REPORT TO

FORTIS DEVELOPMENT GROUP

ON

DETAILED (STAGE 2) SITE INVESTIGATION

FOR

PROPOSED REDEVELOPMENT

AT

2A COOPER STREET, DOUBLE BAY, NSW

Date: 14 January 2022
Ref: E34336PHrpt2

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Executive Summary

Neoscape, on behalf of Fortis Development Group ('the client'), commissioned JK Environments (JKE) to undertake a Detailed (Stage 2) Site Investigation (DSI) for the proposed redevelopment at 2a Cooper Street, Double Bay, NSW ('the site'). The purpose of the investigation is to assess the data gap identified during a previous Preliminary (Stage 1) Site Investigation (PSI), namely the potential for groundwater contamination posed by the off-site potential contamination sources.

The PSI included a review of historical information, a walkover site inspection and soil sampling from three locations (a fourth was attempted but abandoned). Based on the scope of work undertaken for the PSI investigation, JKE identified the following potential contamination sources/areas of environmental concern (AEC):

- Fill material in the form of a sub-base beneath the basement and a churn layer at the surface of the natural soil;
- The on-site mechanical workshop during the 1950's and 1960's;
- Pesticides which may have been used beneath the buildings and/or around the site;
- Hazardous building materials which may be present as a result of former building and demolition activities, however, we note that the entire site was excavated following demolition of the previous building. These materials may also be present in the existing building on site; and
- Nearby, off-site areas including historical motor garages, panel beaters, printers and dry cleaner located up-gradient and cross-gradient of the site.

The PSI was considered adequate for the assessment of the on-site potential contamination sources. All of the soil results were less than the Site Assessment Criteria (SAC) and in general contaminant concentrations were very low. As there was no complete Source-Pathway-Receptor (SPR) link, the risk to the receptors was considered to be negligible.

The PSI concluded that groundwater contamination risks may exist from off-site sources and these potential risks have not been adequately characterised within the scope of the PSI.

The primary aims of the DSI were to make an assessment of the groundwater contamination conditions. The objectives were to:

- Assess the groundwater contamination conditions via implementation of a sampling and analysis program;
- Prepare an updated conceptual site model (CSM);
- Assess the potential risks posed by contamination to the receptors identified in the CSM (Tier 1 assessment);
- Assess whether the site is suitable or can be made suitable for the proposed development (from a contamination viewpoint); and
- Assess whether further intrusive investigation and/or remediation is required.

The DSI included groundwater sampling from three temporary monitoring wells at the site.

Low concentrations of arsenic and copper were detected in the groundwater that exceeded the ecological based SAC. Concentrations of these analytes were generally low and, based on the concentrations encountered in soil samples during the PSI, were considered likely to be associated with regional conditions rather than indicative of site specific contamination. On this basis, the risks posed to receptors is expected to be relatively low. Risks could increase if groundwater is discharged to the stormwater system during temporary construction dewatering (should this be required during the development) and these risks will need to be managed during this process as required.

We note that concentrations of Volatile Organic Compounds (VOCs), petroleum hydrocarbons (referred to as total recoverable hydrocarbons – TRHs), benzene, toluene, ethylbenzene and xylene (BTEX) and Polycyclic Aromatic Hydrocarbons (PAHs) in the groundwater samples were all less than the laboratory detection limits and therefore no complete SPR linkage or unacceptable risks were identified.

The investigation did not identify any unacceptable risks associated with the off-site sources of potential groundwater contamination.

Based on the findings of the investigation, JKE is of the opinion that the site is suitable for the proposed development.

The conclusions and recommendations should be read in conjunction with the limitations presented in the body of this report.

Table of Contents

List of Tables

Attachments

Abbreviations

Asbestos Fines/Fibrous Asbestos	**AF/FA**
Ambient Background Concentrations	**ABC**
Added Contaminant Limits	**ACL**
Asbestos Containing Material	**ACM**
Australian Drinking Water Guidelines	**ADWG**
Area of Environmental Concern	**AEC**
Australian Height Datum	**AHD**
Acid Sulfate Soil	**ASS**
Above-Ground Storage Tank	**AST**
Below Ground Level	**BGL**
Benzo(a)pyrene Toxicity Equivalent Factor	**BaP TEQ**
Bureau of Meteorology	**BOM**
Benzene, Toluene, Ethylbenzene, Xylene	**BTEX**
Cation Exchange Capacity	**CEC**
Contaminated Land Management	**CLM**
Contaminant(s) of Potential Concern	**CoPC**
Chain of Custody	**COC**
Conceptual Site Model	**CSM**
Development Application	**DA**
Dial Before You Dig	**DBYD**
Data Quality Indicator	**DQI**
Data Quality Objective	**DQO**
Detailed Site Investigation	**DSI**
Ecological Investigation Level	**EIL**
Ecological Screening Level	**ESL**
Environmental Management Plan	**EMP**
Excavated Natural Material	**ENM**
Environment Protection Authority	**EPA**
Environmental Site Assessment	**ESA**
Fibre Cement Fragment(s)	**FCF**
General Approval of Immobilisation	**GAI**
Health Investigation Level	**HILs**
Health Screening Level	**HSL**
Health Screening Level-Site Specific Assessment	**HSL-SSA**
International Organisation of Standardisation	**ISO**
JK Environments	**JKE**
Lab Control Spike	**LCS**
Light Non-Aqueous Phase Liquid	**LNAPL**
Map Grid of Australia	**MGA**
National Association of Testing Authorities	**NATA**
National Environmental Protection Measure	**NEPM**
Organochlorine Pesticides	**OCP**
Organophosphate Pesticides	**OPP**
Polycyclic Aromatic Hydrocarbons	**PAH**
Potential ASS	**PASS**
Polychlorinated Biphenyls	**PCBs**
Per-and Polyfluoroalkyl Substances	**PFAS**
Photo-ionisation Detector	**PID**
Protection of the Environment Operations	**POEO**
Practical Quantitation Limit	**PQL**
Quality Assurance	**QA**
Quality Control	**QC**
Remediation Action Plan	**RAP**

Relative Percentage Difference	**RPD**
Site Assessment Criteria	**SAC**
Sampling, Analysis and Quality Plan	**SAQP**
Site Audit Statement	**SAS**
Site Audit Report	**SAR**
Site Specific Assessment	**SSA**
Source, Pathway, Receptor	**SPR**
Specific Contamination Concentration	**SCC**
Standard Penetration Test	**SPT**
Standing Water Level	**SWL**
Trip Blank	**TB**
Toxicity Characteristic Leaching Procedure	**TCLP**
Total Recoverable Hydrocarbons	**TRH**
Trip Spike	**TS**
Upper Confidence Limit	**UCL**
United States Environmental Protection Agency	**USEPA**
Underground Storage Tank	**UST**
Virgin Excavated Natural Material	**VENM**
Volatile Organic Compounds	**VOC**
World Health Organisation	**WHO**
Work Health and Safety	**WHS**

Units

Litres	**L**
Metres BGL	**mBGL**
Metres	**m**
Millivolts	**mV**
Millilitres	**ml or mL**
Milliequivalents	**meq**
micro Siemens per Centimetre	**µS/cm**
Micrograms per Litre	**µg/L**
Milligrams per Kilogram	**mg/kg**
Milligrams per Litre	**mg/L**
Parts Per Million	**ppm**
Percentage	**%**
Percentage weight for weight	**%w/w**

1 INTRODUCTION

Neoscape, on behalf of Fortis Development Group ('the client'), commissioned JK Environments (JKE) to undertake a Detailed (Stage 2) Site Investigation (DSI) for the proposed redevelopment at 2a Cooper Street, Double Bay, NSW ('the site'). The purpose of the investigation is to assess the data gap identified during a previous Preliminary (Stage 1) Site Investigation (PSI), namely the potential for groundwater contamination posed by the off-site potential contamination sources. A summary of the PSI has been included in Section 2. The site location is shown on Figure 1 and the investigation was confined to the site boundaries as shown on Figure 2.

This report has been prepared to support the lodgement of a Development Application (DA) for the proposed redevelopment, with regards to State Environmental Planning Policy No.55 – Remediation of Land (1998)[1].

1.1 Proposed Development Details

Based on the details provided, it is understood that the proposed development includes the addition of two stories to the existing building at the site, together with possible deepening of the basement. The alterations and modifications include demolition and construction of interior walls, addition of electrical and communications room and services room, new fire stairs going to the upper floors, and a new lift which will run from the basement to the new fourth floor.

New footings may be required to support the additional stories and may include piles. Excavation for the lift is anticipated to extend to approximately 2m below the existing basement level. The redeveloped building will house retail premises on the ground floor and commercial space on the upper levels.

We note that the existing basement is tanked and based on the supplied architectural drawings the existing basement appears to extend to the full extent of the site boundaries.

1.2 Aims and Objectives

The primary aims of the investigation were to make an assessment of the groundwater contamination conditions. The objectives were to:

- Assess the groundwater contamination conditions via implementation of a sampling and analysis program;
- Prepare an updated conceptual site model (CSM);
- Assess the potential risks posed by contamination to the receptors identified in the CSM (Tier 1 assessment);
- Assess whether the site is suitable or can be made suitable for the proposed development (from a contamination viewpoint); and
- Assess whether further intrusive investigation and/or remediation is required.

[1] *State Environmental Planning Policy No. 55 – Remediation of Land 1998* (NSW) (referred to as SEPP55)

1.3 Scope of Work

The investigation was undertaken generally in accordance with a JKE proposal (Ref: EP55687PH) of 20 December 2021 and written acceptance from the client of 20 December 2021. The scope of work included the following:

- Review of site information, including background information from various sources outlined in the report;
- Preparation of an updated CSM;
- Design and implementation of a sampling, analysis and quality plan (SAQP);
- Interpretation of the analytical results against the adopted Site Assessment Criteria (SAC);
- Data Quality Assessment; and
- Preparation of a report including a Tier 1 risk assessment.

The scope of work was undertaken with reference to the National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)[2], other guidelines made under or with regards to the Contaminated Land Management Act (1997)[3] and SEPP55. A list of reference documents/guidelines is included in the appendices.

[2] National Environment Protection Council (NEPC), (2013). *National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013).* (referred to as NEPM 2013)

[3] Contaminated Land Management Act 1997 (NSW) (referred to as CLM Act 1997)

2 SITE INFORMATION

2.1 Background

A PSI was previously undertaken by JKE in 2021[4]. The PSI included a review of historical information, a walkover site inspection and soil sampling from three locations (a fourth was attempted but abandoned).

The review of historical information indicated the following:

- The site was occupied by a single building and included mechanical and engineering uses in the 1950's and 1960's. Several motor garages and dry cleaners were located in the vicinity of the site during this period;
- The site was redeveloped between 1968-1970 including excavation for the existing basement. The site has been occupied by the existing building since this time and has included various retail and commercial uses; and
- The majority of motor garages and dry cleaners in the immediate vicinity of the site had closed by the 1980's, with the exception of a panel beater located east of the site that continued operation into the 1990's.

Based on the scope of work undertaken for this investigation, JKE identified the following potential contamination sources/AEC:

- Fill material in the form of a sub-base beneath the basement and a churn layer at the surface of the natural soil;
- The on-site mechanical workshop during the 1950's and 1960's;
- Pesticides which may have been used beneath the buildings and/or around the site;
- Hazardous building materials which may be present as a result of former building and demolition activities, however, we note that the entire site was excavated following demolition of the previous building. These materials may also be present in the existing building on site; and
- Nearby, off-site areas including historical motor garages, panel beaters, printers and dry cleaner located up-gradient and cross-gradient of the site.

Fill was encountered beneath the pavement in all boreholes and extended to depths of approximately 0.8m to 1.5m. BH1 and BH2 were terminated in the fill at a maximum depth of approximately 1.5m. No odours or staining were observed. Natural sand was encountered beneath the fill in BH4 and extended to the termination of the borehole at a depth of approximately 1.8m.

Based on the weight of evidence collected and evaluated for the PSI, there was considered to be a low potential for acid sulfate soil (ASS) materials to be disturbed during the proposed development. We noted that the assessment was limited to a depth of 1.8m, which is 0.2m shallower than the proposed maximum excavation depth. However, given the very low results and the consistency of the natural soil in BH4 from 0.8m to 1.8m, this was not considered to impact the outcome of the assessment. Provided that soil disturbance does not occur below a depth of 2m from the existing basement floor level, an ASS management plan (ASSMP) was not considered necessary for the proposed development. If deeper soil disturbance or

[4] *Report to Brooklyn Lane Investment Pty Ltd on Preliminary (Stage 1) Site Investigation for Proposed Redevelopment at 2A Cooper Street, Double Bay, NSW*. (Ref: E34336PHrpt-rev1)*, dated 1 November 2021*

dewatering occurs, further investigation of the ASS conditions would be required to establish whether management is necessary.

All of the soil results were less than the Site Assessment Criteria (SAC) and in general contaminant concentrations were very low. As there was no complete Source-Pathway-Receptor (SPR) link, the risk to the receptors was considered to be negligible.

The PSI concluded that groundwater contamination risks may exist from off-site sources and these potential risks have not been adequately characterised within the scope of the PSI. The potential for groundwater contamination to pose a risk from historical off-site sources was considered to be relatively low. However, this remained a data gap that required further investigation. JKE considered that the site could be made suitable for the proposed development provided a groundwater investigation is undertaken to better assess the risk posed to receptors by the off-site potential contamination sources. In the event that risks are identified, these would need to be mitigated via remediation and/or management during construction.

2.2 Site Identification

Table 2-1: Site Identification

Current Site Owner (certificate of title):	Brooklyn Lane Investments Pty Limited
Site Address:	2a Cooper Street (also known as 24 Bay Street), Double Bay
Lot & Deposited Plan:	Lots 11 and 12 DP 4606
Current Land Use:	Commercial/Retail
Proposed Land Use:	Commercial/Retail
Local Government Authority:	Woollahra Municipal Council
Current Zoning:	B2 Local Centre
Site Area (m^2) (approx.):	380
RL (AHD in m) (approx.):	4
Geographical Location (decimal degrees) (approx.):	Latitude: -33.877416 Longitude: 151.241316
Site Location Plan:	Figure 1
Sample Location Plan:	Figure 2

2.3 Site Location and Regional Setting

The site is located in a mixed residential and commercial area of Double Bay and is bound by Cooper Street, Bay Street and Brooklyn Lane to the north, east and west of the site, respectively. The site is located approximately 400m to the south of Double Bay itself.

2.4 Topography

The regional topography is characterised by a north-east facing hillside that falls towards Double Bay. The site is located towards the toe of the hillside and has a gentle slope towards the north-east at approximately 1-3°. and the entire site has been excavated to accommodate the single basement level associated with the existing development.

2.5 Site Inspection

A walkover inspection of the site was undertaken by JKE on 20 August 2021. The inspection was limited to accessible areas of the site and immediate surrounds including the existing building basement. An internal inspection of the upper levels of the building was not undertaken.

A summary of the inspection findings is outlined in the following subsections:

2.5.1 Current Site Use and/or Indicators of Former Site Use

At the time of the inspection, the site was occupied by a commercial building with a single basement level that was vacant. Level 1 was occupied by site offices. Signage indicated that the ground floor had been previously occupied by retail premises including clothing shops and cafes.

2.5.2 Buildings, Structures and Roads

The existing building occupied the entire site and included three storeys with a single level basement. A driveway was located in the south-west corner of the site and provided access to a roller door and loading dock in this area.

2.5.3 Boundary Conditions, Soil Stability and Erosion

No surface soils were observed on the site.

2.5.4 Presence of Drums/Chemical Storage and Waste

No obvious indicators of chemical or waste storage were observed at the site.

2.5.5 Evidence of Cut and Fill

The basement was cut into the site was understood to extend below the groundwater table.

2.5.6 Visible or Olfactory Indicators of Contamination (odours, spills etc)

No obvious indicators of contamination were observed at the site.

2.5.7 Drainage and Services

Surface water would be expected to flow around the site/building towards the north and into local stormwater systems.

2.5.8 Sensitive Environments

Sensitive environments such as wetlands, ponds, creeks or extensive areas of natural vegetation were not identified on site or in the immediate surrounds.

2.5.9 Landscaped Areas and Visible Signs of Plant Stress

No landscaped areas were observed on the site.

2.6 Surrounding Land Use

During the site inspection, JKE observed the following land uses in the immediate surrounds:

- North – Royal Oak Hotel and a mixed retail and residential area;
- South – mixed retail and residential areas including a gym and beaty salon;
- East – mixed retail and residential, typically with retail on the ground floor that included a fast-food outlet and boutique stores; and
- West – a mixed commercial and residential area that included a doctor, dentist and optometrist.

JKE did not observe any land uses in the immediate surrounds that were identified as potential contamination sources for the site.

2.7 Underground Services

The 'Dial Before You Dig' (DBYD) plans were reviewed for the investigation in order to establish whether any major underground services exist at the site or in the immediate vicinity that could act as a preferential pathway for contamination migration. Major services were not identified that would be expected to act as preferential pathways for contamination migration.

