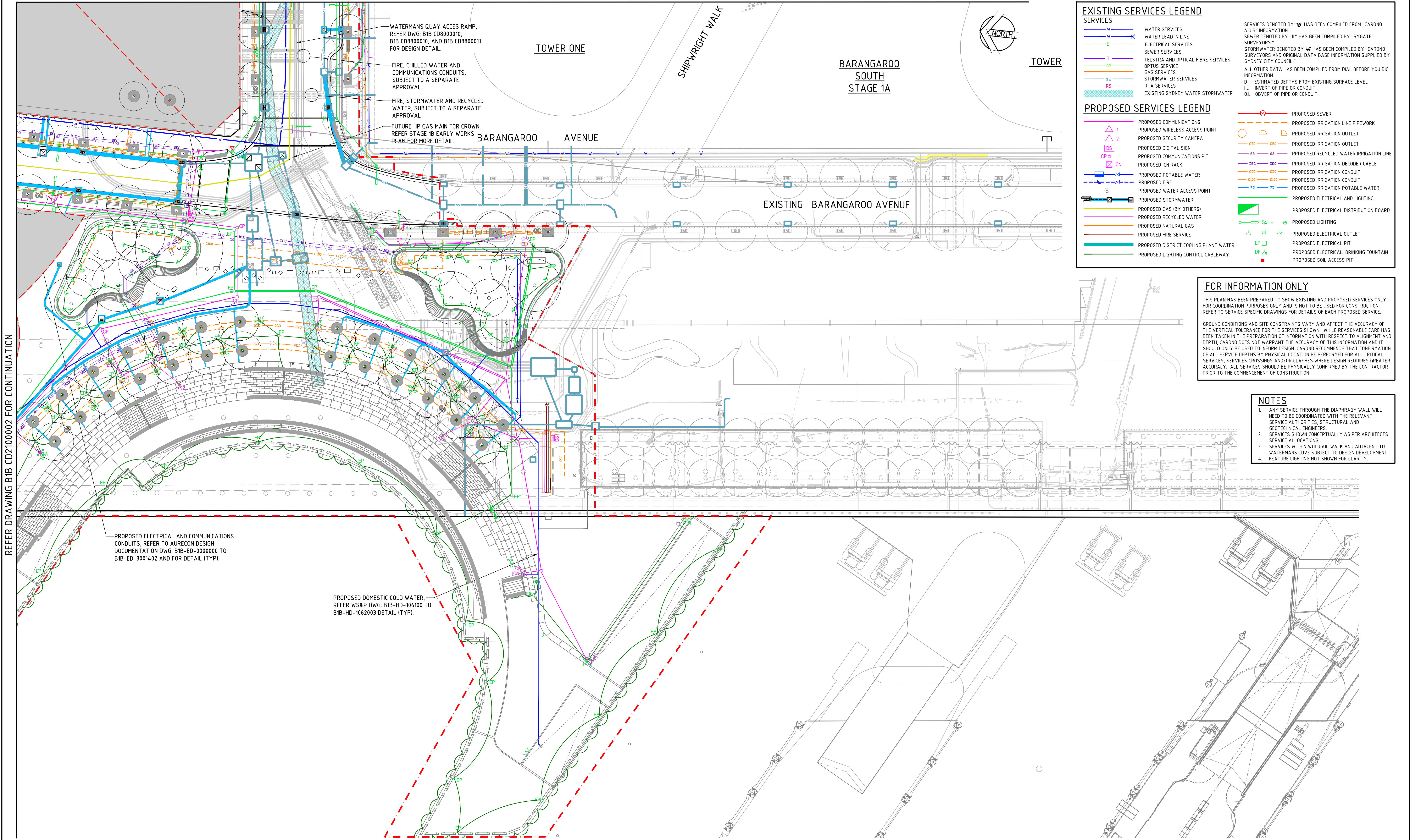
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|--------------------------|--|-----------|------------|--|------------------|
| Lead Architects | RSHP Australia Pty Ltd Rishabh Raju Principal Architect RAIA NSW ARB 9484 Sydney NSW 2000 | Principal | lendlease | Project | BARANGAROO SOUTH |
| Collaborating Architects | Lend Lease Graham W Jones Principal Architect FRAIA NSW ARB 4005 ABN 97 000 098 162 | Developer | Lend Lease | Project Management & Construction | Lend Lease |
| Consultant | | Design | Lend Lease | | |
| | | | | 30 The Bond 30 Hickson Road Millers Point NSW 2000 www.lendlease.com | |



