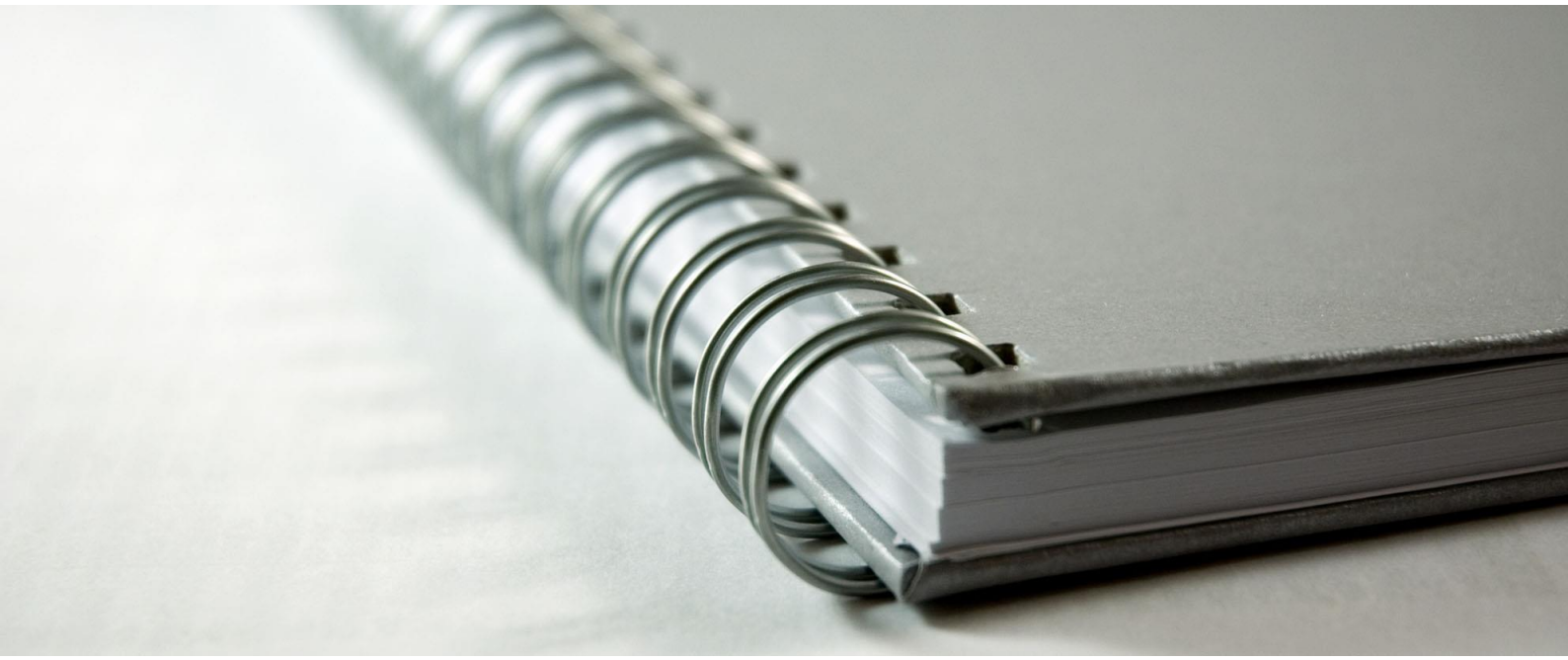
22 – Services Masterplan Report

22.1 – Hydraulic Infrastructure & Services and Water Cycle Management Report

22.2 – Power & Comms Infrastructure Report

22



NSW Department Of Education

Waitara Public School

Hydraulic Infrastructure & Services and Water Cycle Management Report

February 2018

Table of contents

Table index

Figure index

1. Introduction

1.1 Purpose of this report

The proposed new building for Waitara Public School will be located on a site that is approximately 21,000m² of previously developed site that will be in use at the time of construction. This project will redevelop the current school site with the provision of a new multistorey school building and provision of new landscaping features.

This report sets out integrated water management strategies proposed for the new building in Waitara Public School to achieve efficient use of water across the site. It also outlines available infrastructure and services of the site.

1.2 Scope and limitations

This report: has been prepared by GHD for NSW Department Of Education and may only be used and relied on by NSW Department Of Education for the purpose agreed between GHD and the NSW Department Of Education .

GHD otherwise disclaims responsibility to any person other than NSW Department Of Education arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

GHD has prepared this report on the basis of information provided by NSW Department Of Education and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report, which were caused by errors, or omissions in that information.

GHD has not been involved in the preparation of the Environmental Impact Statement (EIS) and has had no contribution to, or review of the EIS. GHD shall not be liable to any person for any error in, omission from, or false or misleading statement in, any other part of the EIS.

1.3 Design approach

The overarching design approach for the water cycle management is to re-use collected rainwater as much as possible, with the intention to use domestic water from the Authority when the tank empties.

Below is a simple concept of the rainwater re-use scheme.

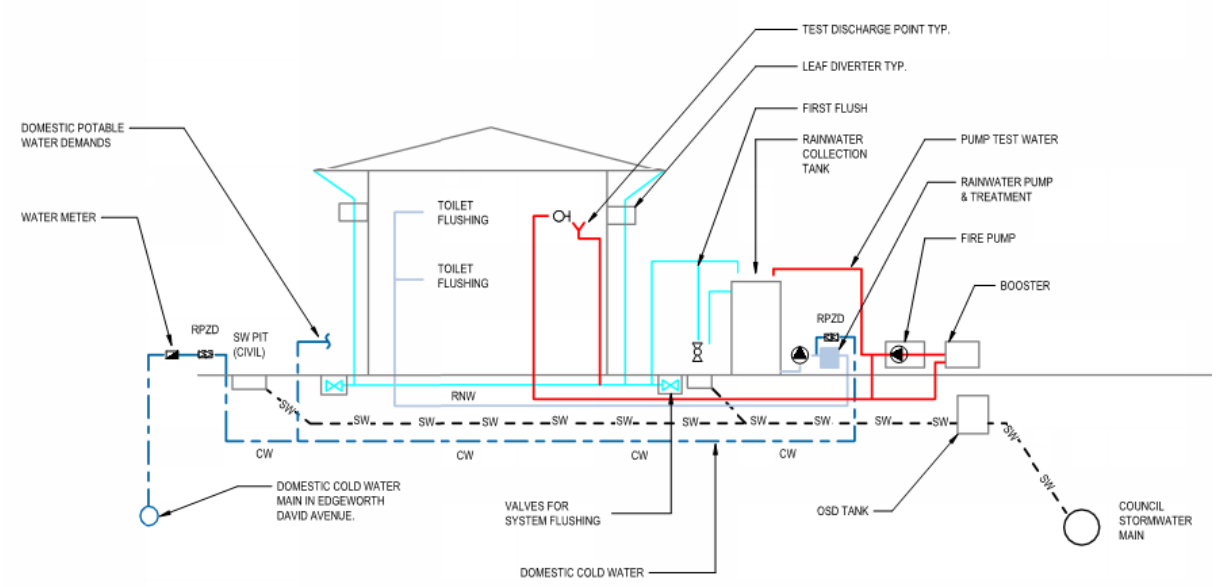


Figure 1 Rainwater Re-use Concept

1.4 Reference Documents

In preparation of this report, the documents listed in Table 1 have been the primary source of information used.

Table 1 Reference Documents

Abbreviation	Document Name	Revision
AS 2419.1	Fire hydrant installations Part 1: System design, installation and commissioning	2005
AS 1851	Routine service of fire protection systems and equipment	2012
AS 2441	Installation of fire hose reels	2005
AS/NZS 3500	Plumbing and Drainage	2015
HB-230	Rainwater Tanks	2006

1.5 Definitions

1.5.1 General

Definitions of terms and abbreviations used in this report are based on definitions given in relevant code or regulations' glossary of terms or dictionary, unless defined in the section below where these definitions shall take precedence.

1.5.2 Abbreviations

AS: Australian Standard

BCA: Building Code of Australia, NCC Volume 1

CO_2-e: Carbon Dioxide Equivalents in kilograms

EFSG: Education Facilities standards and guidelines

GBCA: Green Building Council of Australia

IWM: Integrated Water Management

NCC: National Construction Code

NZS: New Zealand Standard

OSD: On-site Stormwater Detention tank

PVC: Polyvinyl chloride

RPZ: Reduced pressure zone

STW: Stormwater

SWC: Sydney Water Corporation

UNO: Unless Notified Otherwise

1.5.3 Terms

Above ground: This term shall apply to all areas where components are not buried. This term does not mean areas above finished ground level. Areas covered by this term shall include; tunnels, sumps, etc.

Equivalent Person: [1]

Water: Means a standard unit of demand for water based on the average usage of water by a typical person in a residential setting over the long term for drinking, cooking, bathing, washing and cleaning, flushing, irrigation and all other purposes and taking into account the system losses incurred in delivering the water to the person.

Sewage: Means a standard unit of sewage generation based on the average generation by a typical person in a residential setting over the long-term by toilet use, cooking, bathing, washing and cleaning, and all other activities and taking into account the infiltration into the reticulation that occurs in transporting the sewage to the treatment plant.

Hose Tap: The terms “Hose Tap” and “Hose Cock” are interchangeable and refer to the same item of plumbing. “Hose Tap” is the preferred term.

2. Methodology

2.1 Integrated Water Management Analysis

2.1.1 Analysis

The site analysis is based on time step of every day over 7-year period from 1 January 2008 to 31 December 2015. 7 years of Waitara, daily weather data, sourced from the Australian Bureau of Meteorology, was used in the analysis rather than climate averages based on the last 100 years so as to most accurately adjust for recent trending weather patterns due to climate change.

Water consumption has been calculated on expected water usage based on:

- Sanitary fixture type and fixture water demand;
- Expected populations (based on Equivalent Persons) of the building taking into account weekends and public holidays; and
- 100% occupancy rates during weekdays for 1000 EP;

Daily water demand based on student numbers was calculated. As there is no alternative recycled water main available for use, a comparison between standard water demand and low flow fixtures in combination with using water from the Authority's domestic Water Main was undertaken. Irrigation services are excluded for this site, rainwater tank is to be used for flushing purposes only.

2.1.2 Standard Demand

To assist in determining the effect integrated water management strategies have on the water usage, a standard demand scenario has been developed. Details of the configuration of a standard demand and the proposed demands detailed in sections 2.3 and 2.4 of this report.

2.2 Equivalent Persons

Domestic water demands used in this report are based on Equivalent Persons unit which the average usage of water and sewage produced by a typical person in a residential setting (refer to section 1.5.3 for further information).

2.3 Domestic Water Demands

Table 2 details the domestic water demands used in the analysis.

Table 2 Domestic Water Demands

Demand Type	Standard Demand	Proposed Building Demand
Ablutions	16.7 L/EP/Day	13.7 L/EP/Day
Toilet (WC)	25 L/EP/Day	Provided by treated rainwater and recycled water
Leakage and Wash down	2.6 L/EP/Day	2.0 L/EP/Day

Toilet (WC) demand is based on 6/3 L dual flush toilet suites in the standard demand and 4.5/3 L flush toilet suites in the proposed building.

Ablutions demands are based on:

- Shower roses with a 9 L/min demand for the standard demand;
- Shower roses with a 6.5 L/min demand for the Proposed Building;
- Shower times of 5 minutes in both cases;
- The population showering is less than 1% of the total population; and
- Allowance of 5 L/EP/Day for hand washing and basin use.

Leakage and wash down allowance is based on 5% of domestic water use.

2.4 Fire Services Water Consumption

The volume of water consumed for the wet fire services is based on the commissioning requirements of AS 2419.1, AS 2118.1 and AS 2118.6 and maintenance testing requirements of AS 1851. Table 3 details the values used in the Integrated Water Management analysis.

Table 3 Water Consumption of Wet Fire Services Maintenance Testing

Test	Unit	Litres	Test Frequency	Justification
Fire Hydrants (all)	L/FH/Test	150	Annual	AS 1851 Table 4.4.3, item 3.2. Allowance to observe water at each hydrant.
Fire Hose Reel	L/FHR/Test	5	6 monthly	AS 1851 Table 9.4.1, item 10.1. Allowance to observe water at each FHR.
Fire Hydrant Flow and Pressure Testing	L/Test	6,000	Annual	AS 1851 Table 4.4.3, item 3.7. Allowance for fire hydrant flow and pressure testing. 10L/s per operational hydrant for 5 minutes.
Fire pump flow test	L/Test	6,000	Monthly	AS 1851 Table 3.4.1, item 3.7. Allowance for pump flow and pressure testing. 10L/s per operational hydrant for 10 minutes.
Fire Brigade Boost Assembly Flow and Pressure Testing	L/Test	21000	5 yearly	AS 1851 Table 4.4.4, item 4.2. Allowance for fire brigade booster assembly boost test. 20L/s Hydrants and 15L/s SPR for 10 minutes.

3. Conclusions

3.1 Cold Water Usage from Authority Water Main

The site of the proposed building for Waitara only has frontage to a Sydney Water domestic water main and no alternative water sources i.e. recycled water. It is proposed to use the domestic water main to top-up the rainwater re-use system in times of prolonged dry weather.

Using domestic water as a top up for rainwater will reduce the demand of domestic water for toilet flushing by 58%.

3.2 Rainwater Tank Size

Based on the rainfall patterns, the available surface area to capture rainwater and the estimated demands, it is recommended that a 20m^3 storage tank be used in the proposed building.

The volume of 20m^3 will provide 58% of water that is required for toilet flushing without excessive capital cost.

3.3 Grey Water and Black Water Treatment

It is recommended that grey water and black water treatment systems should not be used as the capital cost, ongoing operational and maintenance cost, occupational health and safety issues, energy consumption and low contribution that these systems make to the overall water efficiency of the building do not justify such systems.

4. Infrastructure and Services

4.1 Existing site conditions:

4.1.1 Domestic Cold Water

Waitara Public School has frontage to an existing DN100 CICL Sydney Water Corporation (SWC) main located in Edgeworth David Avenue. An existing DN150 CICL (Cast iron cement lined) SWC water main is also located in Myra St. The school appears to be connected to the existing DN100 CICL SWC water main located in Edgeworth David Avenue (opposite street side). An existing DN40 SWC water meter is installed next to the main entrance of Edgeworth David Avenue. A second DN40 SWC water meter is installed facing Edgeworth David Avenue further west of the main water meter.

The Waitara School has a large site with a number of buildings located on the site; thus an upgrade in pipe size is required to accommodate the new building. The new building shall have a new DN50 water connection; as a result the pipe work downstream from the new connection to the Sydney Water main, including the water meter, shall all be upgraded to DN50 pipe work. The main meter located next to the main entrance shall also be upgraded from a DN40 meter to a DN50 meter to accommodate the change. Upon suitable notification and application, Sydney Water shall indicate the suitability of the existing water meter for the additional building.

The Waitara school shall have a new back flow prevention device installed directly downstream of the existing Sydney Water master water meter facing Edgeworth David avenue next to the main entrance. Additional downstream backflow prevention shall be provided for zones and individual hazards such as:

- Fire services and equipment
- Mechanical plant and equipment;
- Recycled water system top-up; and
- Irrigation plant and equipment.