2.8 Section 10.7 Planning Certificate

The section 10.7 (2 and 5) planning certificates were reviewed for the PSI. Copies of the certificates are attached in the appendices. A summary of the relevant information is outlined below:

- The land is not deemed to be: significantly contaminated; subject to a management order; subject of an approved voluntary management proposal; or subject to an on-going management order under the provisions of the CLM Act 1997;
- The land is not the subject of a Site Audit Statement (SAS);
- The land is located within an ASS risk area; and

- The land is not located in a heritage conservation area. However, the certificates indicate that there is an item of environmental heritage (Item 681 – Gaden House) situated on the land under the provisions of the Woollahra Local Environmental Plan 2014.

3 GEOLOGY AND HYDROGEOLOGY

3.1 Regional Geology

Regional geological information sourced from a Lotsearch *Environmental Risk and Planning Report* was reviewed for the PSI. The report indicated that the site is underlain by Quaternary aged deposits of medium to fine-grained marine sands with podsols.

3.2 Acid Sulfate Soil (ASS) Risk and Planning

A review of the ASS risk map prepared by Department of Land and Water Conservation (1997)[5] indicated that the site is located in an area of 'disturbed terrain'.

ASS information presented in the Lotsearch report indicated that the site is located within a Class 2 ASS risk area. Works in a Class 2 risk area that could pose an environmental risk in terms of ASS include all works below existing ground level and works by which the water table is likely to be lowered.

3.3 Hydrogeology

Hydrogeological information presented in the Lotsearch report indicated that the regional aquifer on-site and in the areas immediately surrounding the site includes porous, extensive highly productive aquifers. There was a total of 28 registered bores within 500m of the site. In summary:

- The nearest registered bore was located approximately 110m west of the site. This was utilised for domestic purposes;
- The majority of the bores were registered for domestic, irrigation or monitoring purposes; and
- The drillers log information from the closest registered bores typically identified deep sand.

The information reviewed for the PSI indicates that the subsurface conditions at the site are expected to consist of moderate to high permeability (alluvial) soils overlying relatively deep bedrock. Abstraction and use of groundwater at the site or in the immediate surrounds may be viable under these conditions, however the use of groundwater is not proposed as part of the development. Domestic use of groundwater is common in the area, however, noting that there is a reticulated water supply in the area, the use of groundwater as a drinking water resource is unlikely. The domestic bores are considered more likely to be utilised for irrigation.

Considering the local topography and surrounding land features, JKE anticipate groundwater to flow towards the north.

Intrusive investigation for the PSI identified groundwater directly beneath the basement slab.

3.4 Receiving Water Bodies

Surface water bodies were not identified in the immediate vicinity of the site. The closest surface water body is Double Bay located approximately 400m to the north of the site. Due to the permeable nature of regional soils, Double Bay is considered to be a potential receptor.

[5] Department of Land and Water Conservation, (1997). *1:25,000 Acid Sulfate Soil Risk Map (Series 9130S3, Ed 2)*

4 CONCEPTUAL SITE MODEL

NEPM (2013) defines a CSM as a representation of site related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM for the site is presented in the following sub-sections and is based on the site information (including the site inspection information) and the review of site history information. Reference should also be made to the figures attached in the appendices.

A review of the CSM in relation to source, pathway and receptor (SPR) linkages has been undertaken as part of the Tier 1 risk assessment process, as outlined in Section 8.

4.1 Potential Contamination Sources/AEC and CoPC

The potential contamination sources/AEC and CoPC are presented in the following table:

Table 4-1: Potential (and/or known) Contamination Sources/AEC and Contaminants of Potential Concern

Source / AEC	CoPC
Nearby off-site areas – Historical motor garages, panel beaters, printers and dry cleaners have been located up-gradient and cross-gradient of the site and are considered to be a potential source of contamination. The former on-site mechanics workshop was ruled out as a source of groundwater contamination based on the PSI soil results which identified no residual impacts from petroleum hydrocarbons.	Heavy metals (lead), petroleum hydrocarbons (referred to as total recoverable hydrocarbons – TRHs), benzene, toluene, ethylbenzene and xylene (BTEX) and VOCs, including tetrachloroethene (also known as perchloroethylene - PCE) and the breakdown products trichloroethene (TCE), cis-1,2-dichloroethene (cis-DCE) and vinyl chloride (VC).

4.2 Mechanism for Contamination, Affected Media, Receptors and Exposure Pathways

The mechanisms for contamination, affected media, receptors and exposure pathways relevant to the potential contamination sources/AEC are outlined in the following CSM table:

Table 4-2: CSM

Potential mechanism for contamination	The mechanisms for contamination from off-site sources could have occurred via 'top down' impacts and spills, or sub-surface release. Impacts to the site could occur via the migration of contaminated groundwater.
Affected media	Groundwater has been identified as potentially affected medium.
Receptor identification	Human receptors include site occupants/users (including adults and children - children would only be expected to access to ground floor retail areas and access would be expected to be infrequent), construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users, groundwater users and recreational water users within Double Bay. Ecological receptors include marine ecology in Double Bay.
Potential exposure pathways	Potential exposure pathways relevant to the human receptors include dermal absorption (all contaminants) and vapours (volatile TRH, naphthalene, BTEX and VOCs). The potential for exposure would typically be associated with the

	construction and excavation works, and future use of the site. Potential exposure pathways for ecological receptors include primary/direct contact and ingestion. Exposure during future site use could occur via direct contact with groundwater during the lift pit and other bulk excavation or inhalation of vapours (e.g. volatilisation from groundwater contamination) within enclosed spaces such as buildings and basements.
Potential exposure mechanisms	The following have been identified as potential exposure mechanisms for site contamination: • Vapour intrusion into the basement and/or building (from volatilisation of contaminants from groundwater); • Migration of groundwater off-site and into nearby water bodies, including aquatic ecosystems and those being used for recreation; and • Migration of groundwater off-site into areas where groundwater is being utilised as a resource (i.e. for irrigation).
Presence of preferential pathways for contaminant movement	No obvious preferential pathways for contamination were identified at the site.

5 SAMPLING, ANALYSIS AND QUALITY PLAN

5.1 Data Quality Objectives (DQO)

Data Quality Objectives (DQOs) were developed to define the type and quality of data required to achieve the project objectives outlined in Section 1.2. The DQOs were prepared with reference to the process outlined in Schedule B2 of NEPM (2013). The seven-step DQO approach for this project is outlined in the following sub-sections.

The DQO process is validated in part by the Data Quality Assurance/Quality Control (QA/QC) Evaluation. The Data (QA/QC) Evaluation is summarised in Section 7.1and the detailed evaluation is provided in the appendices.

5.1.1 Step 1 - State the Problem

The PSI identified a data gap in relation to potential groundwater contamination from off-site sources. Investigation of the groundwater was required to assess whether contamination-related risks exist and establish whether the site is suitable, or whether remediation is required to render the site suitable for the proposed development. This information will be considered by the consent authority in exercising its planning functions in relation to the development proposal.

The DQOs were developed by the author of this report and checked by the reviewer. Both the author and reviewer were joint decision-makers in relation to Step 2 of the DQO process.

The investigation was constrained by the access limitations associated with the existing structures, including the tanked basement.

5.1.2 Step 2 - Identify the Decisions of the Study

The objectives of the investigation are outlined in Section 1.2. The decisions to be made reflect these objectives and are as follows:

- Are any results above the SAC?
- Do potential risks associated with groundwater contamination exist, and if so, what are they?
- Is remediation required?
- Is the site suitable for the proposed development, or can the site be made suitable subject to further characterisation and/or remediation?

5.1.3 Step 3 - Identify Information Inputs

The primary information inputs required to address the decisions outlined in Step 2 include the following:

- Existing relevant environmental data from previous reports;
- Sampling of groundwater;
- Observations of sub-surface variables such as petroleum odours and sheen, and groundwater physiochemical parameters;
- Laboratory analysis of groundwater for the CoPC identified in the CSM; and
- Field and laboratory QA/QC data.

5.1.4 Step 4 - Define the Study Boundary

The sampling will be confined to the site boundaries as shown in Figure 2 and will be limited vertically to a depth of 1m (spatial boundary) below the basement slab. The sampling was completed on 5 January 2022 (temporal boundary), however, we note that the monitoring well details were reported on the original borehole logs dated 8 September 2021. The assessment of potential risk to adjacent land users has been made based on data collected within the site boundary.

The sampling depth was limited due to access constraints.

5.1.5 Step 5 - Develop an Analytical Approach (or Decision Rule)

5.1.5.1 Tier 1 Screening Criteria

The laboratory data will be assessed against relevant Tier 1 screening criteria (referred to as SAC), as outlined in Section 6. Exceedances of the SAC do not necessarily indicate a requirement for remediation or a risk to human health and/or the environment. Exceedances are considered in the context of the CSM and valid SPR-linkages.

For this investigation, the individual results have been assessed as either above or below the SAC.

5.1.5.2 Field and Laboratory QA/QC

Field QA/QC included analysis of inter-laboratory duplicates, intra-laboratory duplicates, trip spike and trip blank samples. Further details regarding the sampling and analysis undertaken, and the acceptable limits adopted, is provided in the Data Quality (QA/QC) Evaluation in the appendices.

The suitability of the laboratory data is assessed against the laboratory QA/QC criteria which is outlined in the attached laboratory reports. These criteria were developed and implemented in accordance with the laboratory's National Association of Testing Authorities, Australia (NATA) accreditation and align with the acceptable limits for QA/QC samples as outlined in NEPM (2013) and other relevant guidelines.

In the event that acceptable limits are not met by the laboratory analysis, other lines of evidence are reviewed (e.g. field observations of samples, preservation, handling etc) and, where required, consultation with the laboratory is undertaken in an effort to establish the cause of the non-conformance. Where uncertainty exists, JKE typically adopt the most conservative concentration reported (or in some cases, consider the data from the affected sample as an estimate).

5.1.5.3 Appropriateness of Practical Quantitation Limits (PQLs)

The PQLs of the analytical methods are considered in relation to the SAC to confirm that the PQLs are less than the SAC. In cases where the PQLs are greater than the SAC, a discussion of this is provided.

5.1.6 Step 6 – Specify Limits on Decision Errors

To limit the potential for decision errors, a range of quality assurance processes are adopted. A quantitative assessment of the potential for false positives and false negatives in the analytical results is undertaken with reference to Schedule B(3) of NEPM (2013) using the data quality assurance information collected.

Decision errors can be controlled through the use of hypothesis testing. The test can be used to show either that the baseline condition is false or that there is insufficient evidence to indicate that the baseline condition is false. The null hypothesis is an assumption that is assumed to be true in the absence of contrary evidence. For this investigation, the null hypothesis has been adopted which is that, there is considered to be a complete SPR linkage for the CoPC identified in the CSM unless this linkage can be proven not to (or unlikely to) exist. The null hypothesis has been adopted for this investigation.

Quantitative limits on decision errors were not established as the sample plan was not probabilistic.

5.1.7 Step 7 - Optimise the Design for Obtaining Data

The most resource-effective design will be used in an optimum manner to achieve the investigation objectives. Adjustment of the investigation design can occur following consultation or feedback from project stakeholders. For this investigation, the design was optimised via consideration of the various lines of evidence used to select the sample locations, the media being sampled, and also by the way in which the data were collected.

The sampling plan and methodology are outlined in the following sub-sections.

5.2 Groundwater Sampling Plan and Methodology

The groundwater sampling plan and methodology is outlined in the table below:

Table 5-1: Groundwater Sampling Plan and Methodology

Aspect	Input
Sampling Plan	Groundwater monitoring wells were installed in BH1 (MW1), BH2 (MW2) and BH4 (MW4) that were previously drilled for the PSI. The wells were positioned to gain a snap-shot of the groundwater conditions. Considering the topography and the location of the nearest down-gradient water body, MW2 and MW4 were considered to be in the up-gradient area of the site and would be expected to provide an indication of groundwater flowing onto (beneath) the site from the north. MW1 was considered to be in the intermediate to down-gradient area of the site and would be expected to provide an indication of groundwater flowing across (beneath) the site and beyond the down-gradient site boundary.
Monitoring Well Installation Procedure	The monitoring well construction details are documented on the appropriate borehole logs attached in the appendices. The monitoring wells were installed to depths of approximately 0.42m to 1m below the basement slab level. The wells were generally constructed as follows: • A spear point end cap was attached the to the base of a 1.5m long section of 50mm diameter Class 18 PVC (machine slotted screen). The PVC was pushed and hammered in to a suitable depth to enable the well to intersect groundwater; and • The PVC was removed following sampling and disposed.
Groundwater Sampling	Due to the tanked basement, the wells were not developed prior to sampling. This was because a temporary plug was removed from the boreholes to facilitate installation of the wells, and if

Aspect	Input
	left unattended, groundwater would have flooded the basement. Groundwater samples were obtained on 5 January 2021. Prior to sampling, the monitoring wells were checked for the presence of Light Non-Aqueous Phase Liquids (LNAPLs) using an inter-phase probe electronic dip meter. The monitoring well head space was checked for VOCs using a calibrated PID unit. The samples were obtained using a peristaltic pump. During sampling, the following parameters were monitored using calibrated field instruments: • Standing water level (SWL) using an electronic dip meter; and • pH, temperature, electrical conductivity (EC), dissolved oxygen (DO) and redox potential (Eh) using a YSI Multi-probe water quality meter. Steady state conditions were considered to have been achieved when the difference in the pH measurements was less than 0.2 units, the difference in conductivity was less than 10%, and when the SWL was not in drawdown. Groundwater samples were obtained directly from the single use PVC tubing and placed in the sample containers. Duplicate samples were obtained by alternate filling of sample containers. This technique was adopted to minimise disturbance of the samples and loss of volatile contaminants associated with mixing of liquids in secondary containers, etc. Groundwater removed from the wells during development and sampling was transported to JKE in jerry cans and stored in holding drums prior to collection by a licensed waste water contractor for off-site disposal. The field monitoring record and calibration data are attached in the appendices.
Decontaminant and Sample Preservation	The samples were preserved with reference to the analytical requirements and placed in an insulated container with ice or ice bricks. On completion of the fieldwork, the samples were temporarily stored in a fridge at the JKE office, before being delivered in the insulated sample container to a NATA registered laboratory for analysis under standard COC procedures.

5.2.1 Laboratory Analysis

Samples were analysed by an appropriate, NATA Accredited laboratory using the analytical methods detailed in Schedule B(3) of NEPM 2013. Reference should be made to the laboratory reports attached in the appendices for further details.

Table 5-2: Laboratory Details

Samples	Laboratory	Report Reference
All primary samples and field QA/QC samples including (intra-laboratory duplicates, trip blanks, trip spikes and field rinsate samples)	Envirolab Services Pty Ltd NSW, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	286315
Inter-laboratory duplicates	Envirolab Services Pty Ltd VIC, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	29438

6 SITE ASSESSMENT CRITERIA (SAC)

The SAC were derived from the NEPM 2013 and other guidelines as discussed in the following sub-sections. The guideline values for individual contaminants are presented in the attached report tables and further explanation of the various criteria adopted is provided in the appendices.

6.1 Groundwater

Groundwater data were compared to relevant Tier 1 screening criteria in accordance with NEPM (2013), following an assessment of environmental values in accordance with the Guidelines for the Assessment and Management of Groundwater Contamination (2007)[6]. Environmental values for this investigation include aquatic ecosystems, human uses, and human-health risks in non-use scenarios.

6.1.1 Human Health

- The NEPM (2013) HSLs were not applicable for this project as the basement will intersect groundwater. On this basis, JKE have undertaken a site-specific assessment (SSA) for the Tier 1 screening of human health risks posed by volatile contaminants in groundwater. The assessment included selection of alternative Tier 1 criteria that were considered suitably protective of human health. These criteria are based on drinking water guidelines and have been referred to as HSL-SSA. The criteria were based on the following (as shown in the attached report tables):
    - Australian Drinking Water Guidelines 2011 (updated 2021)[7] for BTEX compounds and selected VOCs;
    - World Health Organisation (WHO) document titled Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality (2008)[8] for petroleum hydrocarbons;
    - USEPA Region 9 screening levels for naphthalene (threshold value for tap water); and
    - The use of the laboratory PQLs for other contaminants where there were no Australian guidelines.
- The ADWG 2011 were multiplied by a factor of 10 to assess potential risks associated with incidental/recreational-type exposure to groundwater (e.g. within down-gradient water bodies, with bore water used for irrigation, or with seepage water in the basement). These have been deemed as 'recreational' SAC.

6.1.2 Environment (Ecological - aquatic ecosystems)

Groundwater Investigation Levels (GILs) for 95% protection of marine species were adopted based on the Default Guideline Values in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018)[9]. The 99% trigger values were adopted where required to account for bioaccumulation. Low and

[6] NSW Department of Environment and Conservation, (2007). *Guidelines for the Assessment and Management of Groundwater Contamination.*
[7] National Health and Medical Research Council (NHMRC), (2021). *National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011* (referred to as ADWG 2011)
[8] World Health Organisation (WHO), (2008). *Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality* (referred to as WHO 2008)
[9] Australian and New Zealand Governments (ANZG), (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia (referred to as ANZG 2018)

moderate reliability trigger values were also adopted for some contaminants where high-reliability trigger values don’t exist.