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| Drawn By | MDH | Designed By | MV | Checked By | GN | Approved By | | Date | 0CT'16 |
| Scale | 1:250 | Project No. | 161804 | Site No. | B1B | Drawing No. | CD2100002 | Revision | 18 |



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| SERVICES | | |
|----------|------------------------------------|----------------|
| W | WATER SERVICES | SEWER SERVICES |
| W | WATER LEAD IN LINE | SEWER SERVICES |
| E | ELECTRICAL SERVICES | SEWER SERVICES |
| T | TELSTRA AND OPTICAL FIBRE SERVICES | SEWER SERVICES |
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| | | |
|-----|---------------------------------------|---|
| 1 | PROPOSED COMMUNICATIONS | PROPOSED SEWER |
| 2 | PROPOSED WIRELESS ACCESS POINT | PROPOSED IRRIGATION LINE PIPEWORK |
| DS | PROPOSED SECURITY CAMERA | PROPOSED IRRIGATION OUTLET |
| CP | PROPOSED DIGITAL SIGN | PROPOSED IRRIGATION OUTLET |
| ICN | PROPOSED COMMUNICATIONS PIT | PROPOSED RECYCLED WATER IRRIGATION LINE |
| | PROPOSED ICN RACK | PROPOSED IRRIGATION DECODER CABLE |
| | PROPOSED POTABLE WATER | PROPOSED RECYCLED WATER IRRIGATION LINE |
| | PROPOSED FIRE | PROPOSED IRRIGATION DECODER CABLE |
| | PROPOSED WATER ACCESS POINT | PROPOSED IRRIGATION DECODER CABLE |
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| | PROPOSED GAS (BY OTHERS) | PROPOSED IRRIGATION DECODER CABLE |
| | PROPOSED RECYCLED WATER | PROPOSED IRRIGATION DECODER CABLE |
| | PROPOSED NATURAL GAS | PROPOSED IRRIGATION DECODER CABLE |
| | PROPOSED FIRE SERVICE | PROPOSED IRRIGATION DECODER CABLE |
| | PROPOSED DISTRICT COOLING PLANT WATER | PROPOSED IRRIGATION DECODER CABLE |
| | PROPOSED LIGHTING CONTROL CABLEWAY | PROPOSED IRRIGATION DECODER CABLE |

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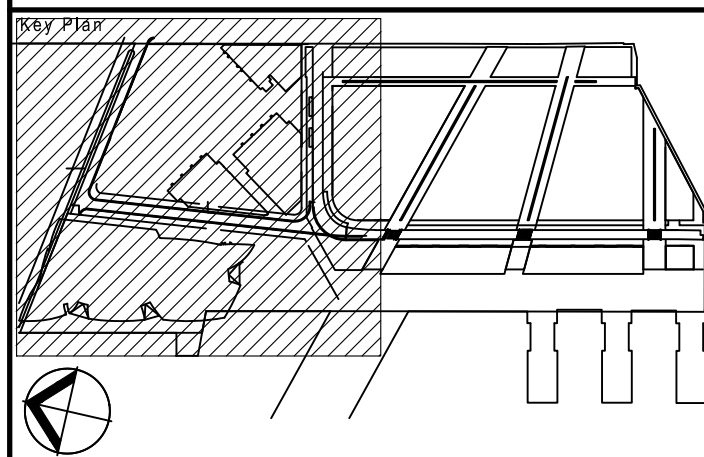
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Tel: 02 9496 7700 Fax: 02 9439 5170
Web: www.cardno.com.au

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| Consultant | |

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| Principal | Lend Lease |
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| | |
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| Project | BARANGAROO SOUTH |
| MP | |

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