4.1.2 Sanitary Drainage and Plumbing

The school has frontage to a DN 225 VC (vitrified clay) sewer main located in Myra Street.

Upon suitable notification and application, Sydney Water shall indicate the suitability of the existing sewer connection with respect to the expected increase in discharge.

4.1.3 Gas Service

Waitara Public School has frontage to a DN110, 210kPa gas main located in Myra St.

The contractor is required to make an application to the supply authority for additional demand. The supply authority will advise if the current gas meter and regulator is adequate and will upgrade the existing connection at their own cost (if required).

A new gas connection shall be made downstream of the existing gas meter to service the new building with natural gas for hot water generation.

GHD

Level 15
133 Castlereagh Street
T: 61 2 9239 7100 F: 61 2 9239 7199 E: sydmail@ghd.com

GHDDocId/G:\21\26108\7. Waitara PS\07 Hydraulic and Fire\14 Reports\2126108-REP-A-WAI-Hydraulic Services Input in EIS.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
A	S.Bugeja	A. Fisher	A.Fisher*	Mike Dean	M.Dean	20.09.17
B	S.Bugeja	A. Fisher	A.Fisher*	M Dean		21/12/17

www.ghd.com

NSW Department Of Education & Communities

Waitara Primary School

Power and Communications Infrastructure Report

Rev C

February 2018

Table of contents

Appendices

1. Electrical/Communications Infrastructure

1.1 Existing electrical and telecommunications utilities

The existing Waitara Public School site consists of multiple permanent and temporary or demountable buildings. The main power supply for the school originates from an Ausgrid substation (number 46650) located on Edgeworth David Ave. There is an existing high voltage and low voltage overhead distribution network installed along Edgeworth David Ave.

The existing service connection point is located at the private pillar located adjacent the substation, the consumer's mains for the school reticulate underground from the pillar into the schools main switchboard, located external to building J. From the main switchboard, submains reticulate throughout the buildings to various distribution boards (EDB's). The site uses underground reticulation to supply individual buildings and the demountable buildings located at the throughout the site.

There is an existing fibre and copper communications service into the library server server room which then feeds out to all other buildings. There is an existing NBN line running along Myra street.

1.1.1 Existing Services to be Decommissioned

As part of the scope of works at Waitara public school, multiple demountables and permanent buildings will be demolished to make room for the new building. All existing services to these buildings will be removed prior to demolition. The existing site main switchboard will need to be temporarily relocated as it is within the construction zone. The temporary site main switchboard will supply the continuing school services during the construction of the new building. Refer to Appendix C for the detailed in ground services survey for the area impacted by the new building.

1.2 Service connections

1.2.1 Power Supply

The existing school site is estimated to use 272 Amps (3 phase).The final school maximum demand with the new building included in the calculations is 1034A (3 phase) – refer to maximum demand calculation included in Appendix A. This allows for air conditioning of all classroom spaces and 15% spare capacity as required by the EFSG. Appendix A contains the application that was submitted to Ausgrid and the response detailing the network upgrade requirements including an upgrade to substation 46650.

A 70kW grid connected solar PV system will be installed on the roof of the new building to offset the energy usage in accordance with EFSG design guidelines. The system will be limited to 100kW across the school site to comply with energy generation regulations and the EFSG.

1.2.2 Telecommunications

A new NBN fibre and Telstra copper connection will be made to the NBN network located in Myra Road – refer to drawing Site plan (Appendix B).

Appendices

Appendix A – Application for Connection

Connection Application - Large, Multiple and Remote Connections

FORM NECF-03

Who should use this form

Use this form if you:

- require a new or altered service connection greater than 100 Amps **OR**
- require new infrastructure to provide electricity to a subdivision of land **OR**
- require a new or altered connection at high voltage **OR**
- require a new or altered service connection at 100 Amps **WHERE**
  - the development comprises more than 6 separate units **OR**
  - any item of plant or equipment is rated at 30 amps or more

For other connections use NECF-02 Connection Application - Residential and Small Commercial Connection

How to submit this form to Ausgrid

Sydney, Central Coast and Hunter
Fax: (02) 4399 8007
Fax (local call): 1300 662 089
Email to: datanorth@ausgrid.com.au

Upper Hunter only
Fax: (02) 6542 9037
Email to: datamuswellbrook@ausgrid.com.au

Total number of pages sent* 08

General enquiries

More information on completing this form can be found on our website:
www.ausgrid.com.au/connectingtothenetwork

Fields marked with an * are mandatory.
This form is to be completed using BLOCK LETTERS only
Any application marked TBA or TBD will be incomplete and will be returned with advice that Ausgrid will not be able to process the application until a complete application is re-submitted. If you do not have all the required information at this stage and are only interested in determining how your proposed development will be supplied, you should consider lodging a preliminary connection enquiry, using our form NECF-01.

PART A: PREMISES AND DEVELOPMENT DETAILS

1. Premises and Owner Details

Retailer | NMI ◄ Your NMI can be found on your electricity bill. Put NA for a new site.

Property Name: WAITARA PUBLIC SCHOOL

Floor No. | Unit No. | Street No. or RMB*: 48-58 | or Lot No.*: LOT A | DP No.*: DP309739

Street Name*: MYRA STREET | Post Code*: 2076

Suburb*: WAITARA | Nearest Cross Street: EDGEWORTH DAVID AVENUE

Name of Registered Proprietor of Land*: DAVID TONGE - DEPARTMENT OF EDUCATION ◄ This is the person authorising connection of the premises.

Address of Registered Proprietor of Land*: LVL 4, 35 BRIDGE ST, SYDNEY | Post Code*: 2010

2. Retail Customer or Real Estate Developer Details

Tick here if you are the land owner ☐ Now proceed to Section 3

Title, First Name, Last Name*: DAVID TONGE | ABN *(if applicable)*

Company Name *(if applicable and provide representative details above)*: DEPARTMENT OF EDUCATION - ASSET MANAGEMENT | Phone No.: 0295618664

Postal Address *: LVL 4, 35 BRIDGE ST, SYDNEY | Mobile Phone No.: 0475951762

Email Address*: DAVID.TONGE@DET.NSW.EDU.AU | Fax No.

3. About You - The Connection Applicant

Questions in this section are about the person making this Connection Application.

What type of applicant are you?* (write A, B, C, D,E or F) ☐

A = Retail Customer, **B** = Real Estate Developer, **C** = Energy Retailer, **D** = You are applying on behalf of a retail customer or developer, **E** = Electrical Contractor on behalf of a customer or developer, **F** = ASP on behalf of a customer or developer

Title, First Name, Last Name*: CAMPBELL GRIFFIN | ABN *(if applicable)*

Company Name *(if applicable and provide representative details above)*: GHD - ELECTRICAL ENGINEER | Phone No. * (and/or): 0292397376

Postal Address *: LVL 15, 133 CASTLEREAGH STREET, PICCADILLY | Mobile Phone No.*: 0409494277

Email address*: CAMPBELL.GRIFFIN@GHD.COM | Fax No.

Electrical Contractor Licence No.* *(If **E** above)* and/or ASP No.* *(If **F** Above)* | Level ◄ If you are an ASP you must provide your accreditation number and level (1,2,3)

Street Address of the Premises *(to be completed by applicant)* * | Post Code*

45-58 MYRA STREET, WAITARA | 2076

4. Electrical Contractor Details *(if available)* N/A

Tick here if the same as Section 3 above_ ☐ Now proceed to Section 5

Title | First Name and Last Name *(or Company Name)* | ABN *(if applicable)*

Postal Address | Phone No.

Email | Fax No.

Electrical Contractor Licence No.

PART B: LOAD DETAILS

5. Connection Details

(i) Connection Timeframes

(a) When do you expect the construction of the premises connection assets to commence?* 01/01/2018 ▲

(b) When do you wish to energise (ie turn on the supply to) the premises?* 31/12/2018

Premises connection assets are the components of the distribution system used to provide the connection service to the premises eg service cable, metering, new Ausgrid pole, pillar or substation etc.

(ii) Existing Connection *(if applicable)*

Existing Point of Common Coupling — Pole ☐ Pillar ☐ Substation [X]

Asset No. 46650 ◄ This is the No. of the pole, pillar or substation. If there is no asset No. put "unknown".

Meter No.

If you have an existing supply, is it from a substation located on the premises?* Y [X] N ☐

(iii) Infrastructure to a Land Subdivision

(a) Is this an application to provide infrastructure to a land subdivision, eg provide low voltage reticulation within an URD subdivision ?* Y ☐ N [X] ► If No, proceed to (iv) below otherwise continue on to (b) below

(b) No. of lots in the subdivision*

(c) Nearest existing Ausgrid Asset*

Pole ☐ Pillar ☐ Substation ☐ Asset No. ◄ This is the number of the pole, pillar or substation. If there is no asset number put "unknown".

► Proceed to (vi)

(iv) Proposed Point of Common Coupling * *(Please tick one)*

Pole ☐ Pillar ☐ Substation [X] Asset No. 46650 ◄ This is the number of the pole, pillar or substation. If there is no asset number put "unknown".

Is the Point of Common Coupling within 50m of the boundary of your land?* Y [X] N ☐

(v) Proposed Point of Supply* *(Please tick one or if Other, please describe)*

Private Pole / Pit / Pillar [X] Main Switchboard ☐ Front of Premises ☐ Other

(vi) Connection Type* *(Please tick all that apply)*

New ☐ Upgrade [X] Alteration ☐ Separation ☐ Amalgamation ☐

(vii) Embedded Generation Details* *(e.g. solar, wind, hydro, back-up and standby)*

(a) Does the premises have existing embedded generation?* Y [X] N ☐ ► If Yes Rated Output EXACT RATING / UNKNOWN kW Type: (solar, wind, gas, etc) SOLAR PV

(b) Are you upgrading or installing new embedded generation?* Y ☐ N [X] ► If Yes, submit our NECF-04 form in addition to this form

(c) Your Installer's Clean Energy Council Accreditation No. N/A ◄ Only complete if embedded generation comprising of AS/NZS 4777 compliant components is being installed

Street Address of the Premises *(to be completed by applicant)* * | Post Code*

45-58 MYRA STREET, WAITARA | 2076

(viii) Service Type* *(Please tick one)*
Overhead [ ] Underground [X] UGOH [ ] Off Pole Transformer [ ] Busbar Supply [ ]

(ix) Service Size* *(Please tick one)*
100 Amps [ ] 200 Amps [ ] 400 Amps [ ] 630 Amps [X] 800 Amps [ ] 1000 Amps [ ]
1200 Amps [ ] 1600 Amps [ ] 2000 Amps [ ] 2500 Amps [ ] 3000 Amps [ ]
Other [ ] Describe _____
(Complete if Other is ticked, eg high voltage connection at 11KV)

(x) Number of Phases* *(Please tick one)*
1 Phase [ ] 2 Phases [ ] 3 Phases [X]

(xi) Metering Details*
(a) Are new meters being installed as part of this connection application?* Y [X] N [ ] ► If yes, number of meters in (b) below must be completed

(b) Number of Meters: *(enter total number)*
Single Phase (E1) [ ] Three Phase (E3) [1] Single Phase & Controlled Load(E2) [ ] Tariff: Controlled Load 1 [ ] Controlled Load 2 [ ]

(c) Embedded generation metering: *(tick if applicable or describe)*
Net [ ] Gross [ ] Other UNKNOWN AT THIS TIME

(d) Will your installation be CT metered?* Y [X] N [ ] ► If yes, *CT Metering Form* must be submitted. Refer to that form for submission details

DETAILS TO PROVIDED FOLLOWING DESIGN PROGRESSION

(xii) Type and Number of Premises

Land Title Type* *(Please tick one)*	Premises Usage* *(Please tick one or more)*	No. of Premises* *(enter total number)*
Torrens [X]	Residential [ ]	
Strata [ ]	Commercial / Industrial [X]	
Community Title [ ]	House Services [ ]	
	Builder's Service [ ]	

Which of the following applies to your premises?* *(one must be ticked)*
Urban [X] Unknown [ ] Rural [ ]
◄ Only fill out House Services if you have Multiple Installations

(xiii) Calculated Maximum Demand in Each Phase (Amps) ◄ This question is not asking about service rating.

	A	B	C			
(a) Existing Maximum Demand	272	272	272	Amps	Existing Service Length	2 m
(b) Proposed Maximum Demand * *(Total of New & Existing Load)*	420	420	420	Amps	Proposed Service Length*	2 m

(c) Is a Maximum Demand Calculation worksheet attached to this application?* Y [X] N [ ] ◄ A worksheet showing the maximum demand calculation in accordance with AS/NZS3000 must be attached to this form unless you answered "Y" in (iii)(a) above.

6. Additional Development Details *(please fill in where relevant to your premises)*

If your development involves any of these, this section MUST be completed, even if you are providing your plans with this application

Residential Portion
Number of living units
Number of bedrooms per unit
Gas hot water *(yes/no)* Y [ ] N [ ]
Gas cooktop *(yes/no)* Y [ ] N [ ]
Car park ventilation current rating Amps
Car park area requiring lighting m^2
Air conditioning *(yes/no & if Yes, No. of units)* Y [ ] N [ ]
Air conditioning rating *(Electrical Input)* Amps

Industrial Portion
No of factory units
Total floor area of all factory units m^2

Commercial Portion
Number of shops 0
Total floor area with air conditioning 800 m^2
Total office area without air conditioning 0 m^2
Car park ventilation current rating 0 Amps
Car park area requiring lighting 1000 m^2
Warehouse floor area 0 m^2
Commercial areas for food handling *(yes/no)* Y [X] N [ ]

Other (eg Lifts, Cranes,etc - List Type, No & Rating in Amps)
1 X LIFT AT 30A

Street Address of the Premises *(to be completed by applicant)* * | Post Code*

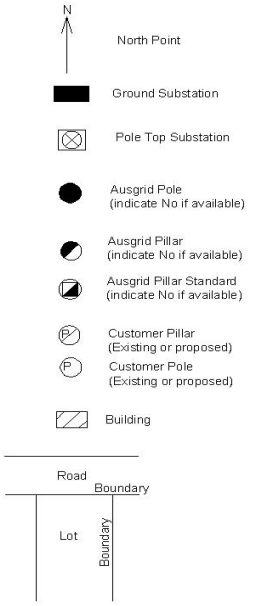
45-58 MYRA STREET, WAITARA | 2076

7. Location Diagram*

This section is about the physical location of your premises and an electrical schematic will not be accepted. Ensure that your diagram clearly identifies property, nearest cross street, North Point, Proposed Point of Common Coupling, Point of Supply and service cable route to main switchboard. Attach a separate paper if more space is required.

SEE ATTACHED PLANS

Use the following symbols where necessary:



8. Specific Equipment - Non Linear/Fluctuating Load Details *(complete if installing any of the items listed below)*

This section is for connections where (a) any single item of plant or equipment has a rating > 75 Amps at 230/400V, (b) any HV connections, or (c) Work where the proposed equipment may cause excessive fluctuations of voltage (eg. lifts,welders, pumps, x-ray machines).