7 RESULTS

7.1 Summary of Data (QA/QC) Evaluation

The data evaluation is presented in the appendices. In summary, JKE are of the opinion that the data are adequately precise, accurate, representative, comparable and complete to serve as a basis for interpretation to achieve the investigation objectives.

7.2 Subsurface Conditions

A summary of the subsurface conditions encountered during the PSI is presented in the following table. Reference should be made to the borehole logs attached in the appendices for further details.

Table 7-1: Summary of Subsurface Conditions

Profile	Description
Pavement	Concrete pavement, approximately 500mm thick was encountered at the surface in all three boreholes originally. However, as noted previously, a temporary plug was removed from the boreholes to facilitate the groundwater investigation.
Fill	Fill was encountered beneath the pavement in all boreholes and extended to depths of approximately 0.8m to 1.5m. BH1 and BH2 were terminated in the fill at a maximum depth of approximately 1.5m. The fill typically comprised silty sand with a trace of clay nodules. The fill in BH4 also contained a trace of ash. No odours or staining were observed.
Natural Soil	Sand was encountered beneath the fill in BH4 and extended to the termination of the borehole at a depth of approximately 1.8m.
Groundwater	All boreholes were drilled within a tanked basement. Groundwater seepage was encountered immediately following removal of the concrete pavement in all boreholes. The boreholes were reopened to allow installation of groundwater monitoring wells for the DSI.

7.3 Field Screening

A summary of the field screening results is presented in the following table:

Table 7-2: Summary of Field Screening

Aspect	Details
Groundwater Depth & Flow	The SWL measured in the monitoring wells installed at the site ranged from 0.26m to 0.8m. Groundwater is expected to flow to the north based on the topography and nearest down-gradient receptor (i.e. Double Bay).
Groundwater Field Parameters	Field measurements recorded during sampling were as follows: - pH ranged from 6.63m to 6.91m; - EC ranged from 628µS/cm to 705µS/cm; - Eh ranged from 31.1mV to 55.7mV; and - DO ranged from 0.5ppm to 5.1ppm.

Aspect	Details
LNAPLs petroleum hydrocarbons	Phase separated product (i.e. LNAPL) were not detected using the interphase probe during groundwater sampling.

7.4 Groundwater Laboratory Results

The soil laboratory results were assessed against the SAC presented in Section 6.1. Individual SAC are shown in the report tables attached in the appendices. A summary of the results is presented below:

Table 7-3: Summary of Groundwater Laboratory Results – Human Health and Environmental (Ecological)

Analyte	N ^	Max. (µg/L)	N> Human Health SAC	N> Ecological SAC	Comments
Arsenic	3	10	0	1	The arsenic result of 10µg/L in the MW2 sample exceeded the ecological based SAC of 2.3µg/L.
Cadmium	3	<0.1	0	0	-
Chromium (total)	3	<1	0	0	-
Copper	3	14	0	1	The copper results of 14µg/L and 3µg/L in the MW1 and WDUP2 (duplicate of MW4) samples, respectively, exceeded the ecological based SAC of 1.3µg/L.
Lead	3	4	0	0	-
Mercury	3	0.08	0	0	-
Nickel	3	6	0	0	-
Zinc	3	8	0	0	-
Total PAHs	3	<0.1	0	0	-
Benzo(a)pyrene	3	<0.1	0	0	-
Naphthalene	3	<0.2	0	0	-
TRH F1	3	<10	0	0	-
TRH F2	3	<50	0	0	-
TRH F3	3	<100	NSL	0	-
TRH F4	3	<100	NSL	0	-
Benzene	3	<1	0	0	-
Toluene	3	<1	0	0	-

Analyte	N ^	Max. (µg/L)	N> Human Health SAC	N> Ecological SAC	Comments
Ethylbenzene	3	<1	0	0	-
m+p-Xylene	3	<2	0	0	-
o-Xylene	3	<1	0	0	-
Total Xylenes	3	<1	0	0	-
VOCs	3	<1/<10	0	0	No VOCs were detected in any of the samples.
pH	3	6.9	0	1	The pH of 6.9 in the MW1 sample was slightly below the acceptable range of 7-8.5 for marine waters.
EC	3	790µS/cm	NSL	NSL	-

Notes:

^: Primary samples

N: Total number

NSL: No set limit

NL: Not limiting

8 DISCUSSION

8.1 Contamination Sources/AEC and Potential for Site Contamination

The PSI identified nearby off-site areas that may pose a groundwater contamination risk, including historical motor garages, panel beaters, printers and dry cleaners that have been located up-gradient and cross-gradient of the site. The groundwater data collected for the investigation is discussed further in the following subsection, as part of the Tier 1 risk assessment.

8.2 Tier 1 Risk Assessment and Review of CSM

For a contaminant to represent a risk to a receptor, the following three conditions must be present:

1. Source – The presence of a contaminant;
2. Pathway – A mechanism or action by which a receptor can become exposed to the contaminant; and
3. Receptor – The human or ecological entity which may be adversely impacted following exposure to contamination.

If one of the above components is missing, the potential for adverse risks is relatively low.

8.2.1 Groundwater

Low concentrations of arsenic and copper were detected in the groundwater that exceeded the ecological based SAC. Concentrations of these analytes were generally low and, based on the concentrations encountered in soil samples during the PSI, were considered likely to be associated with regional conditions rather than indicative of site specific contamination. On this basis, the risks posed to receptors is expected to be relatively low. Risks could increase if groundwater is discharged to the stormwater system during temporary construction dewatering (should this be required during the development) and these risks will need to be managed during this process as required.

We note that concentrations of VOCs, BTEX, TRH and PAHs in the groundwater samples were all less than the laboratory detection limits and therefore no complete SPR linkage or unacceptable risks were identified.

8.3 Decision Statements

The decision statements are addressed below:

Are any results above the SAC?

Some arsenic and copper results in the groundwater samples exceeded the ecological based SAC.

Do potential risks associated with groundwater contamination exist, and if so, what are they?

The heavy metals are considered likely to be associated with regional conditions as discussed in Section 8.2.1. The risk associated with the heavy metals to identified receptors under the proposed site use are low, however, risks will need to be managed if temporary construction dewatering occurs.

Is remediation required?

No triggers for remediation have been identified during the DSI.

Is the site suitable for the proposed development, or can the site be made suitable subject to further characterisation and/or remediation?

Based on the current data, the site is considered to be suitable for the proposed development, without the need for remediation.

8.4 Data Gaps

An assessment of data gaps is provided in the following table:

Table 8-1: Data Gap Assessment

Data Gap	Assessment
SafeWork records not reviewed	Given the excavation of the entire site following use as mechanical workshop, it is considered unlikely that any sub-surface storage of dangerous goods would exist. These records should be reviewed when available, however, it is unlikely they would change the outcomes and conclusions of this report.

9 CONCLUSIONS AND RECOMMENDATIONS

The investigation included a review of the PSI and groundwater sampling from three monitoring wells. Based on the results of the PSI, the potential for groundwater contamination to pose a risk from historical off-site sources was considered to be relatively low. However, this remained a data gap that required further investigation.

The investigation did not identify any unacceptable risks associated with the off-site sources of potential groundwater contamination. Groundwater contaminant concentrations were generally low and we note that concentrations of TRH, BTEX, PAHs and VOC were all less than the laboratory detection limits.

Based on the findings of the investigation, JKE is of the opinion that the site is suitable for the proposed development described in Section 1.1. There is considered to be a relatively low potential for contamination-related unexpected finds to occur at the site during the proposed development works. Unexpected finds would typically be able to be identified by visual or olfactory indicators and could include:

- Waste materials in fill, including building and demolition waste;
- Fibre cement fragments (e.g. ACM);
- Stained fill/soil;
- Odorous soils (e.g. hydrocarbon odours) or groundwater; and/or
- Slag and/or coal wash.

The following should be implemented in the event of an unexpected find:

- All work in the immediate vicinity should cease and temporary barricades should be erected to isolate the area;
- A suitably qualified contaminated land consultant[10] should be engaged to inspect the find and provide advice on the appropriate course of action. In the event that the unexpected find triggers remediation, the requirements of SEPP55 must be addressed (e.g. notifications to Council); and
- Any actions should be implemented and validated to demonstrate that there are no unacceptable risks to the receptors.

At this stage the is no requirement to report to the NSW EPA under the NSW EPA Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997 (2015)[11].

JKE consider that the report objectives outlined in Section 1.2 have been addressed.

[10] JKE recommend that the consultancy engaged for the work be a member of the Australian Contaminated Land Consultants Associated (ACLCA), and/or the individual undertaking the works be certified under one of the NSW EPA endorsed certified practitioner schemes

[11] NSW EPA, (2015). *Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997* (referred to as Duty to Report Contamination)

10 LIMITATIONS

The report limitations are outlined below:

- JKE accepts no responsibility for any unidentified contamination issues at the site. Any unexpected problems/subsurface features that may be encountered during development works should be inspected by an environmental consultant as soon as possible;
- Previous use of this site may have involved excavation for the foundations of buildings, services, and similar facilities. In addition, unrecorded excavation and burial of material may have occurred on the site. Backfilling of excavations could have been undertaken with potentially contaminated material that may be discovered in discrete, isolated locations across the site during construction work;
- This report has been prepared based on site conditions which existed at the time of the investigation; scope of work and limitation outlined in the JKE proposal; and terms of contract between JKE and the client (as applicable);
- The conclusions presented in this report are based on investigation of conditions at specific locations, chosen to be as representative as possible under the given circumstances, visual observations of the site and immediate surrounds and documents reviewed as described in the report;
- Subsurface soil and rock conditions encountered between investigation locations may be found to be different from those expected. Groundwater conditions may also vary, especially after climatic changes;
- The investigation and preparation of this report have been undertaken in accordance with accepted practice for environmental consultants, with reference to applicable environmental regulatory authority and industry standards, guidelines and the assessment criteria outlined in the report;
- Where information has been provided by third parties, JKE has not undertaken any verification process, except where specifically stated in the report;
- JKE has not undertaken any assessment of off-site areas that may be potential contamination sources or may have been impacted by site contamination, except where specifically stated in the report;
- JKE accept no responsibility for potentially asbestos containing materials that may exist at the site. These materials may be associated with demolition of pre-1990 constructed buildings or fill material at the site;
- JKE have not and will not make any determination regarding finances associated with the site;
- Additional investigation work may be required in the event of changes to the proposed development or landuse. JKE should be contacted immediately in such circumstances;
- Material considered to be suitable from a geotechnical point of view may be unsatisfactory from a soil contamination viewpoint, and vice versa; and
- This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose.

Important Information About This Report

These notes have been prepared by JKE to assist with the assessment and interpretation of this report.

The Report is based on a Unique Set of Project Specific Factors
This report has been prepared in response to specific project requirements as stated in the JKE proposal document which may have been limited by instructions from the client. This report should be reviewed, and if necessary, revised if any of the following occur:

- The proposed land use is altered;
- The defined subject site is increased or sub-divided;
- The proposed development details including size, configuration, location, orientation of the structures or landscaped areas are modified;
- The proposed development levels are altered, eg addition of basement levels; or
- Ownership of the site changes.

JKE will not accept any responsibility whatsoever for situations where one or more of the above factors have changed since completion of the investigation. If the subject site is sold, ownership of the investigation report should be transferred by JKE to the new site owners who will be informed of the conditions and limitations under which the investigation was undertaken. No person should apply an investigation for any purpose other than that originally intended without first conferring with the consultant.

Changes in Subsurface Conditions
Subsurface conditions are influenced by natural geological and hydrogeological process and human activities. Groundwater conditions are likely to vary over time with changes in climatic conditions and human activities within the catchment (e.g. water extraction for irrigation or industrial uses, subsurface waste water disposal, construction related dewatering). Soil and groundwater contaminant concentrations may also vary over time through contaminant migration, natural attenuation of organic contaminants, ongoing contaminating activities and placement or removal of fill material. The conclusions of an investigation report may have been affected by the above factors if a significant period of time has elapsed prior to commencement of the proposed development.

This Report is based on Professional Interpretations of Factual Data
Site investigations identify actual subsurface conditions at the actual sampling locations at the time of the investigation. Data obtained from the sampling and subsequent laboratory analyses, available site history information and published regional information is interpreted by geologists, engineers or environmental scientists and opinions are drawn about the overall subsurface conditions, the nature and extent of contamination, the likely impact on the proposed development and appropriate remediation measures.

Actual conditions may differ from those inferred, because no professional, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an investigation indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimise the impact. For this reason, site owners should retain the services of their consultants throughout the development stage of the project, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

Investigation Limitations
Although information provided by a site investigation can reduce exposure to the risk of the presence of contamination, no environmental site investigation can eliminate the risk. Even a rigorous professional investigation may not detect all contamination on a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which showed no signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant which may occur; only the most likely contaminants are screened.

Misinterpretation of Site Investigations by Design Professionals

Costly problems can occur when other design professionals develop plans based on misinterpretation of an investigation report. To minimise problems associated with misinterpretations, the environmental consultant should be retained to work with appropriate professionals to explain relevant findings and to review the adequacy of plans and specifications relevant to contamination issues.

Logs Should not be Separated from the Investigation Report

Borehole and test pit logs are prepared by environmental scientists, engineers or geologists based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these should not be re-drawn for inclusion in site remediation or other design drawings, as subtle but significant drafting errors or omissions may occur in the transfer process. Photographic reproduction can eliminate this problem, however contractors can still misinterpret the logs during bid preparation if separated from the text of the investigation. If this occurs, delays, disputes and unanticipated costs may result. In all cases it is necessary to refer to the rest of the report to obtain a proper understanding of the investigation. Please note that logs with the 'Environmental Log' header are not suitable for geotechnical purposes as they have not been peer reviewed by a Senior Geotechnical Engineer.

To reduce the likelihood of borehole and test pit log misinterpretation, the complete investigation should be available to persons or organisations involved in the project, such as contractors, for their use. Denial of such access and disclaiming responsibility for the accuracy of subsurface information does not insulate an owner from the attendant liability. It is critical that the site owner provides all available site information to persons and organisations such as contractors.

Read Responsibility Clauses Closely

Because an environmental site investigation is based extensively on judgement and opinion, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, model clauses have been developed for use in written transmittals. These are definitive clauses designed to indicate consultant responsibility. Their use helps all parties involved recognise individual responsibilities and formulate appropriate action. Some of these definitive clauses are likely to appear in the environmental site investigation, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to any questions.

Appendix A: Report Figures

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

This plan should be read in conjunction with the Environmental report.

Title: **SITE LOCATION PLAN**

Location: 2A COOPER STREET, DOUBLE BAY, NSW

Project No: E34336PH

Figure No: 1

JKEnvironments

PLOT DATE: 20/09/2021 11:08:02 AM DWG FILE: Z:\S EIS\SC EIS JOBS\34000'S\E34336PH DOUBLE BAY\CAD\E34336PH.DWG

ADJOINING BUILDING
16-22 BAY STREET

BH1 (>1.2)

BH2 (>1.5)

BH3

BH4 (0.8)

FCL 1.83

FCL 3.45

NEW
LIFT

LEGEND

APPROXIMATE SITE BOUNDARY	
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
BH/MW(Fill Depth)	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)

SCALE 1:100 @A3 METRES

This plan should be read in conjunction with the Environmental report.

Title: **SAMPLE LOCATION PLAN**

Location: 2A COOPER STREET, DOUBLE BAY, NSW

Project No: E34336PH

Figure No: 2

JKEnvironments

PLOT DATE: 12/01/2022 4:05:39 PM DWG FILE: S:\5 EIS\5C EIS JOBS\34000'S\E34336PH DOUBLE BAY\CAD\E34336PH.DWG

Appendix B: Proposed Development Plans

SPECIFICATION NOTES:

GENERAL:

1. ALL DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL OTHER DRAWINGS ISSUED, ENGINEERING AND OTHER CONSULTANTS DRAWINGS, SPECIFICATIONS, AND WITH SUCH OTHER DOCUMENTATION OR WRITTEN INSTRUCTION ISSUED.
2. NOTES ON ANY DRAWING APPLY TO ALL DRAWINGS IN THE SET UNLESS NOTED OTHERWISE.
3. ALL DIMENSIONS ARE SHOWN IN MILLIMETRES AND RELATIVE HEIGHTS IN METRES. ALL DIMENSIONS ARE TO BE CHECKED ON SITE AND NO WORK SHALL OCCUR FROM DIMENSIONS SCALED FROM DRAWINGS.
4. DRAWINGS OF A LARGER SCALE TAKE PRECEDENT OVER DRAWINGS OF A LESSER SCALE. WHERE ANY CONFLICT OR AMBIGUITY IS FOUND IN DRAWINGS, DIMENSIONS OR DOCUMENTATION THE CONTRACTOR SHALL SEEK INSTRUCTIONS PRIOR TO PROCEEDING WITH FURTHER WORK.
5. ALL WORK, MATERIALS, METHODOLOGY, TESTING & SUPERVISION ARE TO BE IN ACCORDANCE WITH THESE DRAWINGS, ENGINEERING AND OTHER CONSULTANTS DRAWINGS, SPECIFICATIONS, SUCH OTHER DOCUMENTATION OR WRITTEN INSTRUCTION ISSUED, CONDITIONS OF CONSENT, THE OCCUPATIONAL HEALTH & SAFETY ACT 1983 ENFORCED BY WORKCOVER AUTHORITY, & CURRENT AUSTRALIAN STANDARDS REQUIREMENTS.

EXISTING STRUCTURES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT THE WORKS DO NOT IN ANY WAY IMPAIR THE SAFETY, INTEGRITY OR CONDITION OF EXISTING STRUCTURES OR SUPPORTS.
2. THE CONTRACTOR SHALL INSPECT ALL EXISTING STRUCTURES AND SUPPORTS BOTH PRIOR TO THE COMMENCEMENT OF WORKS AND DURING EXECUTION AND IMMEDIATELY REPORT AND SEEK INSTRUCTIONS IF MORE STRINGENT OR AMENDED PROCEDURES TO THOSE SPECIFIED ARE CONSIDERED NECESSARY.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE TEMPORARY STABILITY AND SUPPORT OF ALL STRUCTURES DURING EXECUTION OF THE WORKS, INCLUDING ALL MASONRY FOUNDATIONS & WALLS, AND ANY FLOORS, ROOFS OR OTHER STRUCTURES SUPPORTED BY THE WALLS.
4. ALL TEMPORARY PROPPING & NEEDLE BEAMS ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER FOR THE DESIGN & INSTALLATION OF TEMPORARY PROPPING PRIOR TO INSTALLATION, AND TEMPORARY PROPPING SHALL NOT BE REMOVED UNLESS APPROVAL OF THE ENGINEER IS FIRST CONFIRMED.
5. THE CONTRACTOR SHALL ALLOW FOR MAKING GOOD ANY DAMAGE TO EXISTING STRUCTURES RESULTING FROM THE WORKS.

EXISTING SERVICES:

1. ALL UTILITY SERVICES SHOWN ON THE DRAWINGS ARE INDICATIVE ONLY.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE LOCATION AND LEVELS OF ALL UTILITY SERVICES PRIOR TO THE COMMENCEMENT OF THE WORKS. ANY DISCREPANCIES FROM THOSE SHOWN ON THE DRAWINGS SHALL BE REPORTED PRIOR TO COMMENCEMENT OF FURTHER WORKS.
3. WHERE REQUIRED THE CONTRACTOR SHALL OBTAIN CLEARANCES FROM UTILITY SERVICES FROM THE RELEVANT SERVICE AUTHORITY OR SUPPLIER.
4. THE CONTRACTOR SHALL ENSURE THAT EXISTING SERVICES TO REMAIN CONNECTED DURING THE WORKS ARE NOT DISRUPTED AND SHALL PROVIDE TEMPORARY PROTECTION OF SERVICES AS REQUIRED.
5. THE CONTRACTOR SHALL ALLOW FOR THE TEMPORARY CAPPING OFF OF SERVICES AFFECTED BY THE WORKS, & THE CAPPING OFF OR REMOVAL OF SERVICES DISCONTINUED AS A RESULT OF THE WORKS.

SITE WORKS:

1. ALL WORKS SHALL COMPLY WITH ANY CONDITIONS OF COMPLYING DEVELOPMENT CERTIFICATE, THE PLANS, SPECIFICATION, AUSTRALIAN STANDARDS, DOCUMENTATION AND WRITTEN INSTRUCTIONS.
2. PRIOR TO COMMENCEMENT OF WORKS THE OWNER SHALL ENGAGE A REGISTERED SURVEYOR TO CONFIRM SITE BOUNDARIES, PLACE BOUNDARY SURVEY MARKS/PEGS, AND CONFIRM SETOUT OF THE WORKS.
3. PRIOR TO COMMENCEMENT OF WORKS THE CONTRACTOR SHALL CONFIRM THE SETOUT OF THE WORKS BY REGISTERED SURVEYOR AND SHALL EXECUTE THE WORKS IN ACCORDANCE WITH THE REGISTERED SURVEYORS SETOUT.
4. ANY WORKS REQUIRED WITHIN THE PUBLIC FOOTPATH OR ROADWAY SHALL NOT BE UNDERTAKEN UNTIL A ROAD OPENING PERMIT HAS FIRST BEEN OBTAINED FROM THE RELEVANT LOCAL AUTHORITY. THE CONTRACTOR SHALL UNDERTAKE ANY SUCH WORKS PURSUANT TO THE ROAD OPENING PERMIT REQUIREMENTS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORATION OF ANY FOOTPATH, KERB, TURF, GRASSED AREA, LANDSCAPING OR PAVEMENT WITHIN THE PUBLIC DOMAIN AFFECTED BY THE WORKS, INCLUDING COMPLIANCE WITH ANY CONDITIONS OR INSTRUCTIONS PROVIDED BY THE RELEVANT LOCAL AUTHORITY
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING ANY TREE PROTECTION ZONE REQUIRED BY THE COMPLYING DEVELOPMENT CERTIFICATE, INCLUDING ANY STRUCTURES, SITE WORKS OR MEASURES REQUIRED BY THOSE CONDITIONS, AND SHALL BE RESPONSIBLE FOR MAINTAINING ANY TREE PROTECTION ZONE AND/OR TREE PROTECTION MEASURES FOR THE DURATION OF THE WORKS.

BCA & AUSTRALIAN STANDARDS REQUIREMENTS:

1. THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT ALL WORKS ARE EXECUTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE BUILDING CODE OF AUSTRALIA (BCA 2016) & RELEVANT STANDARDS.
2. WHILE THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING AND CONFIRMING ALL BCA & STANDARDS REQUIREMENTS, THE FOLLOWING ARE NOTED FOR CLARITY;

- BCA 2016 PART J

WORKS SHALL COMPLY WITH THE FOLLOWING BCA-2016 PART J REQUIREMENTS & VERIFICATION OF COMPLIANCE SHALL BE SUPPLIED ON COMPLETION OF THE WORKS AND PRIOR TO THE ISSUE OF AN OCCUPATIONAL CERTIFICATE;

- AIR CONDITIONING & VENTILATION SYSTEMS SHALL HAVE SUPPLY & RETURN DUCKWORK INSTALLED IN ACCORDANCE WITH SPECIFICATION J5.2;
- THE AGGREGATE DESIGN ILLUMINATION POWER LOAD (EXCEPT FOR EMERGENCY LIGHTING & SIGNAGE, DISPLAY LIGHTING WITH CABINETS & DISPLAY CASES) MUST NOT EXCEED THAT SPECIFIED WITHIN CLAUSE J6.2;
- ARTIFICIAL LIGHTING SWITCH MUST BE LOCATED IN A VISIBLE POSITION IN THE ROOM OR SPACE FROM WHERE THE LIGHTING BEING SWITCHED, OR IN AN ADJACENT ROOM OR SPACE FROM WHERE THE LIGHTING BEING SWITCHED IS VISIBLE & NOT OPERATE LIGHTING WITHIN AN AREA OF MORE THAN 250M2 FOR A SPACE OF NOT MORE THAN 2000M2 FLOOR AREA OR 1000M2 FOR A SPACE OF MORE THAN 2000m2 FLOOR AREA;
- ARTIFICIAL LIGHTING IN A BUILDING OR STOREY OF A BUILDING (EXCEPT EMERGENCY LIGHTS), OR MORE THAN 250M2 IN FLOOR AREA MUST BE CONTROLLED BY A TIME SWITCH IN ACCORDANCE WITH SPECIFICATION J6, OR AN OCCUPANT SENSING DEVICE SUCH AS A SECURITY KEY CARD READER OR A MOTION DETECTOR IN ACCORDANCE WITH SPECIFICATION J6;
- ARTIFICIAL LIGHTING ADJACENT WINDOWS IN A STOREY OF A CLASS 5 BUILDING (EXCEPT FOR EMERGENCY LIGHTS), OF MORE THAN 250 M2 IN FLOOR AREA MUST BE SWITCHED SEPARATELY FROM ARTIFICIAL LIGHTING NOT ADJACENT WINDOWS;
- INTERIOR DECORATIVE AND DISPLAY LIGHTING, SUCH AS FOR A FOYER MURAL OR ART DISPLAY, MUST BE CONTROLLED SEPARATELY FROM OTHER ARTIFICIAL LIGHTING AND BY A MANUAL SWITCH FOR EACH AREA AND BY A TIME SWITCH IN ACCORDANCE WITH SPECIFICATION J6 WHERE THE DISPLAY LIGHTING EXCEEDS 7 KW. WINDOW DISPLAY LIGHTING MUST BE CONTROLLED SEPARATELY FROM OTHER DISPLAY LIGHTING;
- POWER SUPPLY TO A BOILING WATER OR CHILLED WATER STORAGE UNIT MUST BE CONTROLLED BY A TIME SWITCH IN ACCORDANCE WITH SPECIFICATION J6.

- CARPET

CARPET PILE HEIGHT OR PILE THICKNESS SHALL NOT EXCEED 11MM & THE CARPET BACKING THICKNESS SHALL NOT EXCEED 4MM; & CARPET PILE HEIGHT & PILE TNHICKNESS DIMENSION & THEIR COMBINED DIMENSION SHALL NOT EXCEED 11MM, 4MM & 15MM RESPECTIVELY.

- DISABLED ACCESS

ALL NEW WORKS SHALL COMPLY WITH AS1428.1 - 2009 AS ADOPTED BY THE BUILDING CODE OF AUSTRALIA 2016 INCLUDING CIRCULATION SPACES AT DOORWAYS & ACCESSIBLE SANITARY FACILITIES INCLUDING FIXTURES WITHIN.

- DOORS

ALL DOORS IN A REQUIRED EXIT, FORMING PART OF A REQUIRED EXIT OR IN THE PATH OF TRAVEL TO A REQUIRED EXIT SHALL BE READILY OPENABLE WITHOUT A KEY FROM THE INSIDE THAT FACES A PERSON SEEKING EGRESS BY SINGLE HAND DOWNWARD ACTION OR PUSHING ACTION ON A SINGLE DEVICE LOCATED BWTEEN 900MM & 1.2 METRES FROM THE FLOOR IN ACCORDANCE WITH PART D2.21 OF THE BUILDING CODE OF AUSTRALIA 2016.

- EXIT PATHS

THE REQUIRED EXIT WIDTH OR PATH OF TRAVEL TO AN EXIT SHALL NOT BE LESS THAN 1 METRE TO COMPLY WITH THE NCC BUILDING CODE OF AUSTRALIA 2016.

- EXIT SIGNS

DESIGN & INSTALLATION OF "RUNNING MAN" EXIT SIGNS SHALL COMPLY WITH AS2293.1 2005 & THE FOLLOWING;

- EXIST SIGNS SHALL BE CLEARLY VISIBLE TO PERSONS APPROACHING THE EXIT AND WILL BE CIRCUIT SENSING TO THE GENERAL LIGHTING CIRCUIT;
- EXIST SIGNS WILL BE GREEN WITH WHITE LETTERING & INSTALLED TO OPERATE CONTINUOUSLY IN THE EVENT OF POWER FAILURE;
- DIRECTIONAL EXIT SIGNS SHALL BE INSTALLED IN APPROPRIATE POSITIONS IN CORRIDORS, HALLWAYS, LOBBIES, FOYERS & THE LIKE INDICATING THE DIRECTION TO A REQUIRED EXIT.

THE LICENSED ELECTRICAL CONTRACTOR SHALL ON COMPLETION OF THE EMERGENCY LIGHTING & EXIT SIGN INSTALLATION SUBMIT TO THE PRINCIPAL CERTIFYING AUTHORITY A CERTIFICATE CERTIFYING COMPLIANCE WITH AS2993.

- FIRE PROTECTION & EGRESS.

ALL WORKS SHALL CONFORM TO THE FIRE PERFORMANCE SOLUTIONS AND NCC/BCA 2016 REQUIREMENTS DETAILED IN THE FIRE ENGINEERING REPORT VERSION C DATED 14th NOVEMBER 2018 AS PREPARED BY HOLMES FIRE.

- GLAZING.

GLASS DOORS & FIXED PANELS SO LOCATED CAPABLE OF BEING MISTAKEN AS A DOORWAY OF UNIMPEDED PATH OF TRAVEL SHALL BE PROVIDED WITH A GRADE "A" SAFETY GLAZING IN ACCORDANCE WITH AS 1288 2006 SAFETY GLAZING MATERIAL FOR USE BUILDINGS (HUMAN IMPACT CONSIDERATIONS. ALL OTHER GLAZING SHALL BE INSTALLED IN ACCORDANCE WITH TABLE 1A APPENDIX "A" OF AS 1288 GLASS INSTALLATION CODE. A VISION BAND SHALL BE INSTALLED AT 1.0M HIGH MEETING CLAUSE 6.6 OF AS 1428.1 2009.

- HANDRAILS

ALL INTERNAL & EXTERNAL STAIRS SHALL BE PROVIDED WITH A HANDRAIL SHALL MEET THE REQUIREMENTS OF PART 2.7 OF THE NCC BUILDING CODE OF AUSTRALIA 2016 VOLUME ONE AND CLAUSE 7.1, 7.2, 7.4, 7.5 & 7.6 OF

- MATERIALS

MATERIALS USED IN THE BUILDING INCLUDING FLOOR COVERINGS SHALL MEET THE REQUIREMENTS OF CLAUSE C1.10 & SPECIFICATION C1.10A OF THE NCC BUILDING CODE OF AUSTRALIA 2016. I.I EARLY FIRE HAZARD PROPERTIES OF MATERIALS, SPREAD OF SMOKE & FLAME.

- MECHANICAL VENTILATION

MECHANICAL VENTILATION IN ACCORDANCE WITH THE REQUIREMENTS OF AS 1668, PARTS 1 & 2 SHALL BE INSTALLED WHERE NATURAL VENTILATION CANNOT BE PROVIDED.

- PENETRATIONS

WHERE PENETRATIONS ARE MADE TO FLOORS OR OTHER FIRE RATED ELEMENTS THEY SHALL BE FIRE SEALED OR STOPPED OR HAVE FIRE DAMPERS INSTALLED TO MEET BCA 2016 REQUIREMENTS WITH CERTIFICATION TO BE PROVIDED TO THE PRINCIPAL CERTIFYING AUTHORITY. I.E. AS1530.4 - 2014.

- SMOKE DETECTION

EXISTING SMOKE DETECTION & ALARM SYSTEM WHERE ALTERED WITH NEW DETECTORS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF AS1670.1 FOR THE ALTERED PARTS OF THE WORKS.

- STAIR (NEW)

NEW STAIR SHALL BE IN ACCORDANCE WITH THE REQUIREMENT 5.1 TO 5.4 OF THE MORRIS GODING ACCES CONSULTANT REPORT 15.11.2018

- TACTILE GROUND SURFACE INDICATORS

ALL TACTILE GROUND SURFACE INDICATORS SHALL BE IN ACCORDANCE WITH THE REQUIREMENT 8.1 & 8.2 OF THE MORRIS GODING ACCES CONSULTANT REPORT 15.11.2018

- WET AREAS

ALL WORK TO WET AREAS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE REQUIREMENTS OF PART F1.7 NCC BCA 2016 VOLUME ONE & AS 3740 2010

COMPLYING DEVELOPMENT CONSENT REQUIREMENTS:

THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT ALL WORKS ARE EXECUTED IN ACCORDANCE WITH CONDITIONS OF COMPLYING DEVELOPMENT CONSENT ISSUED BY THE PRINCIPAL CERTIFYING AUTHORITY.

HOWEVER WHILE NOT LIMITING THIS RESPONSIBILITY THE FOLLOWING MATTERS ARE NOTED FOR CLARITY;

CLAUSE 5A. 30 COMPLYING DEVELOPMENT ON FLOOD PRONE LOTS

ALL WORKS TO BE CONSTRUCTED AT OR BELOW THE FLOOD PLANNING LEVEL SHALL BE CONSTRUCTED OF FLOOD COMPATIBLE MATERIALS.

ALL ELECTRICAL AND OTHER SERVICES BELOW THE FLOOD PLANNING LEVEL SHALL BE ISOLATED WITH SUITABLE ISOLATING DEVICES AUTOMATICALLY ACTIVATED IN THE EVENT OF DETECTION OF FLOOD WATER.