Description	kVA/kW	Amp	No of Ops/Hr	Design Standard	Mitigation Measures
Distorting Loads					
1 Phase capacitor-filtered or conventional rectifier	N/A				
3 Phase 6-pulse capacitor filtered rectifier / VSD	N/A				
3 Phase 6 pulse capacitor filtered rectifier with series inductor > 3% or DC drive / VSD	N/A				
3 Phase 6 pulse inductor filtered rectifier / VSD	N/A				
3 Phase 12 pulse rectifier / VSD	N/A				
AC voltage regulator	N/A				
Variable voltage variable frequency (VVVF) drive	N/A				
Switch mode power supplies	N/A				
Power Factor Correction	N/A				
Other (please specify)	N/A				
Fluctuating Loads					
Rating of the largest motor	N/A				
Rating of the second largest motor	N/A				
Rating of other frequently fluctuating loads:	N/A				
Other:	N/A				
Special Equipment					
X-Ray or Magnetic Resonance Imaging Devices	N/A				
Welding plant rating	N/A				
Arc furnaces rating	N/A				
Unbalanced loads *(e.g PH-N / PH-PH loads)*	N/A				
Other, (incl >75A rated equipment):	N/A				
TOTAL APPARENT POWER RATING *(KVA)*	N/A				

Street Address of the Premises *(to be completed by applicant)* * | Post Code*

45-58 MYRA STREET, WAITARA | 2076

9. Expedited Connection *(optional)*

For information regarding this section please refer to our website or the guide for this form.

Are you applying for an expedited connection? Y [ ] N [X] ► If No, proceed to Section 10

If Yes, then indicate which model standing offer to provide connection services is acceptable to you (you may tick more than one).

- [ ] Basic - 100 Amps connection
- [ ] Basic - Over 100 Amps connection
- [ ] Basic - micro EG connection
- [ ] Standard - connection requiring Ausgrid-funded offsite works
- [ ] Standard - connection requiring Ausgrid-funded onsite substation
- [ ] Standard - ASP/1 connection
- [ ] Standard - connection requiring Ausgrid augmentation (substation upgrade)

10. Other Information

Information you provide in this section may help Ausgrid to process your connection application faster.

Was a Preliminary Connection Enquiry lodged for the premises using our form NECF-01? Y [ ] N [X] — Preliminary Enquiry No.

Has Ausgrid provided a certified design number for a Network Augmentation project associated with the premises? Y [ ] N [X] — Certified Design No.

If you have appointed an ASP/1, please provide their details below otherwise skip to next question

ASP/1 Name: N/A — ASP No.

Do you have development consent for your proposal? Y [ ] N [X] — DA Reference No.

▲

If yes, please attach any conditions relating to electricity where not already provided to Ausgrid.

Do you wish to underground/relocate electricity assets in conjunction with this connection application? Y [ ] N [X] ► If yes, please provide details in section 11, or on a separate paper

11. Comments and Additional Information *(if applicable)*

(e.g. References to similar existing installations, supporting information. Attach information on a separate paper if there is insufficient space below)

THERE ARE PLANS TO PROVIDE A NEW SCHOOL BUILDING AND MINOR REFURBISHMENT AT THE WAITARA PUBLIC SCHOOL. THE EXISTING SERVICE CONNECTION IS FROM THE EXISTING SUBSTATION TO A PRIVATE PILLAR AND THE PROPOSED FINAL CONNECTION WOULD RETAIN THIS ARRANGEMENT. SEE ATTACHED SITE MAP FOR PLANS. THE DESIGN IS CURRENTLY AT CONCEPT STAGE AND SO EXACT LOADS ARE NOT KNOWN. ATTACHED IS A MAXIMUM DEMAND SPREADHEET CALCULATED ON AREA RATES. CAN YOU PLEASE CONFRIM IF ANY NETWORK UPDGRADES ARE REQUIRED TO HANDLE THE ADDITIONAL LOAD AT THE SCHOOL? THE NEW BUILDING IS PROPOSED TO NOT REQUIRE AIR CONDITIONING, HOWEVER THERE IS A CHANCE IT WILL BE RERQUIRED. IF THE AIR CONDITONING LOAD IS REQUIRED, WILL THERE BE ANY FURTHER NETWORK UPGRADES REQUIRED COMPARED TO THE OPTION OF NO AIRCONDITIONING IN THE NEW ROOMS?

A SOLAR PV SYSTEM IS PROPOSED TO BE INSTALLED ON THE NEW BUILDING, HOWEVER SYSTEM SIZE IS UNKNOWN AND SO A SEPARATE APPLICATION WILL BE SUBMITTED FOR THIS EMBEDDED GENERATOR.

Street Address of the Premises *(to be completed by applicant)* * | Post Code*

45-58 MYRA STREET, WAITARA | 2076

12. Signatory

Signatory should be the person named in Section 3, ie the *Connection Applicant.*

Where this application requests an expedited connection, I declare that I have read and understood the terms and conditions of the connection offer referred to in section 9 (including the Connection Offer Summary) and agree that if the connection is expedited that a contract based on that offer will be formed with Ausgrid on the date that Ausgrid receives the application.

Where this application is being made on behalf of a retail customer or real estate developer, I declare that I have obtained the authority of that person to make this application of their behalf, including where applicable, making a request for expedition of the connection application.

Signatory Name*: CAMPBELL GRIFFIN

Signatory Position*: ELECTRICAL ENGINEER - ELECTRICAL DESIGNER

Signature of Connection Applicant*:

Date signed by the Connection Applicant*: / /

Attachment Checklist:	Tick if done	No of pages	Remarks
This Connection Application form	✓	6	Ensure all fields marked with * are filled in
AS/NZS3000 maximum demand worksheet	X	1	Refer to question 5(xiii)(c)
Connection Application for Embedded & Standby Generation Form NECF-04	N/A		Required if you answered "Y' in question 5(vii)(b)
Development Plans	N/A		Attach if available
Location Diagram (if space in Section 7 is inadequate)	X	1	
Conditions of consent to your Development Application	N/A		Refer to Section 10
Other (please specify) _____	N/A		
Other (please specify) _____	N/A		
	TOTAL*	8	

If this application is incomplete in a material respect or if Ausgrid requires more information, Ausgrid will not process the application until you provide the relevant information. If you do not supply the requested information within 12 months, this application will lapse.

Waitara Public School
Maximum demand to AS 3000
Prepared by Campbell Griffin
Checked By Paul Hebblewhite

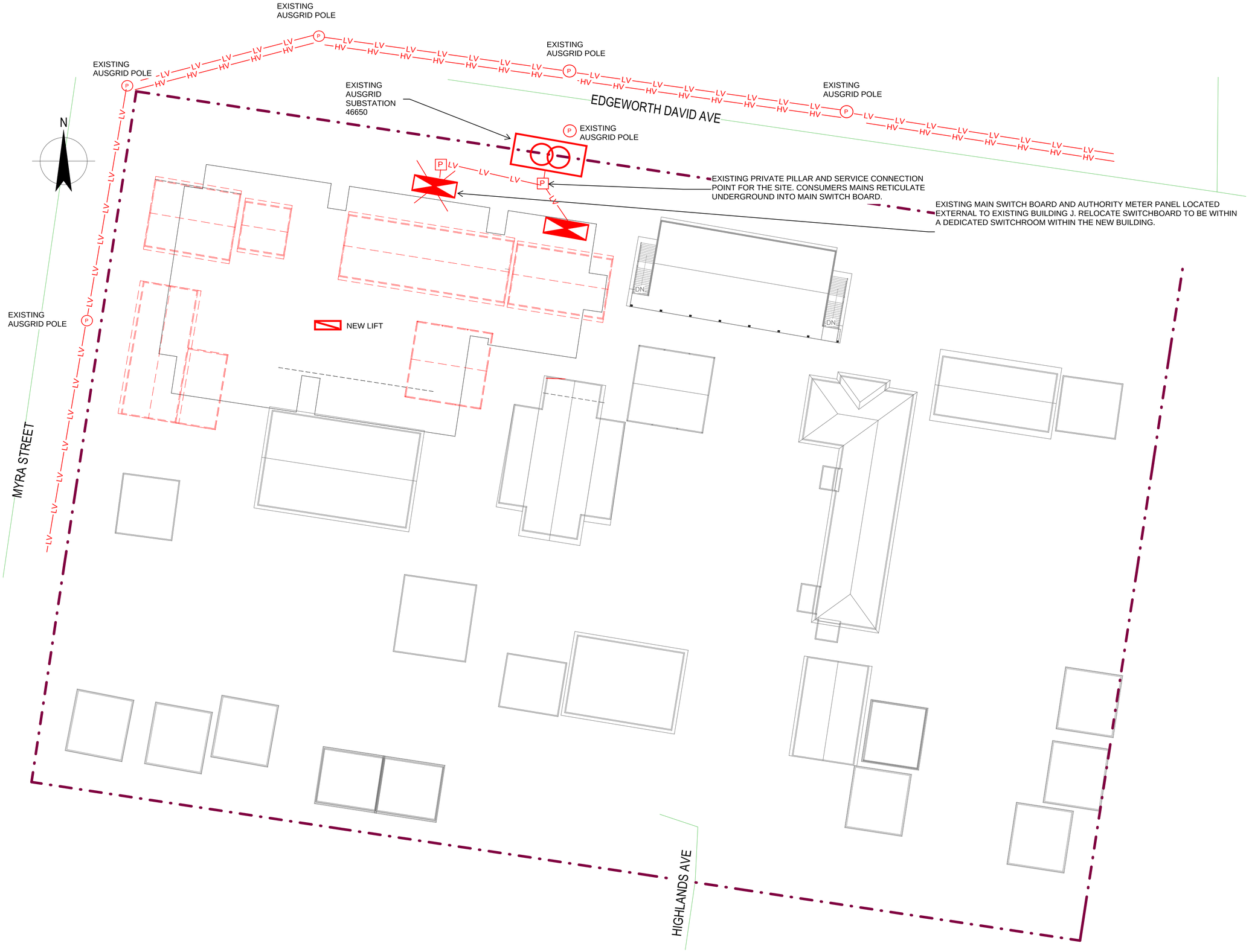
Option 1 - new classrooms with no air conditioning

Area Type	Area existing	new area proposed	VA/m^2	Existing (kVA)	New(kVA)	Total (kVA)	Total (A/phase)	Notes
Homebases/classrooms No A/C or heating	653	2836	30	19.59	85.08	104.67	151.7	new building to be provided with gas heating and no air conditioning
Homebases/classrooms with A/C or heating	653	0	65	42.445	0	42.445	61.5	A/C provided by reverse cycle
Library	205	160	80	16.4	12.8	29.2	42.3	A/C provided to library
Hall	220	230	30	6.6	6.9	13.5	19.6	no A/C in hall
Canteen	40	30	400	16	12	28	40.6	
Staff Office	220	180	80	17.6	14.4	32	46.4	
Demountable buildings	975	-975	65	63.375	-63.375	0	0.0	
outdoor areas with lighting	830	170	5	4.15	0.85	5	7.2	
lift	0	0	0	0	30	30	43.5	
Back of house and ammenities	150	160	10	1.5	1.6	3.1	4.5	
			Total (KVA)	187.7	100.3	287.9	417.3	
			Total(A)	272.0	145.3			

Option 2 - Reverse cycle AC provided to all new classrooms and spare for demountables

Area Type	Area existing	new area proposed	VA/m^2	Existing (kVA)	New(kVA)	Total (kVA)	Total (A/phase)	Notes
Homebases/classrooms No A/C or heating	653	0	30	19.59	0	19.59	28.4	
Homebases/classrooms with A/C or heating	653	2836	65	42.445	184.34	226.785	328.7	A/C provided by reverse cycle
Library	205	160	80	16.4	12.8	29.2	42.3	A/C provided to library
Hall	220	230	30	6.6	6.9	13.5	19.6	no A/C in hall
Canteen	40	30	400	16	12	28	40.6	
Staff Office	220	180	80	17.6	14.4	32	46.4	
Demountable buildings	975	-375	65	63.375	-24.375	39	56.5	
outdoor areas with lighting	830	170	5	4.15	0.85	5	7.2	
lift	0	0	0	0	30	30	43.5	
Back of house and ammenities	120	135	10	1.2	1.35	2.55	3.7	
			Total (KVA)	187.4	238.3	425.6	616.8	
			Total(A)	271.5	345.3			

Please confirm requirements if additional load from air conditioning is required by the department of education - current concept design is not allowing for AC.



0 3 6 9 12 15 m

SCALE 1:300 AT ORIGINAL SIZE

Rev	Description	Job Manager	Date
A	CONCEPT DESIGN	CS	26/05/17

DEPARTMENT OF EDUCATION
7 SCHOOLS UPGRADE

WAITARA PUBLIC SCHOOL

ELECTRICAL SERVICES CONCEPT DESIGN

Level 15, 133 Castlereagh Street, Sydney NSW 2000 Australia
T 61 2 9239 7100 **F** 61 2 9239 7199
E sydmail@ghd.com.au **W** www.ghd.com

scale	1 : 300	**for A1**	**job no.** 21-26108
date	26/05/2017		**rev no.** A

21-26108-WA-CD-EL-SK001

Plot Date: 25/05/2017 5:35:23 AM File Path: C:\Users\Cgriffin\Documents\Revit 2017 Local Files\Waitara Public School_Site_CAMPBELL.GRIFFIN@GHD.COM.rvt

Address all relevant correspondence to:

Ausgrid Contestability Section
PO Box 4009
Sydney NSW 2001

E: Contestability@ausgrid.com.au

Thursday 24th August 2017

GHD Electrical
Attention: Campbell Griffin
Level 15/133 Castlereagh Street
Piccadilly NSW 2000

Email: Campbell.griffin@ghd.com

Reference Number: 1900076786

Dear Campbell

Electricity Network Connection Application at: WAITARA PUBLIC SCHOOL 48-58 MYRA ST WAHROONGA

We have received your Connection Application dated 22.08.2017, and assigned it reference number 1900076786.

We have made a preliminary assessment of your Connection Application and wish to advise the application is incomplete and we cannot proceed to a connection offer at this stage. To enable *Ausgrid* to further consider and process your request you will require a certified design and associated certification number, and you should include this on your application.

This letter provides guidance on how to obtain a certified design and associated certification number.

Scope of Network Alterations

Ausgrid's assessment has determined that the following works are likely to be required to connect your development.

- ❑ KL Kiosk Substation Uprate from a 600KVA transformer to an 800kVA transformer and from a 4 x 400A low voltage panel to a 3 x 400, 1 x 800A low voltage panel of Kiosk Substation S.46650

These works are classified as contestable, which means that you are required to fund the design and some or all of the construction works. If you have not already done so, you will need to engage and manage suitably qualified contractors, known as Accredited Service Providers (ASPs) to undertake the design and construction.

Initially, your ASP Level 3 (ASP/3) will undertake the design, and then your ASP Level 1 (ASP/1) will undertake construction in accordance with the design and *Ausgrid's* policies and standards. The timeframe for the works will vary depending on factors such as the complexity and the way in which you manage your ASP's.

Once the works have been satisfactorily completed and electrified, the premises connection assets will be owned and maintained by *Ausgrid* as part of the electricity distribution network.