SIGNAGE REQUIREMENTS:

THE CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT ALL WORKS ARE EXECUTED IN ACCORDANCE WITH BCA, AUSTRALIAN STANDARDS BUILDING SIGNAGE REQUIREMENTS, TOGETHER WITH SIGNAGE REQUIREMENTS CONTAINED IN THE FOLLOWING REPORTS;

- ACCESSIBILITIES ISSUES REPORT V2 DATED 15 NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS
- PERFORMANCE SOLUTIONS REPORT DATED 16th NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS

WHILE THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHECKING AND CONFIRMING ALL BCA SIGNAGE REQUIREMENTS AS CONTAINED IN CONSULTANTS REPORTS, ARCHITECTURAL DRAWINGS & OTHER CDC DOCUMENTATION, THE FOLLOWING IS NOTED FOR CLARITY;

FIRE DOOR/SMOKE DOOR — BCA D2.23

SIGNS ARE REQUIRED ON EACH FIRE DOOR / SMOKE DOOR AND A SIGN MUST BE IN CAPITAL LETTERS NOT LESS THAN 20MM HIGH IN A COLOUR CONTRASTING WITH THE BACKGROUND AND STATE:

1. FOR AN AUTOMATIC DOOR HELD OPEN BY AN AUTOMATIC HOLD OPEN DEVICE OR A DOOR DISCHARGING FROM A FIRE ISOLATED EXIT;

   " FIRE SAFETY DOOR - DO NOT OBSTRUCT " OR

2. FOR A SELF CLOSING DOOR;

   " FIRE SAFETY DOOR DO NOT OBSTRUCT DO NOT KEEP OPEN "

NOTE: THE FOLLOWING DOORS REQUIRE SIGNAGE ON BOTH SIDES;

- SMOKE DOOR FITTED WITH A HOLD OPEN DEVICE (WHERE THE SIGNAGE IS NOT FITTED TO THE ADJACENT WALL)
- FIRE DOOR FORMING PART OF A HORIZONTAL EXIT
- SMOKE DOOR THAT SWINGS IN BOTH DIRECTIONS
- DOOR LEADING FROM A FIRE ISOLATED EXIT TO A ROAD OR OPEN SPACE

IDENTIFICATION OF ACCESSIBLE FACILITIES, SERVICES & FEATURES — BCA D3.6

SIGNAGE COMPLYING WITH AS1428.1-2009 TO BE PROVIDED DIRECTING PEOPLE WITH DISABILITIES TO EACH ACCESSIBLE ENTRANCE, INCLUDING THE PATH OF TRAVEL TO THE ACCESSIBLE ENTRANCE, FROM ANY NON-ACCESSIBLE ENTRANCES.

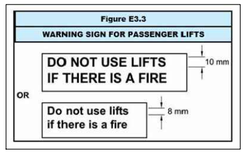
BRAILLIE AND TACTILE SIGNAGE IS REQUIRED TO IDENTIFY EACH DOOR REQUIRED BY E4.5 TO BE PROVIDED WITH AN EXIT SIGN AND STATE -

1. " **EXIT** " AND
2. " **LEVEL** " FOLLOWED BY THE FLOOR LEVEL NUMBER

SUCH SIGNS ARE REQUIRED TO BE LOCATED ON THE SIDE OF THE DOOR THAT FACES A PERSON SEEKING EGRESS, AND ON THE WALL ON THE LATCH SIDE OF THE DOOR WITH THE LEADING EDGE OF THE SIGN LOCATED BETWEEN 50MM & 300MM FROM THE ARCHITRAVE.

LIFT WARNING SIGNS — BCA E3.3

TO BE DISPLAYED NEAR EVERY CALL BUTTON FOR A PASSENGER LIFT. INCISED, INLAID OR EMBOSSED LETTERS ON WALL OR PERMANENTLY FIXED PLATE.



NON REQUIRED STAIRS & RAMPS — BCA SPEC D1.12-2(j)

A WARNING SIGN MUST BE DISPLAYED WHERE IT CAN BE READILY SEEN OUTSIDE THE SHAFT NEAR ALL FIRE DOORS OPENING TO THE SHAFT;

" **DO NOT USE THIS STAIRWAY IF THERE IS A FIRE** "

- IN 20 MM LETTERS, OR

" **Do not use this stairway if there is a fire** "

- IN 16 MM LETTERS

PHILIP CHUN Date: 26/11/2018

Certificate No: 18-211673cdc1

Signature:

PHILIP CHUN Approved Documentation

Complying Development Certificate

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ISSUE:	DATE:	REVISION:
CDC	14.11.2018	NOTES, BCA & AS STANDARD REFERENCES AMENDED & ISSUED FOR CDC
CDC	14.11.2018	REFERENCE TO HOLMES FIRE FOR AMENDED & ISSUED FOR CDC
CDC	19.11.2018	REFERENCE TO MORRIS GODING REPORTS ADDED & ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR			ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL			SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE			TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE			TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES			TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING			VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL			WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS			WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR			ZC	ZINC CLADDING

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NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC ARCHITECTURAL SPECIFICATIONS & NOTES SHEET 1

SCALE: N/A
DATE: 5.11.2018
DRAWN: CH
PROJECT NO: 5055
DRAWING NO: CDC 1.003_03

SPECIFICATION & NOTES (CONTINUED):

SIGNAGE REQUIREMENTS (CONTINUED):

PORTABLE FIRE EXTINGUISHERS — AS 2444-2001 - CLAUSE 3.6

EACH EXTINGUISHER SHALL HAVE THEIR LOCATION CLEARLY INDICATED BY PLACEMENT OF THE FOLLOWING LOCATION SIGN:

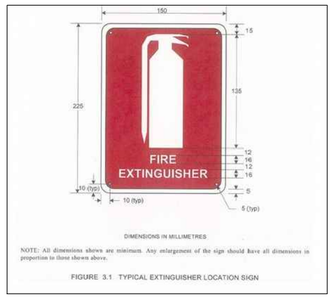


FIGURE 3.1 TYPICAL EXTINGUISHER LOCATION SIGN

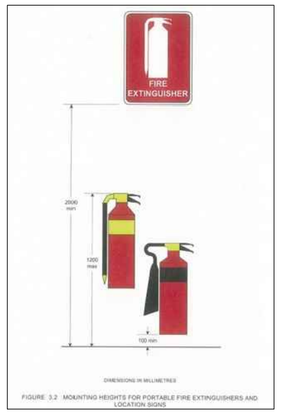


FIGURE 3.2 MOUNTING HEIGHTS FOR PORTABLE FIRE EXTINGUISHERS AND LOCATION SIGNS

FOR AN EXTINGUISHER WITHIN A CABINET OR ENCLOSURE, THE CABINET OR ENCLOSURE SHALL BE MARKED WITH THE WORDS;

" FIRE EXTINGUISHER "

IN LETTERS AT LEAST 32 MM HIGH IN A COLOUR CONTRASTING WITH THE BACKGROUND UNLESS THE DOOR HAS NOT LESS THAN 50% OF ITS SURFACE ARE FABRICATED FROM TRANSPARENT MATERIAL THAT PERMITS VISUAL IDENTIFICATION OF THE CABINETS CONTENTS.

FORM OF SIGNS — AS 1428.1 - 2009 CLAUSE 8.1

SPECIFICATION D3.6 OF THE BCA CONTAINS REQUIREMENTS FOR BAILLIE AND TACTILE SIGNAGE;

WHERE SIGNS ARE REQUIRED, THE FORM OF SIGNS SHALL BE AS FOLLOWS;

(a) WHERE REQUIRED, RAISED TACTILE AND/OR BRAILLE SIGNAGE SHALL BE PROVIDED AS FOLLOWS;
- (i) SANITARY FACILITIES SHALL BE IDENTIFIED WITH THE FOLLOWING:
  - (A) RAISED & VISUAL VERSIONS OF THE INTERNATIONAL SYMBOL OF ACCESS.
  - (B) RAISED & VISUAL VERSIONS OF THE MALE & FEMALE SYMBOLS.
  - (C) RAISED & VISUAL VERSIONS OF THE MALE & FEMALE SYMBOLS.
    NOTE: TITLE CASE HAS THE FIRST LETTER OF EACH WORD CAPITALISED AND THE REST LOWER CASE.
  - (D) BRAILLE THAT FULLY DESCRIBES THE VISUAL INFORMATION DISPLAYED BY SYMBOLS AND RAISED TEXT.
- (ii) SIGNS FOR UNISEX ACCESSIBLE FACILITIES SHALL BE PROVIDED WITH THE LETTERS LH OR RH TO INDICATE A LEFT-HAND OR RIGHT-HAND SIDE TRANSFER ONTO THE WC PAN. THE MIN FONT SIZE SHALL BE 20 MM SANS SERIF.
- (iii) ENTRY DOORS TO AIRLOCKS SERVING AREAS CONTAINING SANITARY FACILITIES SHALL BE INDENTIFIED BY THE USE OF RAISED TEXT AND BRAILLE, TOGETHER WITH RAISED & VISUAL SYMBOLS IDENTIFYING EACH SANITARY FACILITY WITHIN.

(b) ELEMENTS OF SIGNS SHALL BE SETOUT SINGULARLY, OR IN A MODULAR FORM.

(c) ELEMENTS OF SIGNS SHALL ARRANGED HORIZONTALLY OR VERTICALLY AND SHALL INCLUDE RAISED TEXT & BRAILLE, TOGETHER WITH RAISED ANDVISUAL SYMBOLS. WHERE WORDS ARE USED, THEY SHALL BE DISPLAYED HORIZONTALLY.

(d) FACILITIES SHALL BE IDENTIFIED BY THE USE OF RAISED TEXT, BRAILLE, & SYMBOLS IF REQUIRED. THE IDENTIFICATION SHALL BE BETWEEN 120 MM & 1600 MM ABOVE FINISHED FLOOR LEVEL. SIGNS WITH SINGLE LINES OF CHARACTERS MUST HAVE THE LINE OF TACTILE CHARACTERS NOT LESS THAN 1250 MM & NOT HIGHER THAN 1350 MM ABOVE THE FLOOR OR GROUND SURFACE AS PER CLAUSE 2d OF SPECIFICATION D3.6 of THE BCA.

(e) A SANITARY COMPARTMENT FOR PEOPLE WITH AMBULANT DISABILITIES SHALL E IDENTIFIED IN ACCORDANCE WITH THE FIGURES BELOW;

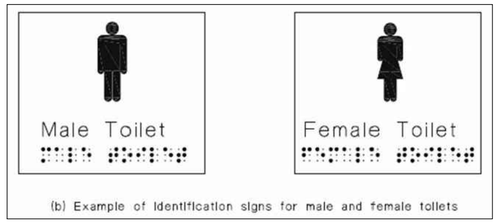
BRAILLE SHALL BE UNIFIED ENGLISH BRAILLE (UEB), GRADE 1, UNCONTRACTED, & SHALL BE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS SET OUT BY THE AUSTRALIAN BRAILLE AUTHORITY (ABA). BRAILLE NUMBERS SHALL BE PRECEDDED BY A BRAILLE NUMERICAL SIGN.

THE INTERNATIONAL SYMBOL OF ACCESS AND INTERNATIONAL SYMBOL FOR DEAFNESS MAY BE USED WITHOUT RAISED EXPLANATORY TEXT SUCH AS "ACCESSIBLE" OR "HEARING LOOP INSTALLED".

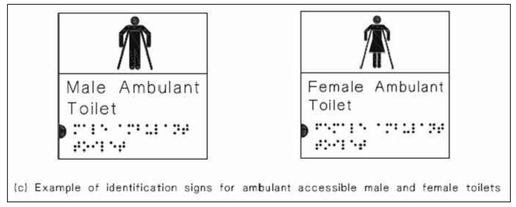
AS 1928.1 - 2009 CLAUSE 8.1 — EXAMPLES OF IDENTIFICATION SIGNS

(a) Example of identification sign for a unisex accessible toilet with a right-hand (RH) transfer

FORM OF SIGNS (CONTINUED) — AS 1428.1 - 2009 CLAUSE 8.1 — EXAMPLES OF IDENTIFICATION SIGNS (CONTINUED)



(b) Example of identification signs for male and female toilets



(c) Example of identification signs for ambulant accessible male and female toilets

(d) Example of wayfinding sign to a unisex accessible toilet with left-hand (LH) transfer

(e) Example of wayfinding sign to a unisex accessible toilet

FIRE SAFETY NOTICES — CLAUSE 183 EP&A REGS

A NOTICE IN THE FORM OF DISPLAYED IN THE TABLE BELOW IS TO BE AT ALL TIMES DISPLAYED IN A CONSPICUOUS POSITION ADJACENT TO A DOORWAY PROVIDING ACCESS TO, BUT NOT WITHIN A FIRE-ISOLATED STAIRWAY, PASSAGEWAY, OR RAMP.

THE WORDS " OFFENCE RELATING TO FIRE EXITS " IN THE NOTICE MUST BE LETTERS AT LEAST 8 MM HIGH, AND THE REMAINING WORDS MUST BE IN LETTERS AT LEAST 2.5 MM HIGH.

" OFFENCE RELATING TO FIRE EXITS "

It is an offence under the *Environmental Planning and Assessment Act 1979*;

(a) to place anything in or near this fire exit that may obstruct persons from moving to and from the exit, or
(b) to interfere with or obstruct the operation of any fire doors, or
(c) to remove, damage, or otherwise interfere with this notice.

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ISSUE:	DATE:	REVISION:
CDC	14.11.2018	NOTES, BCA & AS STANDARD REFERENCES AMENDED & ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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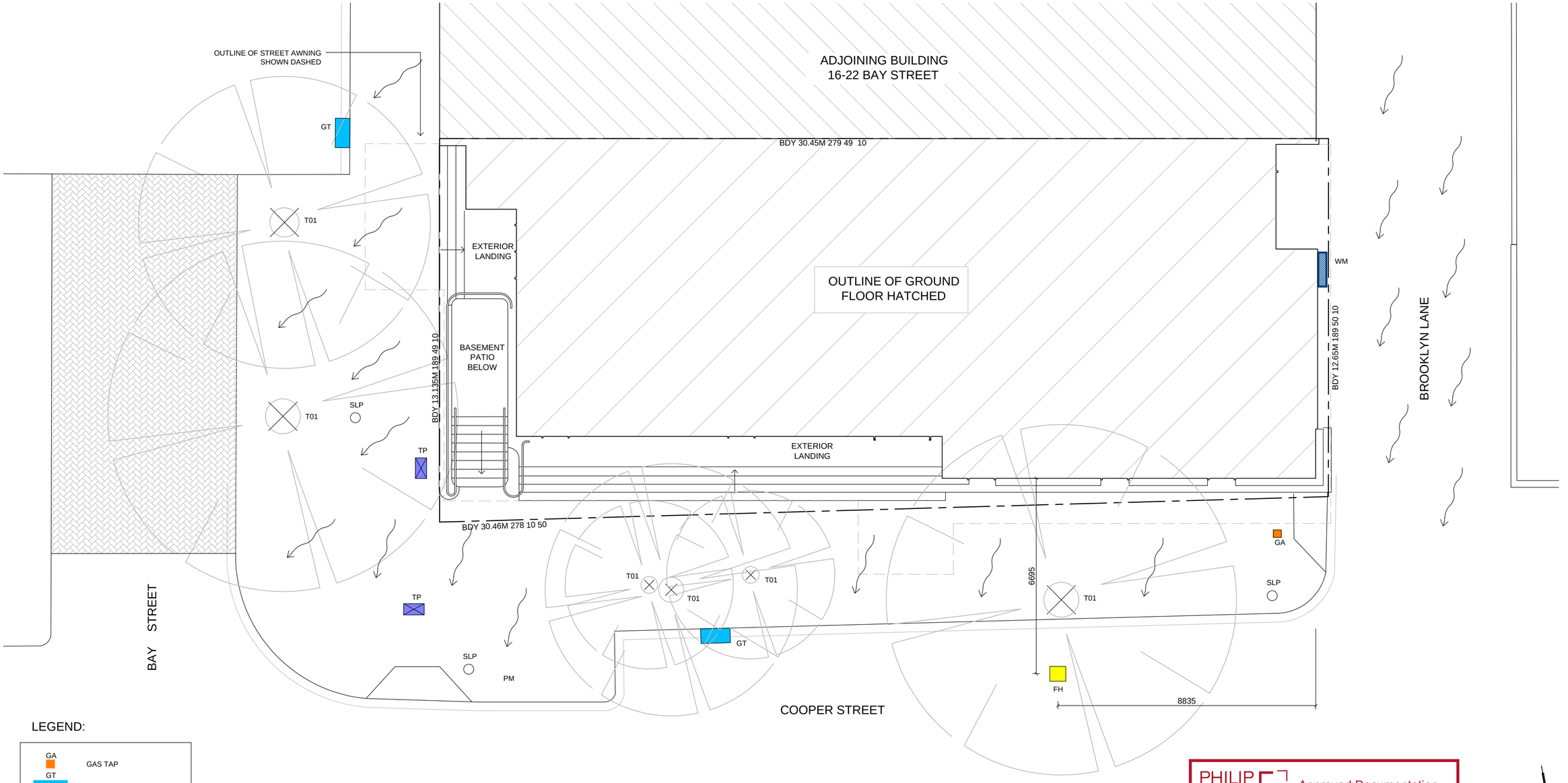
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028
CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC ARCHITECTURAL SPECIFICATIONS & NOTES SHEET 2
SCALE: N/A
DATE: 5.11.2018
DRAWN: CH
PROJECT NO: 5055
DRAWING NO: CDC 1.004_01



LEGEND:

GA	GAS TAP
GT	STREET GULLY TRAP
FH	STREET FIRE HYDRANT
PM	PARKING METER
SLP	STREET LAMP
TP	TELSTRA PIT
	WATER METER

OVERLAND STORMWATER FLOW DIRECTION

STREET TREES:

T01	TRUNK 200D HEIGHT 10M SPREAD 10M
T02	TRUNK 200D HEIGHT 10M SPREAD 12M
T03	TRUNK 300D HEIGHT 10M SPREAD 8M
T04	TRUNK 450D HEIGHT 10M SPREAD 15M
T04	TRUNK 250D HEIGHT 6M SPREAD 12M
T04	TRUNK 1400D HEIGHT 15M SPREAD 20M

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ISSUE:	DATE:	REVISION:
INFO	26.10.2018	DRAWING AMENDED TO A2 FROM A3
INFO	14.11.2018	FIRE HYDRANT, LEGEND & DWG TITLE AMENDED, STORMWATER FLOW & HYDRANT DIMENSION ADDED

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
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BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

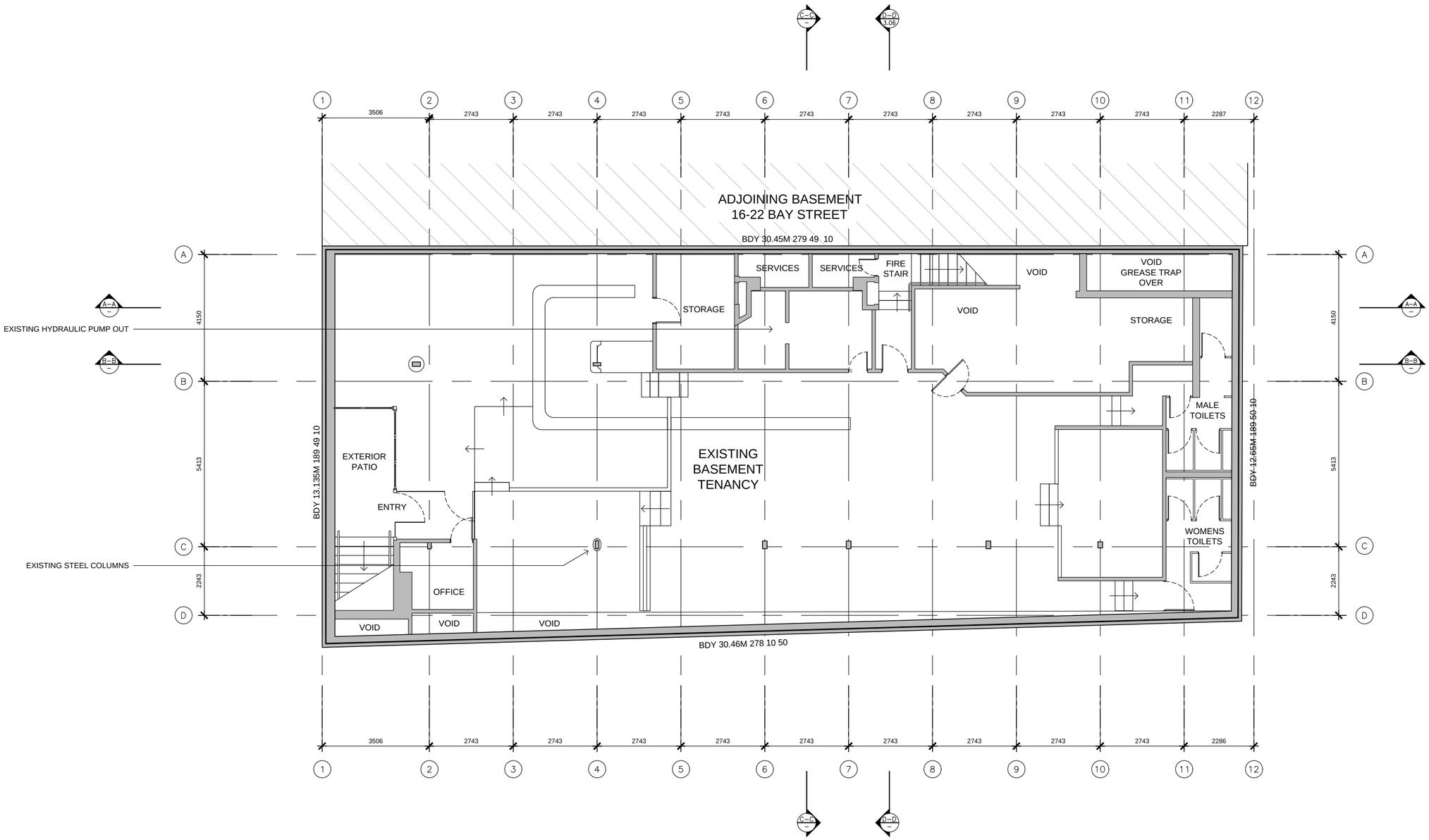
CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC EXISTING SITE PLAN

SCALE: 1 : 100 @ A2

DATE: 10.10.2018 DRAWN: GO

PROJECT NO: 5055 DRAWING NO: CDC 1.005_02



LEGEND:

EXISTING WALL

STRUCTURAL COLUMN : MATERIAL & DIMENSIONS TBC

ADJOINING BUILDINGS

AREAS:

SITE AREA 387.7m²

EXISTING BUILDING AREA: 382.4m²

NETT LETTABLE : 318m²

GFA (LEP DEF.) : 228m²

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N

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CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORKS
CONTRACTOR MUST MARK ANY PREVIOUS DRAWINGS AS "SUPERCEDED" AND USE ONLY CURRENT REVISION DRAWINGS ON SITE.

ISSUE:	DATE:	REVISION:
INFO	26.10.2018	LEGEND, GFA, NOTES AMENDED
CDC	14.11.2018	DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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Level 1, 306-310 New South Head Road, Double Bay, Sydney, NSW 2028
p +61 2 93281198 e admin@howearchitects.com.au
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

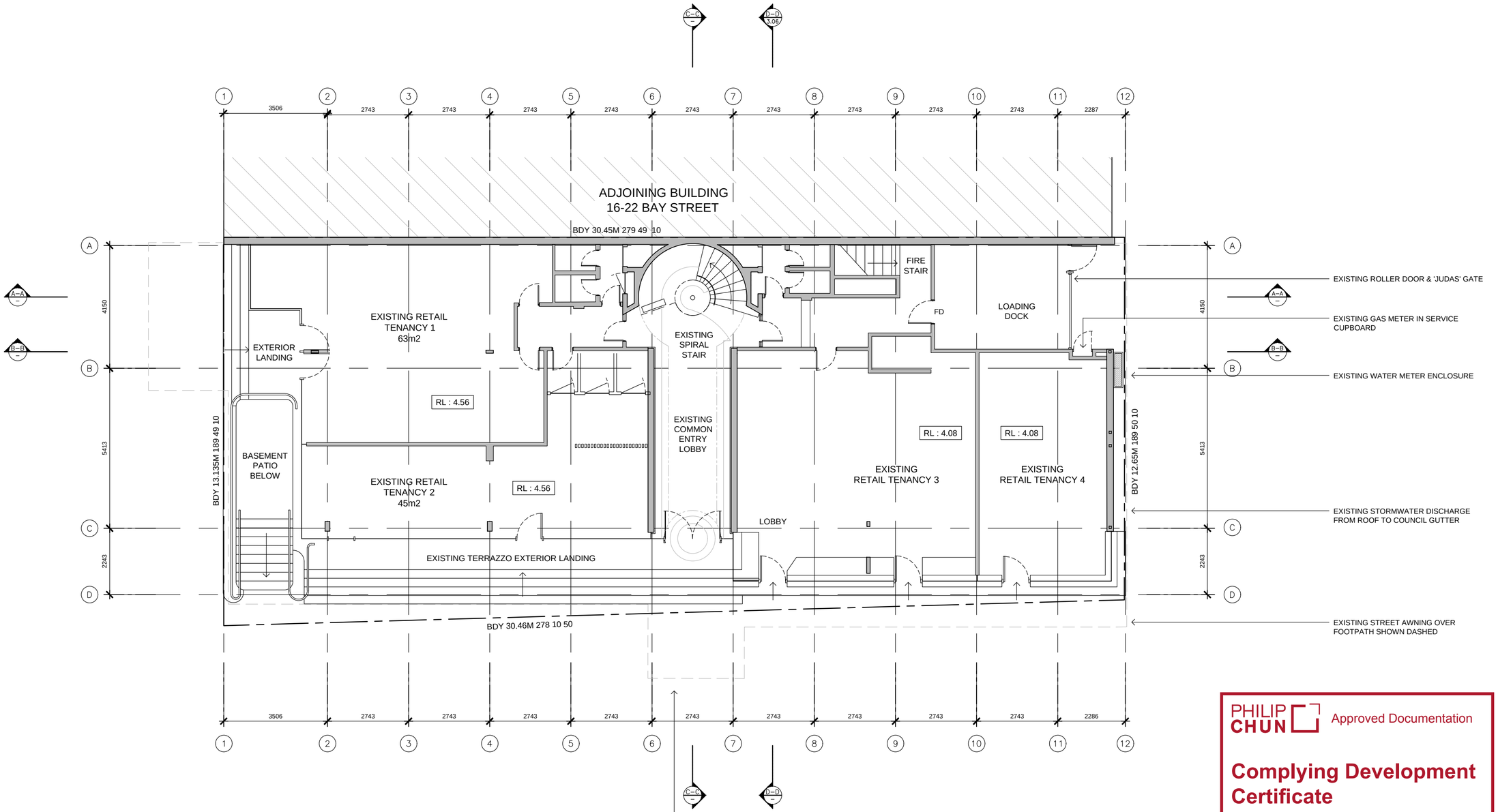
CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC EXISTING BASEMENT PLAN

SCALE: 1 : 100 @ A2

DATE: 10.10.2018 DRAWN: GO

PROJECT NO: 5055 DRAWING NO: CDC 1.006_02



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Complying Development Certificate

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T: 02 9412 2322 F: 02 9412 2433

LEGEND:

- EXISTING WALL
- STRUCTURAL COLUMN : MATERIAL & DIMENSIONS TBC
- ADJOINING BUILDINGS

AREAS:

SITE AREA 386.7m²
EXISTING BUILDING AREA: 356m²
NETT LETTABLE : 202m²
GFA (LEP DEF.) : 226 m²

ISSUED FOR CDC

NOTE:
DO NOT SCALE FROM DRAWINGS, USE FIGURED DIMENSIONS ONLY
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ISSUE:	DATE:	REVISION:
INFO	26.10.2018	LEGEND, GFA, NOTES AMENDED
CDC	14.11.2018	DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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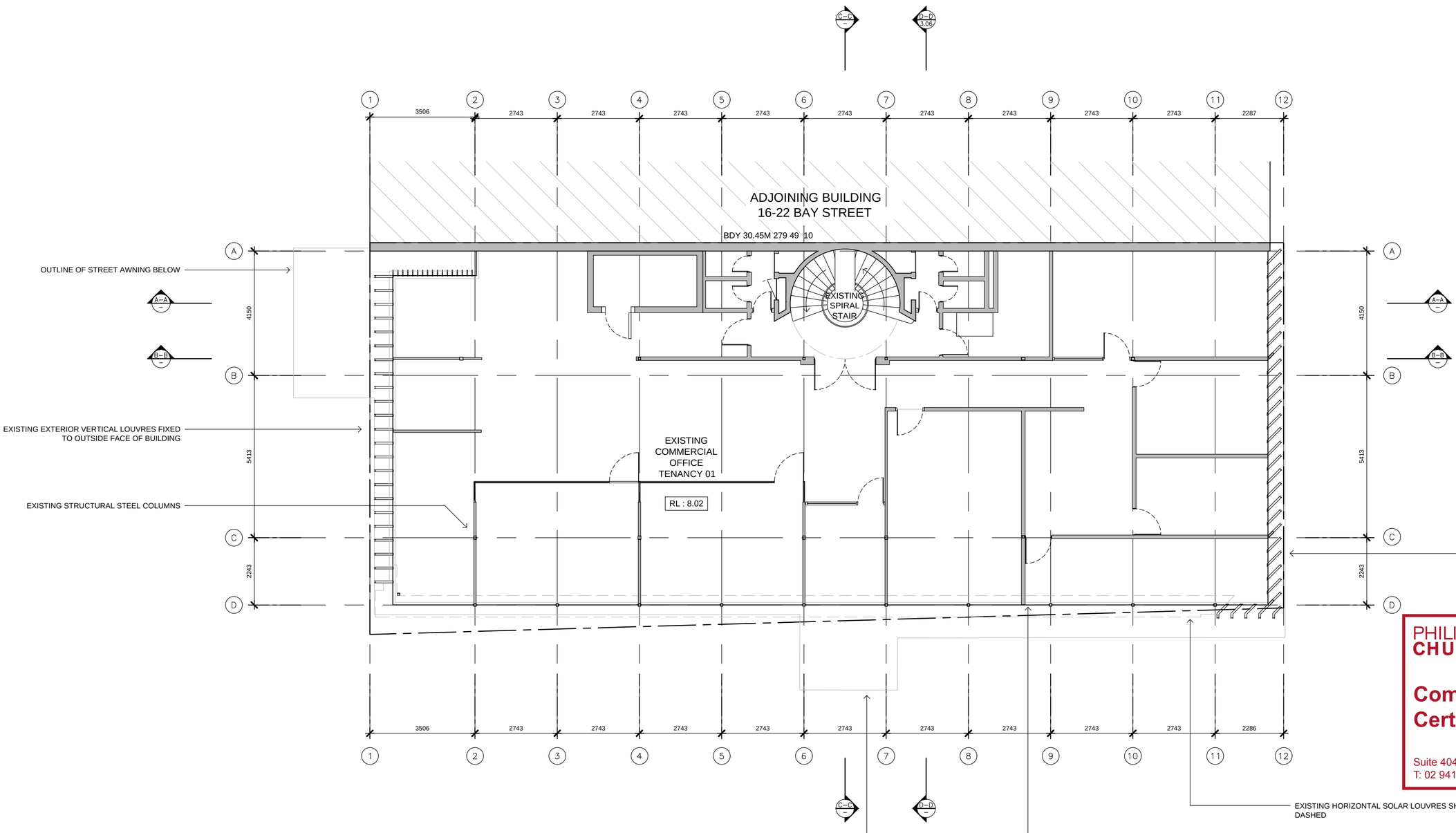
Level 1, 306-310 New South Head Road, Double Bay, Sydney, NSW 2028
p +61 2 93281198 e admin@howearchitects.com.au
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028
CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC EXISTING GROUND FLOOR PLAN

SCALE: 1 : 100 @ A2
DATE: 10.10.2018
DRAWN: GO
PROJECT NO: 5055
DRAWING NO: CDC 1.007_01



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LEGEND:

- EXISTING WALL
- STRUCTURAL COLUMN : MATERIAL & DIMENSIONS TBC
- ADJOINING BUILDINGS

AREAS:

SITE AREA 387.7m²
EXISTING BUILDING AREA: 408m²
NETT LETTABLE : 331m²
GFA (LEP DEF.) : 326m²

N

0 1 2 3 4

ISSUED FOR CDC

NOTE:
DO NOT SCALE FROM DRAWINGS, USE FIGURED DIMENSIONS ONLY
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ISSUE:	DATE:	REVISION:
INFO	26.10.2018	LEGEND, GFA, NOTES AMENDED
CDC	14.11.2018	DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR		ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL		SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE		TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE		TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES		TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING		VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL		WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS		WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR		ZC	ZINC CLADDING

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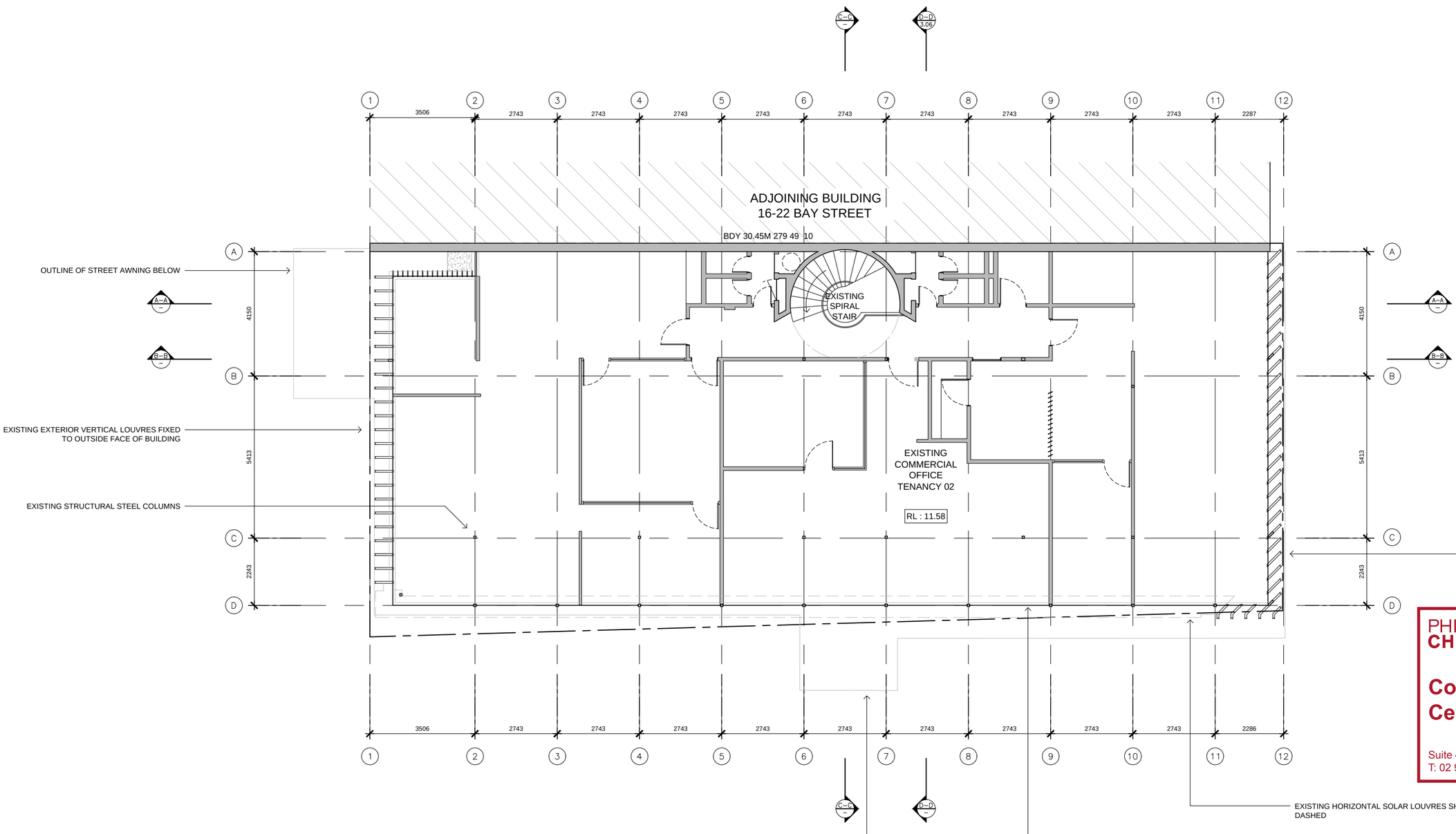
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028
CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC EXISTING FIRST FLOOR PLAN

SCALE: 1 : 100 @ A2
DATE: 10.10.2018
DRAWN: GO
PROJECT NO: 5055
DRAWING NO: CDC 1.008_01



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LEGEND:

- EXISTING WALL
- STRUCTURAL COLUMN : MATERIAL & DIMENSIONS TBC
- ADJOINING BUILDINGS

AREAS:

SITE AREA 387.7m²
EXISTING BUILDING AREA: 370.5m²
NETT LETTABLE : 302m²
GFA (LEP DEF.) : 324m²

N

0 1 2 3 4

ISSUED FOR CDC

NOTE:
DO NOT SCALE FROM DRAWINGS, USE FIGURED DIMENSIONS ONLY
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ISSUE:	DATE:	REVISION:
INFO	26.10.2018	LEGEND, GFA, NOTES AMENDED
CDC	14.11.2018	DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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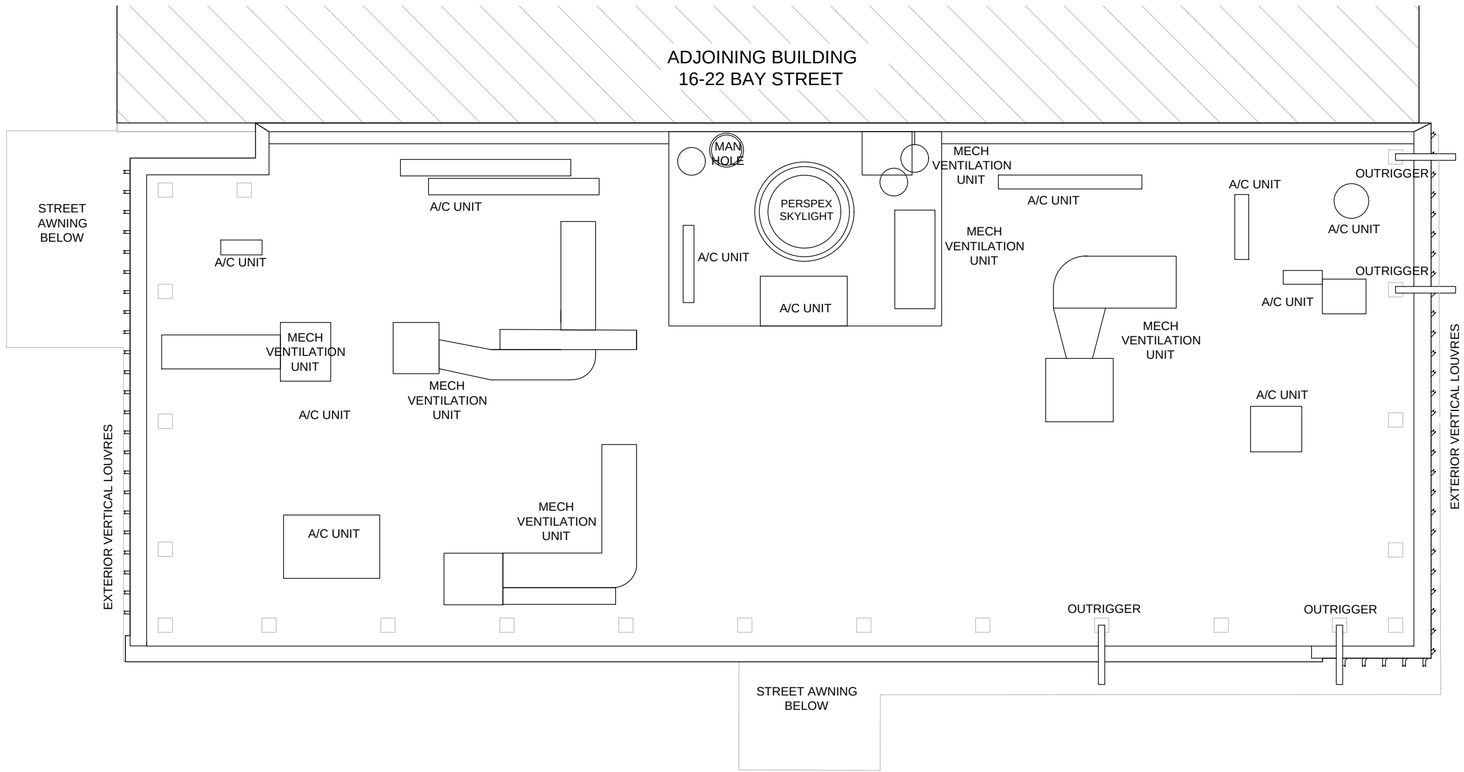
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028
CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC SECOND FLOOR EXISTING PLAN

SCALE: 1 : 100 @ A2
DATE: 10.10.2018
DRAWN: GO
PROJECT NO: 5055
DRAWING NO: CDC 1.009_01



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N

0 1 2 3 4

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ISSUE:	DATE:	REVISION:
INFO	26.10.2018	DRAWING AMENDED TO A2 FROM A3
CDC	14.11.2018	DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
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CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

CLIENT: AMA HOLDINGS PTY LTD

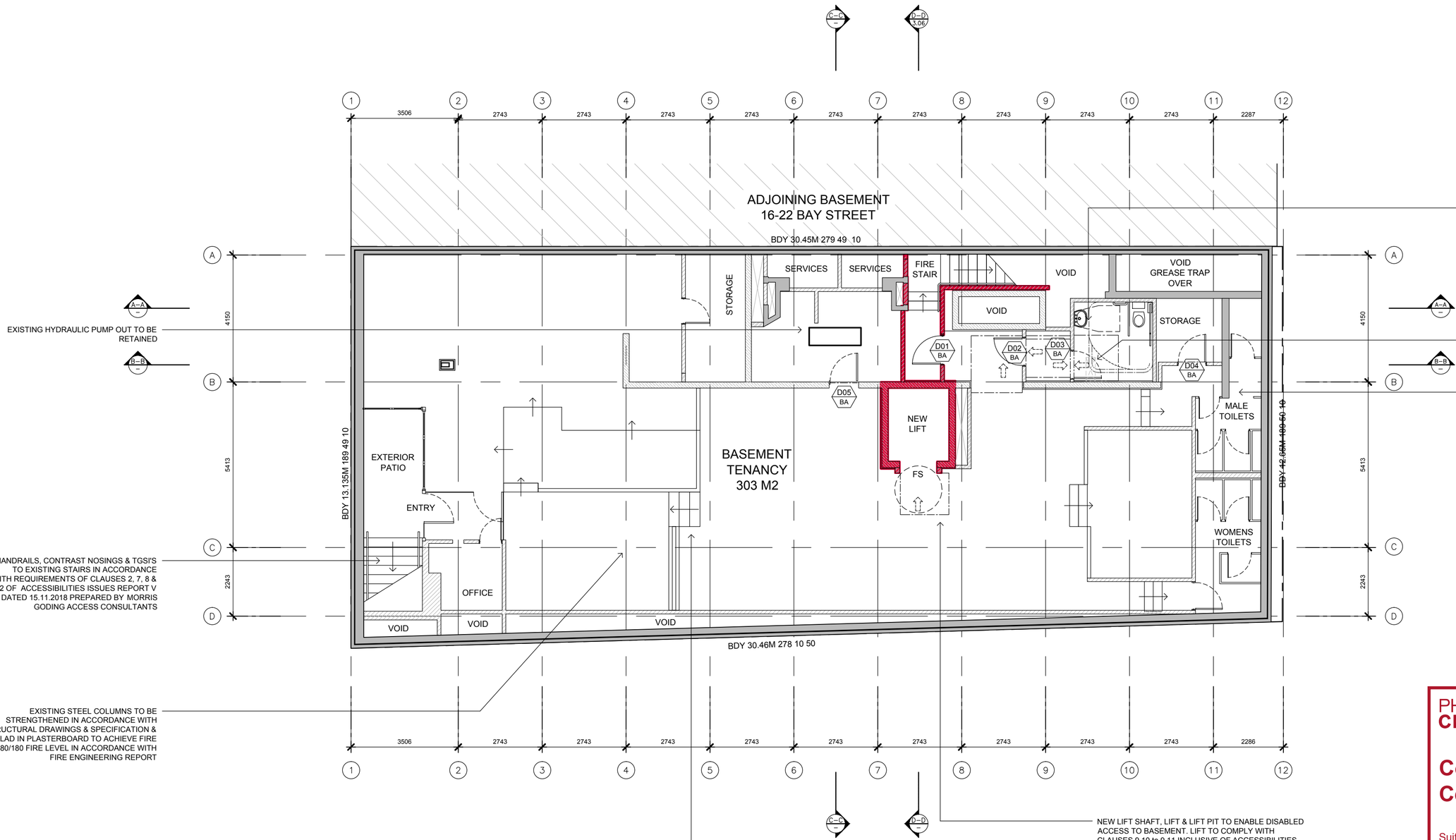
DRAWING: EXISTING ROOF PLAN

SCALE: 1 : 100 @ A2

DATE: 10.10.2018 DRAWN: GO

PROJECT NO: 5055

DRAWING NO: CDC 1.010_01



EXISTING HYDRAULIC PUMP OUT TO BE RETAINED

HANDRAILS, CONTRAST NOSINGS & TGSI'S TO EXISTING STAIRS IN ACCORDANCE WITH REQUIREMENTS OF CLAUSES 2, 7, 8 & 12 OF ACCESSIBILITIES ISSUES REPORT V 2 DATED 15.11.2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS

EXISTING STEEL COLUMNS TO BE STRENGTHENED IN ACCORDANCE WITH STRUCTURAL DRAWINGS & SPECIFICATION & CLAD IN PLASTERBOARD TO ACHIEVE FIRE 180/180/180 FIRE LEVEL IN ACCORDANCE WITH FIRE ENGINEERING REPORT

NEW UNISEX DISABLED AMBULATORY TOILET. REFER TO DRAWINGS CDC 4.300 REV00 & CDC 4.301 REV01 FOR DETAIL

NEW HYDRAULIC SERVICE RISER ABOVE TOILET CEILING TO LOADING DOCK ON GROUND FLOOR ABOVE

EXISTING TOILETS TO COMPLY WITH THE REQUIREMENT OF 11.1 & 12.1.1 TO 12.1.14 OF ACCESSIBILITIES ISSUES REPORT V2 DATED 15 NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS.
PROVIDE A *PRESSALIT CARE SUPPORT ARMS - FIXED HEIGHT* DROP-DOWN GRAB RAIL & SIGNAGE IN ACCORDANCE WITH CLAUSE 10.1 OF PERFORMANCE SOLUTIONS REPORT DATED 16 NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS.

NEW LIFT SHAFT, LIFT & LIFT PIT TO ENABLE DISABLED ACCESS TO BASEMENT. LIFT TO COMPLY WITH CLAUSES 9.10 to 9.11 INCLUSIVE OF ACCESSIBILITIES ISSUES REPORT V 2 DATED 15.11.2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS

MODIFY STAIRS IN ACCORDANCE WITH CLAUSE 8.1 OF PERFORMANCE SOLUTIONS REPORT DATED 16 NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS;
PROVIDE A 50-70MM WIDE INDICATIVE COLOUR CONTRAST STRIP ON THE STEPS TO ASSIST PEOPLE WITH VISION IMPAIRMENTS
PROVIDE HANDRAILS ON BOTH SIDES OF THE STAIR IN ACCORDANCE WITH AS1428.1
PROVIDE TACTILE INDICATORS AT TOP AND BOTTOM OF THE STAIRS (600MM DEEP)
STAIRS TO HAVE CLOSED RISERS

LEGEND:

- EXISTING STRUCTURAL WALL
- EXISTING PARTITION WALL
- NEW STRUCTURAL WALL - TYPE A
- NEW INTERNAL WALL - TYPE B
- EXISTING STEEL COLUMN
- NEW STEEL COLUMN
- SERVICE/PLANT RISER
- DISABLED ACCESS CIRCULATION
- FIRE COMPARTMENT/EGRESS
- 180/180/180 FIRE WALL
- 120/120/120 FIRE WALL
- FD FIRE DOOR
- FS FIRE SHUTTER

NOTES:

1. THIS GENERAL ARRANGEMENT PLAN SHALL BE READ IN CONJUNCTION WITH ANY OTHER REQUIREMENT AS NOTED IN ARCHITECTURAL SECTIONS, COMPONENT, SCHEDULES AND ARCHITECTURAL DETAIL DRAWINGS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH REQUIREMENTS OF CLAUSES 2, 3, 4, 7, 8 & 12 OF ACCESSIBILITIES ISSUES REPORT V2 DATED 15 NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS

AREAS:

SITE AREA 386.7m²
EXISTING BUILDING AREA: 382.4m²
NETT LETTABLE : 303m²
GFA (LEP DEF.) : 234m²

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N

0 1 2 3 4

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NOTE:
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ISSUE:	DATE:	REVISION:
DRAFT	18.10.2018	EXIST PUMPOUT ADDED, NEW RISER TO LOADING DOCK, NOTES & DWG SIZE MODIFIED
DRAFT	25.10.2018	DOOR NOTATIONS ADDED
CDC	19.11.2018	UNISEX TOILET MODIFIED, DISABILITY ACCESS NOTATION ADDED, ISSUED FOR CDC
CDC	21.11.2018	CIRCULATION SPACE TO DOOR D02 MODIFIED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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p +61 2 93281198 e admin@howearchitects.com.au
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028
CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC BASEMENT GENERAL ARRANGEMENT PLAN