Design Stage

You or the person you represent must engage an ASP/3 to design the necessary network alterations. *Ausgrid* has classified the design information requirement for this connection as ***standard***. Therefore, for this connection, the ASP/3 must submit a Proposed Design Scope (PDS) to *Ausgrid* for assessment. This will form the basis of Design Information – Site Specific Terms and Conditions for the project, which your ASP/3 will use to prepare and submit a design that is certifiable.

You will also need to enter into a Contract for Design Related Services with *Ausgrid* as outlined below. This Contract sets out the rights and obligations of *Ausgrid* and yourself with respect to certification of your ASP/3's design by *Ausgrid*.

Once the design has been certified by *Ausgrid*, your Connection Application will be complete and you may use the design certification number to request that your Connection Application proceed to a connection offer or expedited connection, provided you assure *Ausgrid* that the development has not materially changed since you submitted your original Connection Application.

Contract for Design Related Services

This letter is an offer to enter into a Contract for Design Related Services. It remains open for acceptance for 45 business days. A copy of the Contract for Design Related Services is available for your review on our website *http://www.Ausgrid.com.au* at the following link:
http://www.ausgrid.com.au/~/media/Files/Network/ASPs/ASP3%20new/CDRS%20Appendices/Design%20Contract%202017.pdf.

No work will be undertaken by *Ausgrid* until a Design Contract is in place.

You are encouraged to contact ASP/3's and ASP/1's to understand the likely overall costs you will incur for design and construction before you accept and commit to the Contract for Design Related Services.

IMPORTANT: The contractual arrangements provide the framework for a design to be prepared by your ASP/3, and NOT by *Ausgrid*. *Ausgrid's* fees as outlined below are for the design related network services we provide during the design phase, and are IN ADDITION to the fees charged by your ASP/3 in preparing the design.

Acceptance Fees

The acceptance fees relating to the Contract for Design Related Services are payable upon acceptance. *Ausgrid* will invoice you once we receive your signed acceptance form. The Contract will not commence until you pay the invoiced fee.

These fees are an estimate for the *Ausgrid* services required. Further fees may apply for any additional services required and these will be quoted on each occasion. *Ausgrid's* published rates for our services are amended from time to time in our Connection Policy – Connection Charges publication, and in accordance with the Contract, *Ausgrid* reserves the right to charge the rates that are applicable at the time the service is provided.

Fees for *Ausgrid's* services are in addition to the design and construction costs charged by your ASP's, and some fees may not be refundable if the service has already been provided.

The Acceptance Fee will be calculated as follows (GST inclusive). These fees and rates are set by the Australian Energy Regulator:

Design Information	$512.94
Design Certification	$996.35
Administration	$639.78
Facilitation	$483.84
TOTAL	**$2632.91**

General

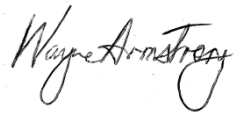
Standard *Ausgrid* documents mentioned in this letter, including those enclosed, are available on *Ausgrid's* website *www.ausgrid.com.au*. If you do not have access to the web and would like to read any of the documents mentioned in this letter they may be obtained by contacting the phone number below.

Should you require any further information please contact me on the phone number or email address detailed below.

What to do next

- ❑ Read the Contract for Design Related Services on our website. To accept our offer to enter into a Contract for Design Related Services,
  - Complete and sign the Acceptance of Offer in the space provided below and return it to *Ausgrid*. **Note that a tax invoice will be generated based on the details provided on the form**.
  - You will also need to pay *Ausgrid's* fees as detailed above. An invoice for the above total amount will be forwarded to you on acceptance of the contract.
- ❑ Engage the services of an ASP/3 to submit a Proposed Design Scope (PDS) to *Ausgrid* for assessment. Note that *Ausgrid* will not accept the PDS for assessment until the Contract for Design Related Services is in place. Ausgrid requires the PDS to be submitted within 12 months of the contract commencement date.

Yours sincerely,



Wayne Armstrong
Team Leader - Contestability Central Coast & Lake Macquarie
Ausgrid

Direct Telephone Number: 02 8569 6731
Facsimile: 02 4351 0377
Email: warmstrong@ausgrid.com.au

Encl: Acceptance of Offer Form
Contestable Connection or Relocation flowchart

Acceptance of Offer

Design Offer Expiry Date: Thursday, 26 October 2017

***Ausgrid* - MC Reference Number:** 1900076786
***Ausgrid* – AP/AE Reference Number:** 800177484
***Ausgrid* - Trim Reference Number:** B17/4552

Premises: **WAITARA PUBLIC SCHOOL 48-58 MYRA ST WAHROONGA**

The Connection Applicant accepts the above *Ausgrid's* offer of a Contract for Design Related Services in relation to the design of connection assets at the above premises.

Please note that a tax invoice will be generated based on the details provided on this form. Changes to this information following invoice processing will result in additional charges.

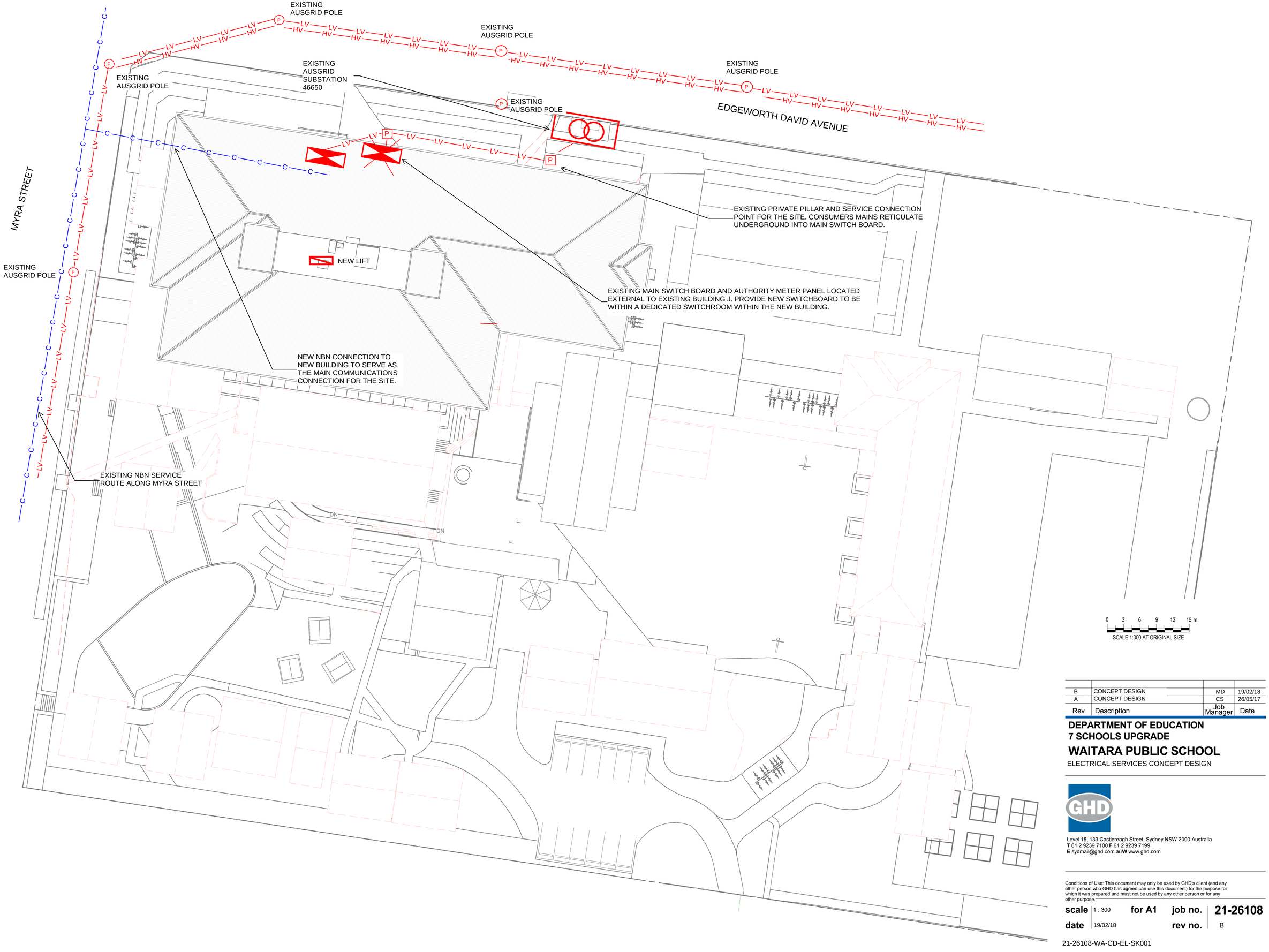
Details of Person or Company to invoice for the payment of *Ausgrid* Fees and Charges.	
This is the party that will be billed and responsible for payment. **If you are signing on behalf of a third party, we require their details for invoicing**	_____ print name of person or company _____ ABN _____ postal address - line 1 _____ postal address – line 2 _____ contact name _____ contact phone number _____ email address _____ purchase order number

Signed by the Connection Applicant (as per application form details)

_____ signature
_____ print name of signatory
_____ print position of signatory
_____ date
_____ company name
_____ ABN
_____ email address
_____ contact phone number

***AUSGRID* USE ONLY:** Date of Receipt : _____

Appendix B - Site Plan



Rev	Description	Job Manager	Date
B	CONCEPT DESIGN	MD	19/02/18
A	CONCEPT DESIGN	CS	26/05/17

DEPARTMENT OF EDUCATION
7 SCHOOLS UPGRADE

WAITARA PUBLIC SCHOOL

ELECTRICAL SERVICES CONCEPT DESIGN

GHD

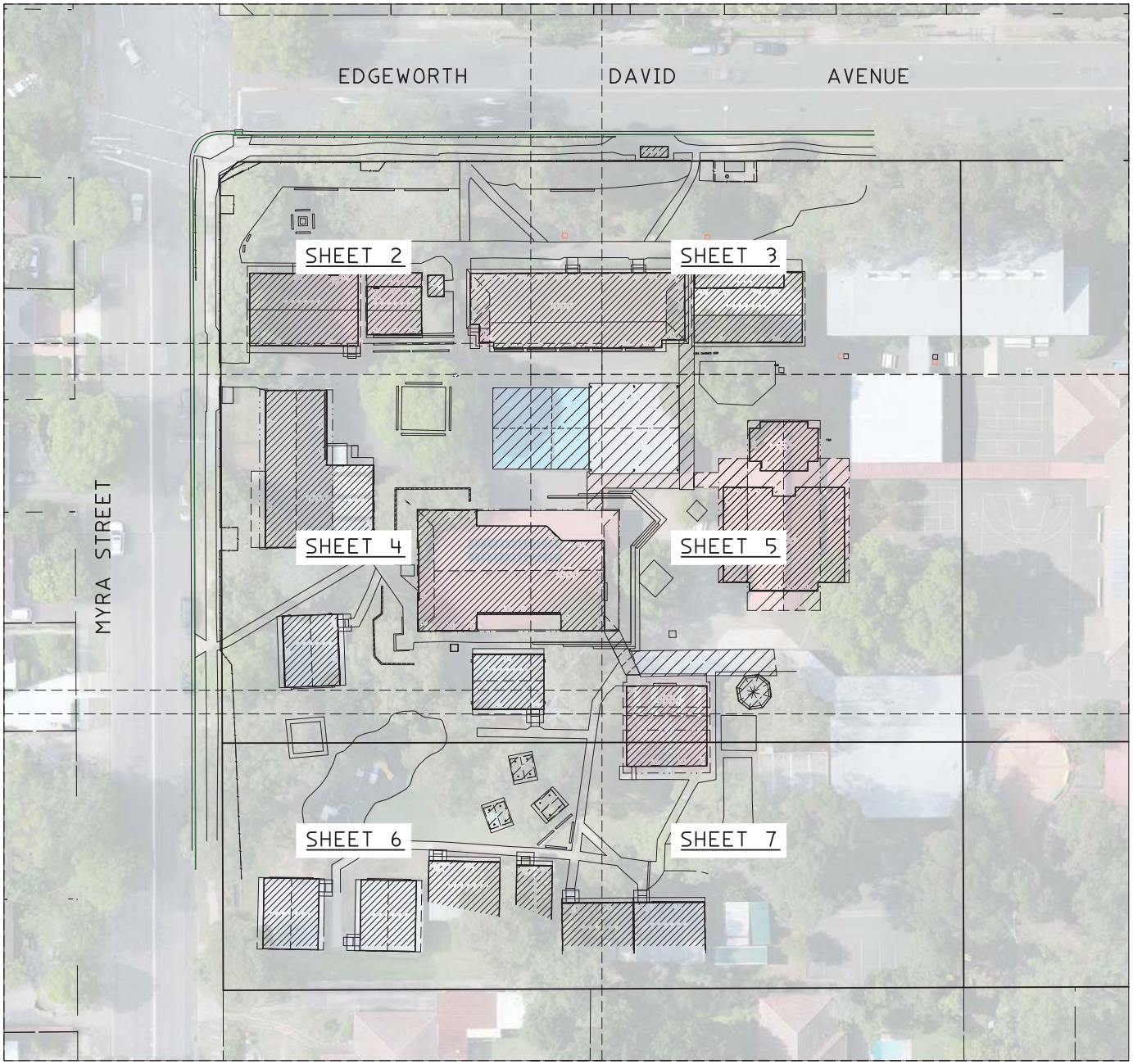
Level 15, 133 Castlereagh Street, Sydney NSW 2000 Australia
T 61 2 9239 7100 **F** 61 2 9239 7199
E sydmail@ghd.com.au **W** www.ghd.com

scale	1 : 300	**for A1**	**job no.**	**21-26108**	
date	19/02/18		**rev no.**	B	

21-26108-WA-CD-EL-SK001

Appendix C - Detailed In-Ground Services Survey

A1



MGA NORTH

0 5 10 15 20 25 30

SCALE 1:300

The Essential First Step.

			HORIZONTAL DATUM:	**VERTICAL DATUM:**	**CLIENT:**	**SURVEY PLAN SHOWING DETAIL & LEVELS OVER LOT A IN D.P.309739, LOTS 12 & 13 IN D.P.17375, LOTS 1 IN D.P.333142 & LOT 11 IN D.P.17375 No. 48-58 MYRA STREET WAHROONGA NSW 2076**	C.M.S. Surveyors Pty Limited	SURVEYED TC/BB	DRAWN ABS/TC	CHECKED TC/BB	APPROVED MDL
			CO-ORDINATE SYSTEM: MGA	DATUM: AUSTRALIAN HEIGHT DATUM (AHD)	GHD WOODHEAD		ACN: 096 240 201	SURVEY INSTRUCTION 15978	SCALE 1:300 @ A1	DATE OF SURVEY 30/05/17	
			MARKS ADOPTED: SSM41898, SSM83818	B.M. ADOPTED: SSM41898	LEVEL 15, 133 CASTLEREAGH STREET		PO Box 463 Dee Why NSW 2099	DRAWING NAME 15978detail		SHEET 1 OF 7	ISSUE 1
1	FIRST ISSUE	15/07/16	LGA: HORNSBY	R.L. 185.074 (ORDER L2)	SYDNEY NSW 2000		2/99A South Creek Road, Dee Why NSW 2099	CAD FILE 15978detail 1.dwg			
				SOURCE: S.C.I.M.S. (10/04/17)			Telephone: (02) 9971 4802 Facsimile: (02) 9971 4822 E-mail: info@cmssurveyors.com.au				

A1

LEGEND:

AW = AWNING
BIT = BITUMEN
BLD = EXTERNAL BUILDING
BS = BOTTOM OF STEP
BW = BOTTOM OF WALL
BW = BOTTOM WALL
CL = CENTERLINE
COM = COMMUNICATIONS PIT
CON = CONCRETE
DK = DECK
DP = DOWN PIPE
DRN = DRAIN
DS = DOOR SILL LEVEL
EK = ELECTRICITY KIOSK
EPIT = ELECTRICITY PIT
EPL = ELECTRICITY PILLAR
FCE = FENCE
GDN = GARDEN
GM = GAS METER
GRT = GRATE
GV = GAS VALVE
HL = HOOD LEVEL
LAN = LANDING
LID = MISCELLANEOUS PIT LID
LIP = KERB LIP
LP = LIGHT POLE
NS = NATURAL SURFACE
PAV = PAVING
POST = POST
PP = POWER POLE
RF = TOP OF ROOF
RR = ROOF RIDGE
SGN = SIGN
SHD = SHED
SIP = SEWER INSPECTION PIT
SL = SILL LEVEL
SMH = SEWER MAN HOLE
SF = SOFT FALL
SS = SUBSOIL
STR = STAIRS
SU = SEWER UNDERGROUND
SV = STOP VALVE
SVE = SEWER VENT
TFCE = TOP OF FENCE
TG = TOP OF GUTTER
TKB = TOP OF KERB
TL = TRAFFIC LIGHT
TP = TAP
TP = TOP OF PIPE
TR = TREE
TW = TOP WALL
UE = UNDERSIDE OF EAVE
UNS = UNDERSIDE
VC = VEHICLE CROSSING
VER = VERANDAH
WM = WATER METER

C = CSL = COMMUNICATIONS SLA
E = ESL = ELECTRICITY SLA
G = GSL = GAS SLA
SW = SWSL = STORMWATER SLA
U = USL = UNKNOWN SERVICE SLA
W = WSL = WATER SLA

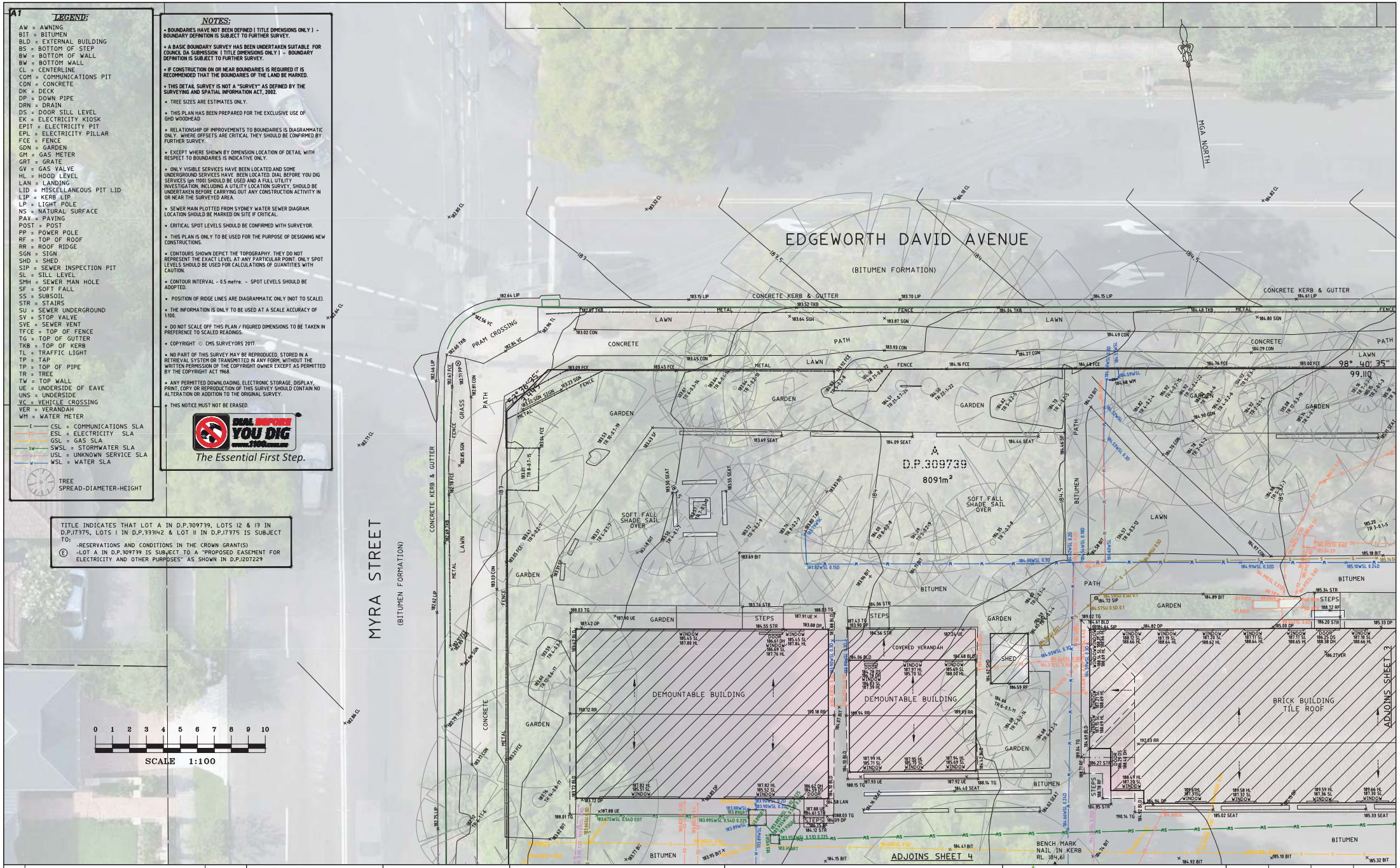
TREE
SPREAD-DIAMETER-HEIGHT

NOTES:

- BOUNDARIES HAVE NOT BEEN DEFINED (TITLE DIMENSIONS ONLY) - BOUNDARY DEFINITION IS SUBJECT TO FURTHER SURVEY.
- A BASIC BOUNDARY SURVEY HAS BEEN UNDERTAKEN SUITABLE FOR COUNCIL DA SUBMISSION (TITLE DIMENSIONS ONLY) - BOUNDARY DEFINITION IS SUBJECT TO FURTHER SURVEY.
- IF CONSTRUCTION ON OR NEAR BOUNDARIES IS REQUIRED IT IS RECOMMENDED THAT THE BOUNDARIES OF THE LAND BE MARKED.
- THIS DETAIL SURVEY IS NOT A "SURVEY" AS DEFINED BY THE SURVEYING AND SPATIAL INFORMATION ACT, 2002.
- TREE SIZES ARE ESTIMATES ONLY.
- THIS PLAN HAS BEEN PREPARED FOR THE EXCLUSIVE USE OF GHD WOODHEAD
- RELATIONSHIP OF IMPROVEMENTS TO BOUNDARIES IS DIAGRAMMATIC ONLY. WHERE OFFSETS ARE CRITICAL THEY SHOULD BE CONFIRMED BY FURTHER SURVEY.
- EXCEPT WHERE SHOWN BY DIMENSION LOCATION OF DETAIL WITH RESPECT TO BOUNDARIES IS INDICATIVE ONLY.
- ONLY VISIBLE SERVICES HAVE BEEN LOCATED AND SOME UNDERGROUND SERVICES HAVE BEEN LOCATED. DIAL BEFORE YOU DIG SERVICES (ph 1100) SHOULD BE USED AND A FULL UTILITY INVESTIGATION, INCLUDING A UTILITY LOCATION SURVEY, SHOULD BE UNDERTAKEN BEFORE CARRYING OUT ANY CONSTRUCTION ACTIVITY IN OR NEAR THE SURVEYED AREA.
- SEWER MAIN PLOTTED FROM SYDNEY WATER SEWER DIAGRAM. LOCATION SHOULD BE MARKED ON SITE IF CRITICAL.
- CRITICAL SPOT LEVELS SHOULD BE CONFIRMED WITH SURVEYOR.
- THIS PLAN IS ONLY TO BE USED FOR THE PURPOSE OF DESIGNING NEW CONSTRUCTIONS.
- CONTOURS SHOWN DEPICT THE TOPOGRAPHY. THEY DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.
- CONTOUR INTERVAL - 0.5 metre. - SPOT LEVELS SHOULD BE ADOPTED.
- POSITION OF RIDGE LINES ARE DIAGRAMMATIC ONLY (NOT TO SCALE).
- THE INFORMATION IS ONLY TO BE USED AT A SCALE ACCURACY OF 1:100.
- DO NOT SCALE OFF THIS PLAN / FIGURED DIMENSIONS TO BE TAKEN IN PREFERENCE TO SCALED READINGS.
- COPYRIGHT © CMS SURVEYORS 2017.
- NO PART OF THIS SURVEY MAY BE REPRODUCED, STORED IN A RETRIEVAL SYSTEM OR TRANSMITTED IN ANY FORM, WITHOUT THE WRITTEN PERMISSION OF THE COPYRIGHT OWNER EXCEPT AS PERMITTED BY THE COPYRIGHT ACT 1968.
- ANY PERMITTED DOWNLOADING, ELECTRONIC STORAGE, DISPLAY, PRINT, COPY OR REPRODUCTION OF THIS SURVEY SHOULD CONTAIN NO ALTERATION OR ADDITION TO THE ORIGINAL SURVEY.
- THIS NOTICE MUST NOT BE ERASED.

DIAL BEFORE YOU DIG www.1100.com.au
The Essential First Step.

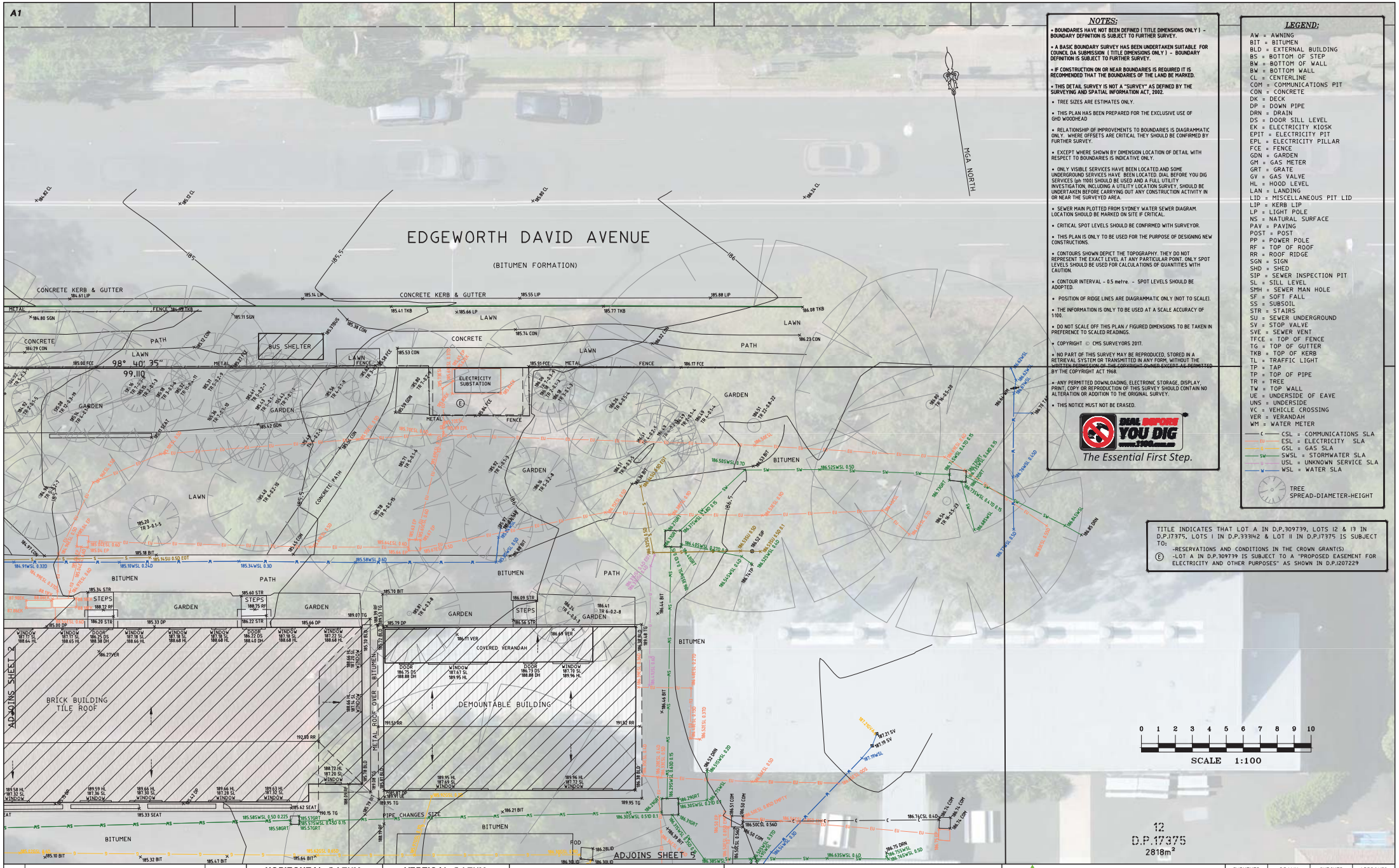
TITLE INDICATES THAT LOT A IN D.P.309739, LOTS 12 & 13 IN D.P.17375, LOTS 1 IN D.P.333142 & LOT 11 IN D.P.17375 IS SUBJECT TO:
-RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
(E) -LOT A IN D.P.309739 IS SUBJECT TO A "PROPOSED EASEMENT FOR ELECTRICITY AND OTHER PURPOSES" AS SHOWN IN D.P.1207229



			HORIZONTAL DATUM:	**VERTICAL DATUM:**	**CLIENT:**	**SURVEY PLAN SHOWING DETAIL & LEVELS OVER LOT A IN D.P.309739, LOTS 12 & 13 IN D.P.17375, LOTS 1 IN D.P.333142 & LOT 11 IN D.P.17375 No. 48-58 MYRA STREET WAHROONGA NSW 2076**	C.M.S. Surveyors Pty Limited
			CO-ORDINATE SYSTEM: MGA	DATUM: AUSTRALIAN HEIGHT DATUM (AHD)	GHD WOODHEAD		ACN: 096 240 201
			MARKS ADOPTED: SSM41898, SSM83818	B.M. ADOPTED: SSM41898	LEVEL 15, 133 CASTLEREAGH STREET		PO Box 463 Dee Why NSW 2099
				R.L. 185.074 (ORDER L2)	SYDNEY NSW 2000		2/99A South Creek Road, Dee Why NSW 2099
1	FIRST ISSUE	15/07/16	LGA: HORNSBY	SOURCE: S.C.I.M.S. (10/04/17)			Telephone: (02) 9971 4802 Facsimile: (02) 9971 4822
							E-mail: info@cmssurveyors.com.au

SURVEYED	DRAWN	CHECKED	APPROVED
TC/BB	ABS/TC	TC/BB	MDL
SURVEY INSTRUCTION	SCALE	DATE OF SURVEY	
15978	1:100 @ A1	30/05/17	
DRAWING NAME		SHEET	ISSUE
15978detail		2 OF 7	1
CAD FILE			
15978detail 1.dwg			

A1



NOTES:

- BOUNDARIES HAVE NOT BEEN DEFINED (TITLE DIMENSIONS ONLY) - BOUNDARY DEFINITION IS SUBJECT TO FURTHER SURVEY.
- A BASIC BOUNDARY SURVEY HAS BEEN UNDERTAKEN SUITABLE FOR COUNCIL DA SUBMISSION (TITLE DIMENSIONS ONLY) - BOUNDARY DEFINITION IS SUBJECT TO FURTHER SURVEY.
- IF CONSTRUCTION ON OR NEAR BOUNDARIES IS REQUIRED IT IS RECOMMENDED THAT THE BOUNDARIES OF THE LAND BE MARKED.
- THIS DETAIL SURVEY IS NOT A "SURVEY" AS DEFINED BY THE SURVEYING AND SPATIAL INFORMATION ACT, 2002.
- TREE SIZES ARE ESTIMATES ONLY.
- THIS PLAN HAS BEEN PREPARED FOR THE EXCLUSIVE USE OF GHD WOODHEAD
- RELATIONSHIP OF IMPROVEMENTS TO BOUNDARIES IS DIAGRAMMATIC ONLY. WHERE OFFSETS ARE CRITICAL THEY SHOULD BE CONFIRMED BY FURTHER SURVEY.
- EXCEPT WHERE SHOWN BY DIMENSION LOCATION OF DETAIL WITH RESPECT TO BOUNDARIES IS INDICATIVE ONLY.
- ONLY VISIBLE SERVICES HAVE BEEN LOCATED AND SOME UNDERGROUND SERVICES HAVE BEEN LOCATED. DIAL BEFORE YOU DIG SERVICES (ph 1100) SHOULD BE USED AND A FULL UTILITY INVESTIGATION, INCLUDING A UTILITY LOCATION SURVEY, SHOULD BE UNDERTAKEN BEFORE CARRYING OUT ANY CONSTRUCTION ACTIVITY IN OR NEAR THE SURVEYED AREA.
- SEWER MAIN PLOTTED FROM SYDNEY WATER SEWER DIAGRAM. LOCATION SHOULD BE MARKED ON SITE IF CRITICAL.
- CRITICAL SPOT LEVELS SHOULD BE CONFIRMED WITH SURVEYOR.
- THIS PLAN IS ONLY TO BE USED FOR THE PURPOSE OF DESIGNING NEW CONSTRUCTIONS.
- CONTOURS SHOWN DEPICT THE TOPOGRAPHY. THEY DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.
- CONTOUR INTERVAL - 0.5 metre. - SPOT LEVELS SHOULD BE ADOPTED.
- POSITION OF RIDGE LINES ARE DIAGRAMMATIC ONLY (NOT TO SCALE).
- THE INFORMATION IS ONLY TO BE USED AT A SCALE ACCURACY OF 1:100.
- DO NOT SCALE OFF THIS PLAN / FIGURED DIMENSIONS TO BE TAKEN IN PREFERENCE TO SCALED READINGS.
- COPYRIGHT © CMS SURVEYORS 2017.
- NO PART OF THIS SURVEY MAY BE REPRODUCED, STORED IN A RETRIEVAL SYSTEM OR TRANSMITTED IN ANY FORM, WITHOUT THE WRITTEN PERMISSION OF THE COPYRIGHT OWNER EXCEPT AS PERMITTED BY THE COPYRIGHT ACT 1968.
- ANY PERMITTED DOWNLOADING, ELECTRONIC STORAGE, DISPLAY, PRINT, COPY OR REPRODUCTION OF THIS SURVEY SHOULD CONTAIN NO ALTERATION OR ADDITION TO THE ORIGINAL SURVEY.
- THIS NOTICE MUST NOT BE ERASED.

DIAL BEFORE YOU DIG 1100
The Essential First Step.

LEGEND:

AW = AWNING
BIT = BITUMEN
BLD = EXTERNAL BUILDING
BS = BOTTOM OF STEP
BW = BOTTOM OF WALL
BW = BOTTOM WALL
CL = CENTERLINE
COM = COMMUNICATIONS PIT
CON = CONCRETE
DK = DECK
DP = DOWN PIPE
DRN = DRAIN
DS = DOOR SILL LEVEL
EK = ELECTRICITY KIOSK
EPIT = ELECTRICITY PIT
EPL = ELECTRICITY PILLAR
FCE = FENCE
GDN = GARDEN
GM = GAS METER
GRT = GRATE
GV = GAS VALVE
HL = HOOD LEVEL
LAN = LANDING
LID = MISCELLANEOUS PIT LID
LIP = KERB LIP
LP = LIGHT POLE
NS = NATURAL SURFACE
PAV = PAVING
POST = POST
PP = POWER POLE
RF = TOP OF ROOF
RR = ROOF RIDGE
SGN = SIGN
SHD = SHED
SIP = SEWER INSPECTION PIT
SL = SILL LEVEL
SMH = SEWER MAN HOLE
SF = SOFT FALL
SS = SUBSOIL
STR = STAIRS
SU = SEWER UNDERGROUND
SV = STOP VALVE
SVE = SEWER VENT
TFCE = TOP OF FENCE
TG = TOP OF GUTTER
TKB = TOP OF KERB
TL = TRAFFIC LIGHT
TP = TAP
TP = TOP OF PIPE
TR = TREE
TW = TOP WALL
UE = UNDERSIDE OF EAVE
UNS = UNDERSIDE
VC = VEHICLE CROSSING
VER = VERANDAH
WM = WATER METER
C — CSL = COMMUNICATIONS SLA
EU — ESL = ELECTRICITY SLA
G — GSL = GAS SLA
SW — SWSL = STORMWATER SLA
U — USL = UNKNOWN SERVICE SLA
W — WSL = WATER SLA
TREE SPREAD-DIAMETER-HEIGHT

TITLE INDICATES THAT LOT A IN D.P.309739, LOTS 12 & 13 IN D.P.17375, LOTS 1 IN D.P.333142 & LOT 11 IN D.P.17375 IS SUBJECT TO:
-RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
(E) -LOT A IN D.P.309739 IS SUBJECT TO A "PROPOSED EASEMENT FOR ELECTRICITY AND OTHER PURPOSES" AS SHOWN IN D.P.1207229

1	FIRST ISSUE	15/07/16

HORIZONTAL DATUM:
CO-ORDINATE SYSTEM: MGA
MARKS ADOPTED: SSM41898, SSM83818
LGA: HORNSBY

VERTICAL DATUM:
DATUM: AUSTRALIAN HEIGHT DATUM (AHD)
B.M. ADOPTED: SSM41898
R.L. 185.074 (ORDER L2)
SOURCE: S.C.I.M.S. (10/04/17)

CLIENT:
GHD WOODHEAD
LEVEL 15, 133 CASTLEREAGH STREET
SYDNEY NSW 2000

SURVEY PLAN SHOWING DETAIL & LEVELS OVER LOT A IN D.P.309739, LOTS 12 & 13 IN D.P.17375, LOTS 1 IN D.P.333142 & LOT 11 IN D.P.17375
No. 48-58 MYRA STREET
WAHROONGA NSW 2076

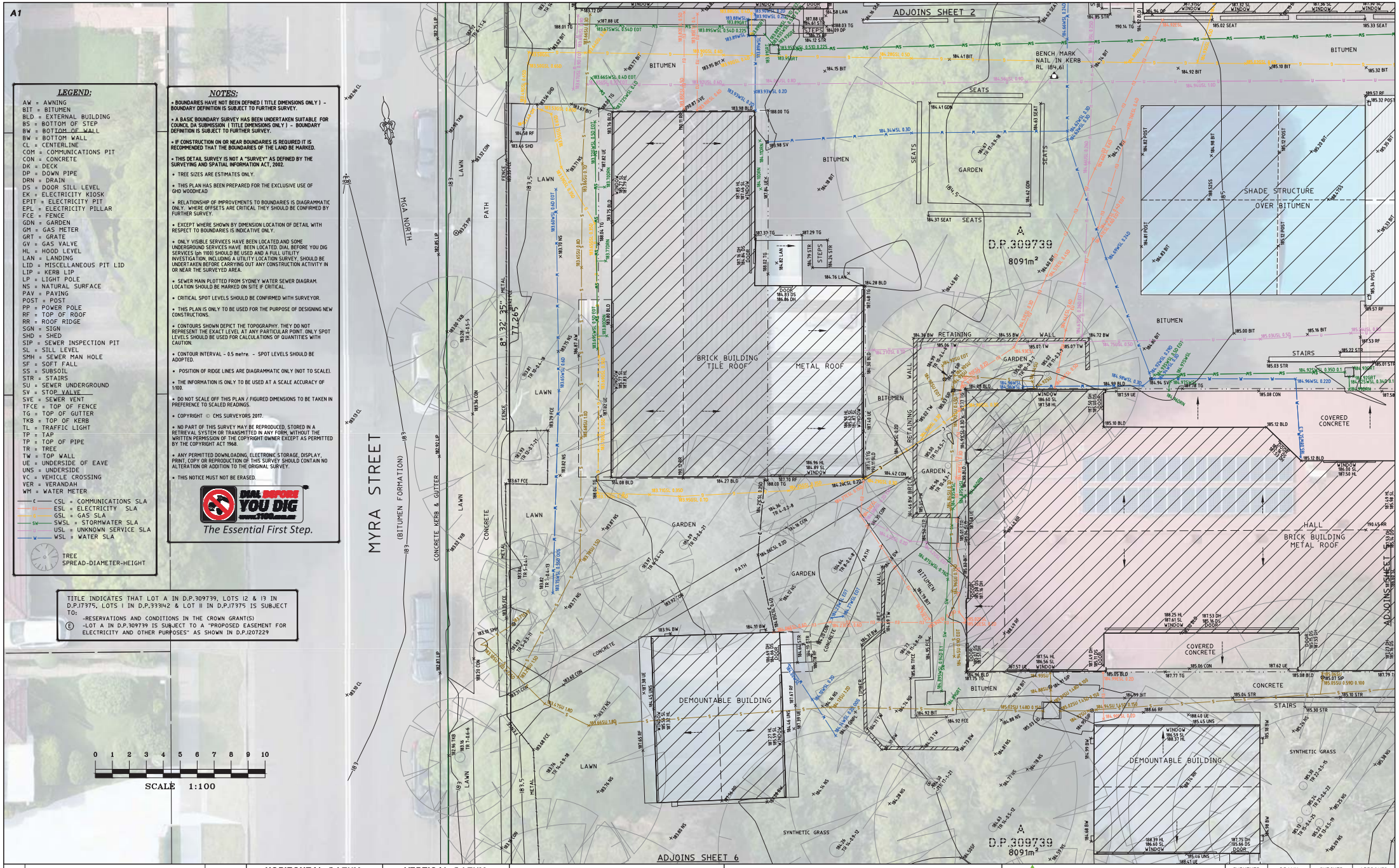
C.M.S. Surveyors Pty Limited
ACN: 096 240 201
PO Box 463 Dee Why NSW 2099
2/99A South Creek Road, Dee Why NSW 2099
Telephone: (02) 9971 4802 Facsimile: (02) 9971 4822
E-mail: info@cmssurveyors.com.au

SURVEYED	DRAWN	CHECKED	APPROVED
TC/BB	ABS/TC	TC/BB	MDL

SURVEY INSTRUCTION	SCALE	DATE OF SURVEY
15978	1:100 @ A1	30/05/17

DRAWING NAME: 15978detail
CAD FILE: 15978detail 1.dwg
SHEET: 3 OF 7
ISSUE: 1

A1



LEGEND:

AW = AWNING
BIT = BITUMEN
BLD = EXTERNAL BUILDING
BS = BOTTOM OF STEP
BW = BOTTOM OF WALL
BW = BOTTOM WALL
CL = CENTERLINE
COM = COMMUNICATIONS PIT
CON = CONCRETE
DK = DECK
DP = DOWN PIPE
DRN = DRAIN
DS = DOOR SILL LEVEL
EK = ELECTRICITY KIOSK
EPIT = ELECTRICITY PIT
EPL = ELECTRICITY PILLAR
FCE = FENCE
GDN = GARDEN
GM = GAS METER
GRT = GRATE
GV = GAS VALVE
HL = HOOD LEVEL
LAN = LANDING
LID = MISCELLANEOUS PIT LID
LIP = KERB LIP
LP = LIGHT POLE
NS = NATURAL SURFACE
PAV = PAVING
POST = POST
PP = POWER POLE
RF = TOP OF ROOF
RR = ROOF RIDGE
SGN = SIGN
SHD = SHED
SIP = SEWER INSPECTION PIT
SL = SILL LEVEL
SMH = SEWER MAN HOLE
SF = SOFT FALL
SS = SUBSOIL
STR = STAIRS
SU = SEWER UNDERGROUND
SV = STOP VALVE
SVE = SEWER VENT
TFCE = TOP OF FENCE
TG = TOP OF GUTTER
TKB = TOP OF KERB
TL = TRAFFIC LIGHT
TP = TAP
TP = TOP OF PIPE
TR = TREE
TW = TOP WALL
UE = UNDERSIDE OF EAVE
UNS = UNDERSIDE
VC = VEHICLE CROSSING
VER = VERANDAH
WM = WATER METER

C —— CSL = COMMUNICATIONS SLA
E —— ESL = ELECTRICITY SLA
G —— GSL = GAS SLA
SW —— SWSL = STORMWATER SLA
U —— USL = UNKNOWN SERVICE SLA
W —— WSL = WATER SLA

TREE
SPREAD-DIAMETER-HEIGHT

NOTES:

- BOUNDARIES HAVE NOT BEEN DEFINED (TITLE DIMENSIONS ONLY) - BOUNDARY DEFINITION IS SUBJECT TO FURTHER SURVEY.
- A BASIC BOUNDARY SURVEY HAS BEEN UNDERTAKEN SUITABLE FOR COUNCIL DA SUBMISSION (TITLE DIMENSIONS ONLY) - BOUNDARY DEFINITION IS SUBJECT TO FURTHER SURVEY.
- IF CONSTRUCTION ON OR NEAR BOUNDARIES IS REQUIRED IT IS RECOMMENDED THAT THE BOUNDARIES OF THE LAND BE MARKED.
- THIS DETAIL SURVEY IS NOT A "SURVEY" AS DEFINED BY THE SURVEYING AND SPATIAL INFORMATION ACT, 2002.
- TREE SIZES ARE ESTIMATES ONLY.
- THIS PLAN HAS BEEN PREPARED FOR THE EXCLUSIVE USE OF GHD WOODHEAD
- RELATIONSHIP OF IMPROVEMENTS TO BOUNDARIES IS DIAGRAMMATIC ONLY. WHERE OFFSETS ARE CRITICAL THEY SHOULD BE CONFIRMED BY FURTHER SURVEY.
- EXCEPT WHERE SHOWN BY DIMENSION LOCATION OF DETAIL WITH RESPECT TO BOUNDARIES IS INDICATIVE ONLY.
- ONLY VISIBLE SERVICES HAVE BEEN LOCATED.AND SOME UNDERGROUND SERVICES HAVE BEEN LOCATED. DIAL BEFORE YOU DIG SERVICES (ph 1100) SHOULD BE USED AND A FULL UTILITY INVESTIGATION, INCLUDING A UTILITY LOCATION SURVEY, SHOULD BE UNDERTAKEN BEFORE CARRYING OUT ANY CONSTRUCTION ACTIVITY IN OR NEAR THE SURVEYED AREA.
- SEWER MAIN PLOTTED FROM SYDNEY WATER SEWER DIAGRAM. LOCATION SHOULD BE MARKED ON SITE IF CRITICAL.
- CRITICAL SPOT LEVELS SHOULD BE CONFIRMED WITH SURVEYOR.
- THIS PLAN IS ONLY TO BE USED FOR THE PURPOSE OF DESIGNING NEW CONSTRUCTIONS.
- CONTOURS SHOWN DEPICT THE TOPOGRAPHY. THEY DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.
- CONTOUR INTERVAL - 0.5 metre. - SPOT LEVELS SHOULD BE ADOPTED.
- POSITION OF RIDGE LINES ARE DIAGRAMMATIC ONLY (NOT TO SCALE).
- THE INFORMATION IS ONLY TO BE USED AT A SCALE ACCURACY OF 1:100
- DO NOT SCALE OFF THIS PLAN / FIGURED DIMENSIONS TO BE TAKEN IN PREFERENCE TO SCALED READINGS.
-
- THIS NOTICE MUST NOT BE ERASED.

TITLE INDICATES THAT LOT A IN D.P.309739, LOTS 12 & 13 IN D.P.17375, LOTS 1 IN D.P.333142 & LOT 11 IN D.P.17375 IS SUBJECT TO:
-RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
(E) -LOT A IN D.P.309739 IS SUBJECT TO A "PROPOSED EASEMENT FOR ELECTRICITY AND OTHER PURPOSES" AS SHOWN IN D.P.1207229

0 1 2 3 4 5 6 7 8 9 10
SCALE 1:100

1	FIRST ISSUE	15/07/16	

HORIZONTAL DATUM:
CO-ORDINATE SYSTEM: MGA
MARKS ADOPTED: SSM41898, SSM83818
LGA: HORNSBY

VERTICAL DATUM:
DATUM: AUSTRALIAN HEIGHT DATUM (AHD)
B.M. ADOPTED: SSM41898
R.L. 185.074 (ORDER L2)
SOURCE: S.C.I.M.S. (10/04/17)

CLIENT:
GHD WOODHEAD
LEVEL 15, 133 CASTLEREAGH STREET
SYDNEY NSW 2000

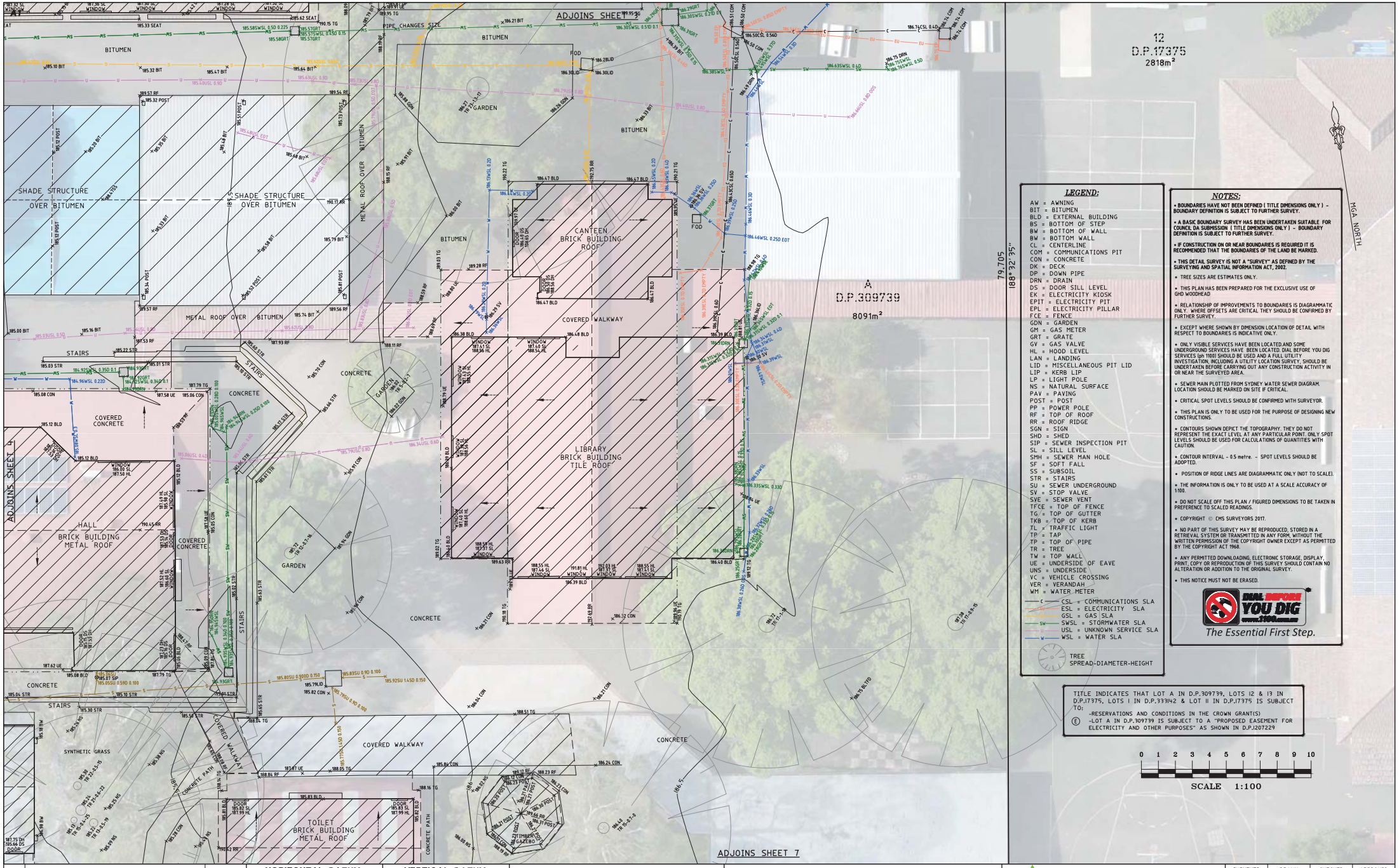
SURVEY PLAN SHOWING DETAIL & LEVELS OVER LOT A IN D.P.309739, LOTS 12 & 13 IN D.P.17375, LOTS 1 IN D.P.333142 & LOT 11 IN D.P.17375
No. 48-58 MYRA STREET
WAHROONGA NSW 2076

C.M.S. Surveyors Pty Limited
ACN: 096 240 201
PO Box 463 Dee Why NSW 2099
2/99A South Creek Road, Dee Why NSW 2099
Telephone: (02) 9971 4802 Facsimile: (02) 9971 4822
E-mail: info@cmssurveyors.com.au

SURVEYED	DRAWN	CHECKED	APPROVED
TC/BB	ABS/TC	TC/BB	MDL

SURVEY INSTRUCTION	SCALE	DATE OF SURVEY
15978	1:100 @ A1	30/05/17

DRAWING NAME: 15978detail
CAD FILE: 15978detail 1.dwg
SHEET: 4 OF 7
ISSUE: 1



LEGEND:

AW = AWNING
BIT = BITUMEN
BLD = EXTERNAL BUILDING
BS = BOTTOM OF STEP
BW = BOTTOM OF WALL
BW = BOTTOM WALL
CL = CENTERLINE
COM = COMMUNICATIONS PIT
CON = CONCRETE
DK = DECK
DP = DOWN PIPE
DRN = DRAIN
DS = DOOR SILL LEVEL
EK = ELECTRICITY KIOSK
EPIT = ELECTRICITY PIT
EPL = ELECTRICITY PILLAR
FCE = FENCE
GDN = GARDEN
GM = GAS METER
GRT = GRATE
GV = GAS VALVE
HL = HOOD LEVEL
LAN = LANDING
LID = MISCELLANEOUS PIT LID
LIP = KERB LIP
LP = LIGHT POLE
NS = NATURAL SURFACE
PAV = PAVING
POST = POST
PP = POWER POLE
RF = TOP OF ROOF
RR = ROOF RIDGE
SGN = SIGN
SHD = SHED
SIP = SEWER INSPECTION PIT
SL = SILL LEVEL
SMH = SEWER MAN HOLE
SF = SOFT FALL
SS = SUBSOIL
STR = STAIRS
SU = SEWER UNDERGROUND
SV = STOP VALVE
SVE = SEWER VENT
TFCE = TOP OF FENCE
TG = TOP OF GUTTER
TKB = TOP OF KERB
TL = TRAFFIC LIGHT
TP = TAP
TP = TOP OF PIPE
TR = TREE
TW = TOP WALL
UE = UNDERSIDE OF EAVE
UNS = UNDERSIDE
VC = VEHICLE CROSSING
VER = VERANDAH
WM = WATER METER

C = CSL = COMMUNICATIONS SLA
E = ESL = ELECTRICITY SLA
G = GSL = GAS SLA
SW = SWSL = STORMWATER SLA
U = USL = UNKNOWN SERVICE SLA
W = WSL = WATER SLA

TREE
SPREAD-DIAMETER-HEIGHT

NOTES:

- BOUNDARIES HAVE NOT BEEN DEFINED (TITLE DIMENSIONS ONLY) - BOUNDARY DEFINITION IS SUBJECT TO FURTHER SURVEY.
- A BASIC BOUNDARY SURVEY HAS BEEN UNDERTAKEN SUITABLE FOR COUNCIL DA SUBMISSION (TITLE DIMENSIONS ONLY) - BOUNDARY DEFINITION IS SUBJECT TO FURTHER SURVEY.
- IF CONSTRUCTION ON OR NEAR BOUNDARIES IS REQUIRED IT IS RECOMMENDED THAT THE BOUNDARIES OF THE LAND BE MARKED.
- THIS DETAIL SURVEY IS NOT A "SURVEY" AS DEFINED BY THE SURVEYING AND SPATIAL INFORMATION ACT, 2002.
- TREE SIZES ARE ESTIMATES ONLY.
- THIS PLAN HAS BEEN PREPARED FOR THE EXCLUSIVE USE OF GHD WOODHEAD
- RELATIONSHIP OF IMPROVEMENTS TO BOUNDARIES IS DIAGRAMMATIC ONLY. WHERE OFFSETS ARE CRITICAL THEY SHOULD BE CONFIRMED BY FURTHER SURVEY.
- EXCEPT WHERE SHOWN BY DIMENSION LOCATION OF DETAIL WITH RESPECT TO BOUNDARIES IS INDICATIVE ONLY.
- ONLY VISIBLE SERVICES HAVE BEEN LOCATED AND SOME UNDERGROUND SERVICES HAVE BEEN LOCATED. DIAL BEFORE YOU DIG SERVICES (ph 1100) SHOULD BE USED AND A FULL UTILITY INVESTIGATION, INCLUDING A UTILITY LOCATION SURVEY, SHOULD BE UNDERTAKEN BEFORE CARRYING OUT ANY CONSTRUCTION ACTIVITY IN OR NEAR THE SURVEYED AREA.
- SEWER MAIN PLOTTED FROM SYDNEY WATER SEWER DIAGRAM. LOCATION SHOULD BE MARKED ON SITE IF CRITICAL.
- CRITICAL SPOT LEVELS SHOULD BE CONFIRMED WITH SURVEYOR.
- THIS PLAN IS ONLY TO BE USED FOR THE PURPOSE OF DESIGNING NEW CONSTRUCTIONS.
- CONTOURS SHOWN DEPICT THE TOPOGRAPHY. THEY DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.
- CONTOUR INTERVAL - 0.5 metre. - SPOT LEVELS SHOULD BE ADOPTED.
- POSITION OF RIDGE LINES ARE DIAGRAMMATIC ONLY (NOT TO SCALE).
- THE INFORMATION IS ONLY TO BE USED AT A SCALE ACCURACY OF 1:100.
- DO NOT SCALE OFF THIS PLAN / FIGURED DIMENSIONS TO BE TAKEN IN PREFERENCE TO SCALED READINGS.
-
-
- ANY PERMITTED DOWNLOADING, ELECTRONIC STORAGE, DISPLAY, PRINT, COPY OR REPRODUCTION OF THIS SURVEY SHOULD CONTAIN NO ALTERATION OR ADDITION TO THE ORIGINAL SURVEY.
- THIS NOTICE MUST NOT BE ERASED.

DIAL BEFORE YOU DIG 1100
The Essential First Step.

TITLE INDICATES THAT LOT A IN D.P.309739, LOTS 12 & 13 IN D.P.17375, LOTS 1 IN D.P.333142 & LOT 11 IN D.P.17375 IS SUBJECT TO:
-RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
(E) -LOT A IN D.P.309739 IS SUBJECT TO A "PROPOSED EASEMENT FOR ELECTRICITY AND OTHER PURPOSES" AS SHOWN IN D.P.1207229

0 1 2 3 4 5 6 7 8 9 10
SCALE 1:100

1	FIRST ISSUE	15/07/16

HORIZONTAL DATUM:
CO-ORDINATE SYSTEM: MGA
MARKS ADOPTED: SSM41898, SSM83818
LGA: HORNSBY

VERTICAL DATUM:
DATUM: AUSTRALIAN HEIGHT DATUM (AHD)
B.M. ADOPTED: SSM41898
R.L. 185.074 (ORDER L2)
SOURCE: S.C.I.M.S. (10/04/17)

CLIENT:
GHD WOODHEAD
LEVEL 15, 133 CASTLEREAGH STREET
SYDNEY NSW 2000

SURVEY PLAN SHOWING DETAIL & LEVELS OVER LOT A IN D.P.309739, LOTS 12 & 13 IN D.P.17375, LOTS 1 IN D.P.333142 & LOT 11 IN D.P.17375
No. 48-58 MYRA STREET
WAHROONGA NSW 2076

C.M.S. Surveyors Pty Limited
ACN: 096 240 201
PO Box 463 Dee Why NSW 2099
2/99A South Creek Road, Dee Why NSW 2099
Telephone: (02) 9971 4802 Facsimile: (02) 9971 4822
E-mail: info@cmssurveyors.com.au

SURVEYED	DRAWN	CHECKED	APPROVED
TC/BB	ABS/TC	TC/BB	MDL

SURVEY INSTRUCTION	SCALE	DATE OF SURVEY
15978	1:100 @ A1	30/05/17

DRAWING NAME: 15978detail
SHEET: 5 OF 7
ISSUE: 1
CAD FILE: 15978detail 1.dwg

A1

LEGEND:

AW = AWNING
BIT = BITUMEN
BLD = EXTERNAL BUILDING
BS = BOTTOM OF STEP
BW = BOTTOM OF WALL
BW = BOTTOM WALL
CL = CENTERLINE
COM = COMMUNICATIONS PIT
CON = CONCRETE
DK = DECK
DP = DOWN PIPE
DRN = DRAIN
DS = DOOR SILL LEVEL
EK = ELECTRICITY KIOSK
EPIT = ELECTRICITY PIT
EPL = ELECTRICITY PILLAR
FCE = FENCE
GDN = GARDEN
GM = GAS METER
GRT = GRATE
GV = GAS VALVE
HL = HOOD LEVEL
LAN = LANDING
LID = MISCELLANEOUS PIT LID
LIP = KERB LIP
LP = LIGHT POLE
NS = NATURAL SURFACE
PAV = PAVING
POST = POST
PP = POWER POLE
RF = TOP OF ROOF
RR = ROOF RIDGE
SGN = SIGN
SHD = SHED
SIP = SEWER INSPECTION PIT
SL = SILL LEVEL
SMH = SEWER MAN HOLE
SF = SOFT FALL
SS = SUBSOIL
STR = STAIRS
SU = SEWER UNDERGROUND
SV = STOP VALVE
SVE = SEWER VENT
TFCE = TOP OF FENCE
TG = TOP OF GUTTER
TKB = TOP OF KERB
TL = TRAFFIC LIGHT
TP = TAP
TP = TOP OF PIPE
TR = TREE
TW = TOP WALL
UE = UNDERSIDE OF EAVE
UNS = UNDERSIDE
VC = VEHICLE CROSSING
VER = VERANDAH
WM = WATER METER

C — CSL = COMMUNICATIONS SLA
E — ESL = ELECTRICITY SLA
G — GSL = GAS SLA
SW — SWSL = STORMWATER SLA
U — USL = UNKNOWN SERVICE SLA
W — WSL = WATER SLA

TREE
SPREAD-DIAMETER-HEIGHT

NOTES:

- **BOUNDARIES HAVE NOT BEEN DEFINED (TITLE DIMENSIONS ONLY) - BOUNDARY DEFINITION IS SUBJECT TO FURTHER SURVEY.**
- **A BASIC BOUNDARY SURVEY HAS BEEN UNDERTAKEN SUITABLE FOR COUNCIL DA SUBMISSION (TITLE DIMENSIONS ONLY) - BOUNDARY DEFINITION IS SUBJECT TO FURTHER SURVEY.**
- **IF CONSTRUCTION ON OR NEAR BOUNDARIES IS REQUIRED IT IS RECOMMENDED THAT THE BOUNDARIES OF THE LAND BE MARKED.**
- **THIS DETAIL SURVEY IS NOT A "SURVEY" AS DEFINED BY THE SURVEYING AND SPATIAL INFORMATION ACT, 2002.**
- TREE SIZES ARE ESTIMATES ONLY.
- THIS PLAN HAS BEEN PREPARED FOR THE EXCLUSIVE USE OF GHD WOODHEAD
- RELATIONSHIP OF IMPROVEMENTS TO BOUNDARIES IS DIAGRAMMATIC ONLY. WHERE OFFSETS ARE CRITICAL THEY SHOULD BE CONFIRMED BY FURTHER SURVEY.
- EXCEPT WHERE SHOWN BY DIMENSION LOCATION OF DETAIL WITH RESPECT TO BOUNDARIES IS INDICATIVE ONLY.
- ONLY VISIBLE SERVICES HAVE BEEN LOCATED AND SOME UNDERGROUND SERVICES HAVE BEEN LOCATED. DIAL BEFORE YOU DIG SERVICES (ph 1100) SHOULD BE USED AND A FULL UTILITY INVESTIGATION, INCLUDING A UTILITY LOCATION SURVEY, SHOULD BE UNDERTAKEN BEFORE CARRYING OUT ANY CONSTRUCTION ACTIVITY IN OR NEAR THE SURVEYED AREA.
- SEWER MAIN PLOTTED FROM SYDNEY WATER SEWER DIAGRAM. LOCATION SHOULD BE MARKED ON SITE IF CRITICAL.
- CRITICAL SPOT LEVELS SHOULD BE CONFIRMED WITH SURVEYOR.
- THIS PLAN IS ONLY TO BE USED FOR THE PURPOSE OF DESIGNING NEW CONSTRUCTIONS.
- CONTOURS SHOWN DEPICT THE TOPOGRAPHY. THEY DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.
- CONTOUR INTERVAL - 0.5 metre. - SPOT LEVELS SHOULD BE ADOPTED.
- POSITION OF RIDGE LINES ARE DIAGRAMMATIC ONLY (NOT TO SCALE).
- THE INFORMATION IS ONLY TO BE USED AT A SCALE ACCURACY OF 1:100.
- DO NOT SCALE OFF THIS PLAN / FIGURED DIMENSIONS TO BE TAKEN IN PREFERENCE TO SCALED READINGS.
-
-
- ANY PERMITTED DOWNLOADING, ELECTRONIC STORAGE, DISPLAY, PRINT, COPY OR REPRODUCTION OF THIS SURVEY SHOULD CONTAIN NO ALTERATION OR ADDITION TO THE ORIGINAL SURVEY.
- THIS NOTICE MUST NOT BE ERASED.

DIAL BEFORE YOU DIG 1100
The Essential First Step.

TITLE INDICATES THAT LOT A IN D.P.309739, LOTS 12 & 13 IN D.P.17375, LOTS 1 IN D.P.333142 & LOT 11 IN D.P.17375 IS SUBJECT TO:

-RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
(E) -LOT A IN D.P.309739 IS SUBJECT TO A "PROPOSED EASEMENT FOR ELECTRICITY AND OTHER PURPOSES" AS SHOWN IN D.P.1207229

0 1 2 3 4 5 6 7 8 9 10
SCALE 1:100

1	FIRST ISSUE	15/07/16	

HORIZONTAL DATUM:
CO-ORDINATE SYSTEM: MGA
MARKS ADOPTED: SSM41898, SSM83818
LGA: HORNSBY

VERTICAL DATUM:
DATUM: AUSTRALIAN HEIGHT DATUM (AHD)
B.M. ADOPTED: SSM41898
R.L. 185.074 (ORDER L2)
SOURCE: S.C.I.M.S. (10/04/17)

CLIENT:
GHD WOODHEAD
LEVEL 15, 133 CASTLEREAGH STREET
SYDNEY NSW 2000

SURVEY PLAN SHOWING DETAIL & LEVELS OVER LOT A IN D.P.309739, LOTS 12 & 13 IN D.P.17375, LOTS 1 IN D.P.333142 & LOT 11 IN D.P.17375
No. 48-58 MYRA STREET
WAHROONGA NSW 2076

C.M.S. Surveyors Pty Limited
ACN: 096 240 201
PO Box 463 Dee Why NSW 2099
2/99A South Creek Road, Dee Why NSW 2099
Telephone: (02) 9971 4802 Facsimile: (02) 9971 4822
E-mail: info@cmssurveyors.com.au

SURVEYED	DRAWN	CHECKED	APPROVED
TC/BB	ABS/TC	TC/BB	MDL

SURVEY INSTRUCTION	SCALE	DATE OF SURVEY
15978	1:100 @ A1	30/05/17

DRAWING NAME: 15978detail
CAD FILE: 15978detail 1.dwg
SHEET: 6 OF 7
ISSUE: 1

LEGEND:

AW = AWNING
BIT = BITUMEN
BLD = EXTERNAL BUILDING
BS = BOTTOM OF STEP
BW = BOTTOM OF WALL
BW = BOTTOM WALL
CL = CENTERLINE
COM = COMMUNICATIONS PIT
CON = CONCRETE
DK = DECK
DP = DOWN PIPE
DRN = DRAIN
DS = DOOR SILL LEVEL
EK = ELECTRICITY KIOSK
EPIT = ELECTRICITY PIT
EPL = ELECTRICITY PILLAR
FCE = FENCE
GDN = GARDEN
GM = GAS METER
GRT = GRATE
GV = GAS VALVE
HL = HOOD LEVEL
LAN = LANDING
LID = MISCELLANEOUS PIT LID
LIP = KERB LIP
LP = LIGHT POLE
NS = NATURAL SURFACE
PAV = PAVING
POST = POST
PP = POWER POLE
RF = TOP OF ROOF
RR = ROOF RIDGE
SGN = SIGN
SHD = SHED
SIP = SEWER INSPECTION PIT
SL = SILL LEVEL
SMH = SEWER MAN HOLE
SF = SOFT FALL
SS = SUBSOIL
STR = STAIRS
SU = SEWER UNDERGROUND
SV = STOP VALVE
SVE = SEWER VENT
TFCE = TOP OF FENCE
TG = TOP OF GUTTER
TKB = TOP OF KERB
TL = TRAFFIC LIGHT
TP = TAP
TP = TOP OF PIPE
TR = TREE
TW = TOP WALL
UE = UNDERSIDE OF EAVE
UNS = UNDERSIDE
VC = VEHICLE CROSSING
VER = VERANDAH
WM = WATER METER

C — CSL = COMMUNICATIONS SLA
E — ESL = ELECTRICITY SLA
G — GSL = GAS SLA
SW — SWSL = STORMWATER SLA
U — USL = UNKNOWN SERVICE SLA
W — WSL = WATER SLA

TREE
SPREAD-DIAMETER-HEIGHT

NOTES:

- **BOUNDARIES HAVE NOT BEEN DEFINED (TITLE DIMENSIONS ONLY) - BOUNDARY DEFINITION IS SUBJECT TO FURTHER SURVEY.**
- **A BASIC BOUNDARY SURVEY HAS BEEN UNDERTAKEN SUITABLE FOR COUNCIL DA SUBMISSION (TITLE DIMENSIONS ONLY) - BOUNDARY DEFINITION IS SUBJECT TO FURTHER SURVEY.**
- **IF CONSTRUCTION ON OR NEAR BOUNDARIES IS REQUIRED IT IS RECOMMENDED THAT THE BOUNDARIES OF THE LAND BE MARKED.**
- **THIS DETAIL SURVEY IS NOT A "SURVEY" AS DEFINED BY THE SURVEYING AND SPATIAL INFORMATION ACT, 2002.**
- TREE SIZES ARE ESTIMATES ONLY.
- THIS PLAN HAS BEEN PREPARED FOR THE EXCLUSIVE USE OF GHD WOODHEAD
- RELATIONSHIP OF IMPROVEMENTS TO BOUNDARIES IS DIAGRAMMATIC ONLY. WHERE OFFSETS ARE CRITICAL THEY SHOULD BE CONFIRMED BY FURTHER SURVEY.
- EXCEPT WHERE SHOWN BY DIMENSION LOCATION OF DETAIL WITH RESPECT TO BOUNDARIES IS INDICATIVE ONLY.
- ONLY VISIBLE SERVICES HAVE BEEN LOCATED AND SOME UNDERGROUND SERVICES HAVE BEEN LOCATED. DIAL BEFORE YOU DIG SERVICES (ph 1100) SHOULD BE USED AND A FULL UTILITY INVESTIGATION, INCLUDING A UTILITY LOCATION SURVEY, SHOULD BE UNDERTAKEN BEFORE CARRYING OUT ANY CONSTRUCTION ACTIVITY IN OR NEAR THE SURVEYED AREA.
- SEWER MAIN POSITIONS FROM SYDNEY WATER SEWER DIAGRAM. LOCATION SHOULD BE MARKED ON SITE IF CRITICAL.
- CRITICAL SPOT LEVELS SHOULD BE CONFIRMED WITH SURVEYOR.
- THIS PLAN IS ONLY TO BE USED FOR THE PURPOSE OF DESIGNING NEW CONSTRUCTIONS.
- CONTOURS SHOWN DEPICT THE TOPOGRAPHY. THEY DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.
- CONTOUR INTERVAL - 0.5 metre. - SPOT LEVELS SHOULD BE ADOPTED.
- POSITION OF RIDGE LINES ARE DIAGRAMMATIC ONLY (NOT TO SCALE).
- THE INFORMATION IS ONLY TO BE USED AT A SCALE ACCURACY OF 1:100.
- DO NOT SCALE OFF THIS PLAN / FIGURED DIMENSIONS TO BE TAKEN IN PREFERENCE TO SCALED READINGS.
-
-
- ANY PERMITTED DOWNLOADING, ELECTRONIC STORAGE, DISPLAY, PRINT, COPY OR REPRODUCTION OF THIS SURVEY SHOULD CONTAIN NO ALTERATION OR ADDITION TO THE ORIGINAL SURVEY.
- THIS NOTICE MUST NOT BE ERASED.

DIAL BEFORE YOU DIG 1100
The Essential First Step.

TITLE INDICATES THAT LOT A IN D.P.309739, LOTS 12 & 13 IN D.P.17375, LOTS 1 IN D.P.333142 & LOT 11 IN D.P.17375 IS SUBJECT TO:
-RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
(E) -LOT A IN D.P.309739 IS SUBJECT TO A "PROPOSED, EASEMENT FOR ELECTRICITY AND OTHER PURPOSES" AS SHOWN IN D.P.1207229

0 1 2 3 4 5 6 7 8 9 10
SCALE 1:100

1	FIRST ISSUE	15/07/16	

HORIZONTAL DATUM:
CO-ORDINATE SYSTEM: MGA
MARKS ADOPTED: SSM41898, SSM83818
LGA: HORNSBY

VERTICAL DATUM:
DATUM: AUSTRALIAN HEIGHT DATUM (AHD)
B.M. ADOPTED: SSM41898
R.L. 185.074 (ORDER L2)
SOURCE: S.C.I.M.S. (10/04/17)

CLIENT:
GHD WOODHEAD
LEVEL 15, 133 CASTLEREAGH STREET
SYDNEY NSW 2000

SURVEY PLAN SHOWING DETAIL & LEVELS OVER LOT A IN D.P.309739, LOTS 12 & 13 IN D.P.17375, LOTS 1 IN D.P.333142 & LOT 11 IN D.P.17375
No. 48-58 MYRA STREET
WAHROONGA NSW 2076

C.M.S. Surveyors Pty Limited
ACN: 096 240 201
PO Box 463 Dee Why NSW 2099
2/99A South Creek Road, Dee Why NSW 2099
Telephone: (02) 9971 4802 Facsimile: (02) 9971 4822
E-mail: info@cmssurveyors.com.au

SURVEYED	DRAWN	CHECKED	APPROVED
TC/BB	ABS/TC	TC/BB	MDL

SURVEY INSTRUCTION	SCALE	DATE OF SURVEY
15978	1:100 @ A1	30/05/17

DRAWING NAME: 15978detail
CAD FILE: 15978detail 1.dwg
SHEET: 7 OF 7
ISSUE: 1

GHD

Level 15
133 Castlereagh Street
T: 61 2 9239 7100 F: 61 2 9239 7199 E: sydmail@ghd.com

GHDDocId/N:\AU\Sydney\Projects\21\26108\7. Waitara PS\04 Electrical, IT, Comm or Sec\14 Reports\Power and Comms infrastrcuture report\Waitara Power and Comms Infrastructure Report Rev B.docx

Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
A	Campbell Griffin *	Trevor McMaster		Mike Warren		25.08.17
B	Campbell Griffin *	Trevor McMaster		Bryson Millers		
C	Campbell Griffin *	Trevor McMaster		Bryson Millers		19-02-2018

* indicates signature on original issue of document or last issue of document

www.ghd.com