SCALE: 1 : 100 @ A2
DATE: 10.10.2018
DRAWN: GO
PROJECT NO: 5055
DRAWING NO: CDC 1.015_04

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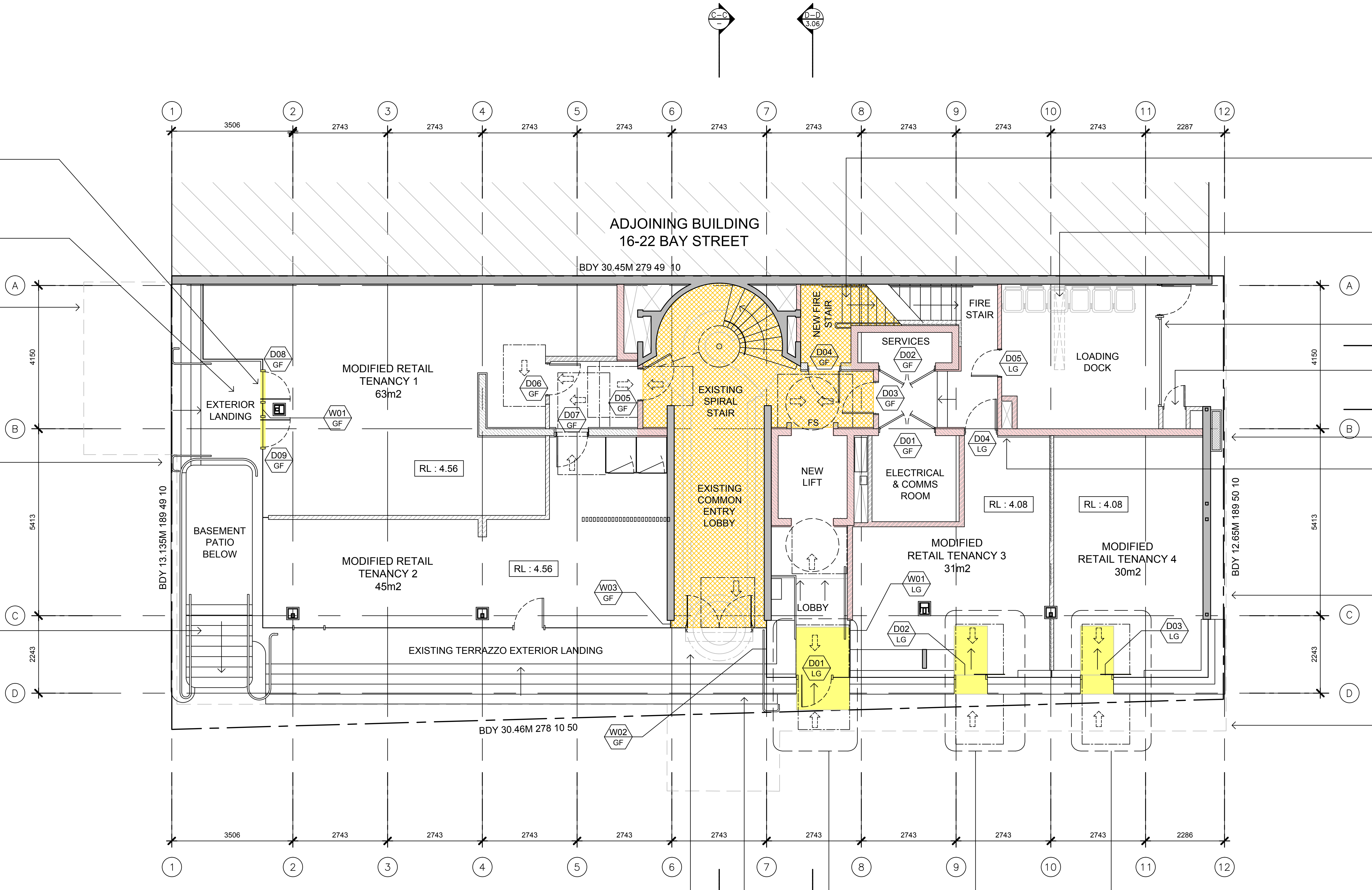
EXISTING GLAZED ENTRY DOORS RELOCATED TO ALLOW FOR COLUMN STRENGTHENING. UNDERTAKEN AS EXEMPT DEVELOPMENT AND NOT INCLUDED IN THIS COMPLYING DEVELOPMENT APPLICATION

PROVIDE SIGNAGE IN ACCORDANCE WITH CLAUSE 7.1 OF PERFORMANCE SOLUTIONS REPORT DATED 16 NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS;

OUTLINE OF STREET AWNING OVER SHOWN DASHED

NEW HANDRAILS, CONTRAST NOSINGS & TGSI'S TO EXISTING STAIRS IN ACCORDANCE WITH REQUIREMENTS OF CLAUSES 2, 7, 8 & 12 OF ACCESSIBILITIES ISSUES REPORT V 2 DATED 15.11.2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS

HANDRAILS, CONTRAST NOSINGS & TGSI'S TO EXISTING STAIRS IN ACCORDANCE WITH REQUIREMENTS OF CLAUSES 2, 7, 8 & 12 OF ACCESSIBILITIES ISSUES REPORT V 2 DATED 15.11.2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS



NEW FIRE STAIR CONFIGURATION TO COMPLY WITH REQUIREMENTS OF CLAUSE 9.1 OF PERFORMANCE SOLUTIONS REPORT DATED 16 NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS;

NEW HYDRAULIC SERVICE RISER FROM FIRST & SECOND FLOORS ABOVE

EXISTING ROLLER DOOR & 'JUDAS' GATE

EXISTING GAS METER IN SERVICE CUPBOARD

EXISTING WATER METER ENCLOSURE

NEW HYDRAULIC SERVICE RISER FROM BASEMENT

EXISTING STORMWATER DISCHARGE FROM ROOF TO COUNCIL GUTTER

EXISTING STREET AWNING OVER FOOTPATH SHOWN DASHED

NEW DISABLED ACCESS RAMP AND GLASS AUTOMATED DOOR UNDERSTAKEN AS EXEMPT DEVELOPMENT AND NOT INCLUDED IN THIS COMPLYING DEVELOPMENT APPLICATION.

NEW DISABLED ACCESS RAMP AND GLASS AUTOMATED DOOR UNDERSTAKEN AS EXEMPT DEVELOPMENT AND NOT INCLUDED IN THIS COMPLYING DEVELOPMENT APPLICATION.

NEW DISABLED ACCESS RAMP AND GLASS AUTOMATED DOOR UNDERSTAKEN AS EXEMPT DEVELOPMENT AND NOT INCLUDED IN THIS COMPLYING DEVELOPMENT APPLICATION.

NEW HANDRAILS, CONTRAST NOSINGS & TGSI'S TO EXISTING STAIRS IN ACCORDANCE WITH REQUIREMENTS OF CLAUSES 2, 7, 8 & 12 OF ACCESSIBILITIES ISSUES REPORT V 2 DATED 15.11.2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS

NEW SIGNAGE IN ACCORDANCE WITH CLAUSE 5.1 OF PERFORMANCE SOLUTIONS REPORT DATED 16 NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS;

N

0 1 2 3 4

LEGEND:

- EXISTING STRUCTURAL WALL
- EXISTING PARTITION WALL
- NEW STRUCTURAL WALL - TYPE A
- NEW INTERNAL WALL - TYPE B
- EXISTING STEEL COLUMN
- NEW STEEL COLUMN
- SERVICE/PLANT RISER
- DISABLED ACCESS CIRCULATION
- FIRE COMPARTMENT/EGRESS
- 180/180/180 FIRE WALL
- 120/120/120 FIRE WALL
- FD FIRE DOOR
- FS FIRE SHUTTER
- PROPOSED WORKS NOT INCLUDED IN THIS COMPLYING DEVELOPMENT APPLICATION

NOTES:

1. THIS GENERAL ARRANGEMENT PLAN SHALL BE READ IN CONJUNCTION WITH ANY OTHER REQUIREMENT AS NOTED IN ARCHITECTURAL SECTIONS, COMPONENT, SCHEDULES AND ARCHITECTURAL DETAIL DRAWINGS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH REQUIREMENTS OF CLAUSES 2, 3, 4, 7, 8 & 12 OF ACCESSIBILITIES ISSUES REPORT V2 DATED 15 NOVEMBER 2018 & TOGETHER WITH PERFORMANCE SOLUTIONS REPORT DATED 16th NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS

AREAS:

SITE AREA 386.7m²

EXISTING BUILDING AREA: 369.7m²

NETT LETTABLE : 169m²

GFA (LEP DEF.) : 207m²

ISSUED FOR CDC

NOTE:

DO NOT SCALE FROM DRAWINGS, USE FIGURED DIMENSIONS ONLY
CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORKS
CONTRACTOR MUST MARK ANY PREVIOUS DRAWINGS AS "SUPERCEDED" AND USE ONLY CURRENT REVISION DRAWINGS ON SITE.

ISSUE:	DATE:	REVISION:
DRAFT	15.10.2018	NEW BASEMENT RISER IN LOADING DOCK, NOTES & DWG SIZE MODIFIED FROM A3 to A2
DRAFT	25.10.2018	FIRE EGRESS WALLS & DOORS MODIFIED, DOOR & WINDOW NOTATIONS ADDED
DRAFT	2.11.2018	HIGHLIGHTING & NOTES ADDED TO IDENTIFY WORKS NOT INCLUDED IN CDC APPLICATION
CDC	19.11.2018	DISABILITY ACCESS NOTATION ADDED, DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

CLIENT: AMA HOLDINGS PTY LTD

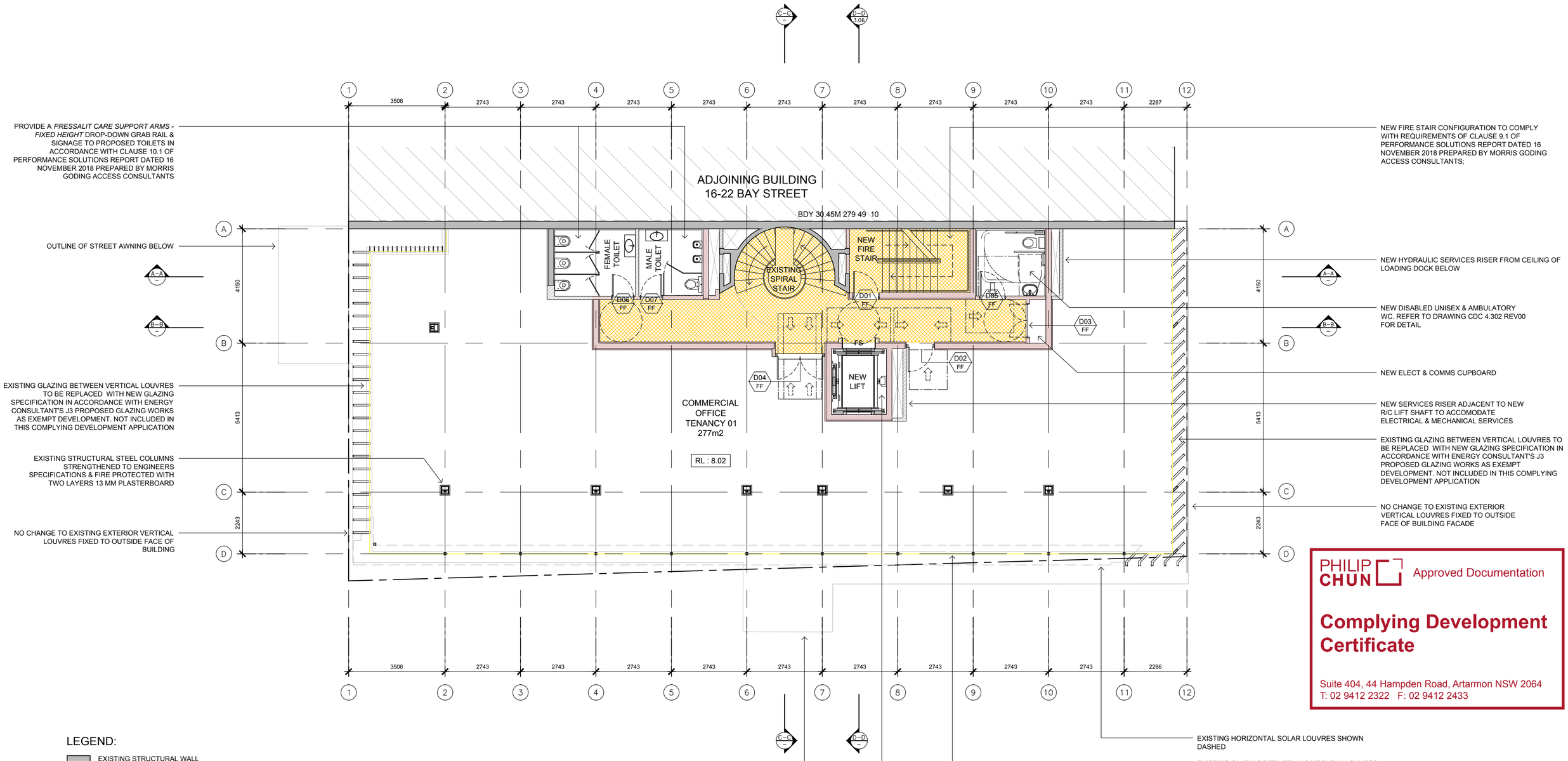
DRAWING: CDC GROUND FLOOR GENERAL ARRANGEMENT PLAN

SCALE: 1 : 100 @ A2

DATE: 10.10.2018 DRAWN: GO

PROJECT NO: 5055

DRAWING NO: CDC 1.016_04



PROVIDE A *PRESSALIT CARE SUPPORT ARMS - FIXED HEIGHT* DROP-DOWN GRAB RAIL & SIGNAGE TO PROPOSED TOILETS IN ACCORDANCE WITH CLAUSE 10.1 OF PERFORMANCE SOLUTIONS REPORT DATED 16 NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS

OUTLINE OF STREET AWNING BELOW

EXISTING GLAZING BETWEEN VERTICAL LOUVRES TO BE REPLACED WITH NEW GLAZING SPECIFICATION IN ACCORDANCE WITH ENERGY CONSULTANT'S J3 PROPOSED GLAZING WORKS AS EXEMPT DEVELOPMENT. NOT INCLUDED IN THIS COMPLYING DEVELOPMENT APPLICATION

EXISTING STRUCTURAL STEEL COLUMNS STRENGTHENED TO ENGINEERS SPECIFICATIONS & FIRE PROTECTED WITH TWO LAYERS 13 MM PLASTERBOARD

NO CHANGE TO EXISTING EXTERIOR VERTICAL LOUVRES FIXED TO OUTSIDE FACE OF BUILDING

NEW FIRE STAIR CONFIGURATION TO COMPLY WITH REQUIREMENTS OF CLAUSE 9.1 OF PERFORMANCE SOLUTIONS REPORT DATED 16 NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS;

NEW HYDRAULIC SERVICES RISER FROM CEILING OF LOADING DOCK BELOW

NEW DISABLED UNISEX & AMBULATORY WC. REFER TO DRAWING CDC 4.302 REV00 FOR DETAIL

NEW ELECT & COMMS CUPBOARD

NEW SERVICES RISER ADJACENT TO NEW R/C LIFT SHAFT TO ACCOMODATE ELECTRICAL & MECHANICAL SERVICES

EXISTING GLAZING BETWEEN VERTICAL LOUVRES TO BE REPLACED WITH NEW GLAZING SPECIFICATION IN ACCORDANCE WITH ENERGY CONSULTANT'S J3 PROPOSED GLAZING WORKS AS EXEMPT DEVELOPMENT. NOT INCLUDED IN THIS COMPLYING DEVELOPMENT APPLICATION

NO CHANGE TO EXISTING EXTERIOR VERTICAL LOUVRES FIXED TO OUTSIDE FACE OF BUILDING FACADE

EXISTING HORIZONTAL SOLAR LOUVRES SHOWN DASHED

EXISTING GLAZING BETWEEN HORIZONTAL LOUVRES TO BE REPLACED WITH NEW GLAZING SPECIFICATION IN ACCORDANCE WITH ENERGY CONSULTANT'S J3 PROPOSED GLAZING WORKS AS EXEMPT DEVELOPMENT. NOT INCLUDED IN THIS COMPLYING DEVELOPMENT APPLICATION

NEW PASSENGER LIFT IN ACCORDANCE WITH REQUIREMENTS OF CLAUSES 9.1 TO 9.11 OF ACCESSIBILITIES ISSUES REPORT V2 DATED 15 NOVEMBER 2018

EXISTING STREET AWNING OVER MAIN BUILDING ENTRY

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Complying Development Certificate

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LEGEND:

- EXISTING STRUCTURAL WALL
- EXISTING PARTITION WALL
- NEW STRUCTURAL WALL - TYPE A
- NEW INTERNAL WALL - TYPE B
- EXISTING STEEL COLUMN
- NEW STEEL COLUMN
- SERVICE/PLANT RISER
- DISABLED ACCESS CIRCULATION
- FIRE COMPARTMENT/EGRESS
- 180/180/180 FIRE WALL
- 120/120/120 FIRE WALL
- FD FIRE DOOR
- FS FIRE SHUTTER
- PROPOSED WORKS NOT INCLUDED IN THIS COMPLYING DEVELOPMENT APPLICATION

NOTES:

1. THIS GENERAL ARRANGEMENT PLAN SHALL BE READ IN CONJUNCTION WITH ANY OTHER REQUIREMENT AS NOTED IN ARCHITECTURAL SECTIONS, COMPONENT, SCHEDULES AND ARCHITECTURAL DETAIL DRAWINGS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH REQUIREMENTS OF CLAUSES 2, 3, 4, 7, 8 & 12 OF ACCESSIBILITIES ISSUES REPORT V2 DATED 15 NOVEMBER 2018 & TOGETHER WITH PERFORMANCE SOLUTIONS REPORT DATED 16th NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS

AREAS:

SITE AREA 386.7m²
EXISTING BUILDING AREA: 408.5m²
NETT LETTABLE : 255m²
GFA (LEP DEF.) : 294m²

N

0 1 2 3 4

ISSUED FOR CDC

NOTE:
DO NOT SCALE FROM DRAWINGS, USE FIGURED DIMENSIONS ONLY.
CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORKS
CONTRACTOR MUST MARK ANY PREVIOUS DRAWINGS AS "SUPERCEDED" AND USE ONLY CURRENT REVISION DRAWINGS ON SITE.

ISSUE:	DATE:	REVISION:
DRAFT	15.10.2018	NOTES AMENDED & DWG SIZE MODIFIED FROM A3 to A2
DRAFT	25.10.2018	GFA AMENDED, DOOR NOTATIONS ADDED
DRAFT	2.11.2018	HIGHLIGHTING & NOTES ADDED TO IDENTIFY WORKS NOT INCLUDED IN CDC APPLICATION
CDC	19.11.2018	DISABILITY ACCESS NOTATION ADDED, DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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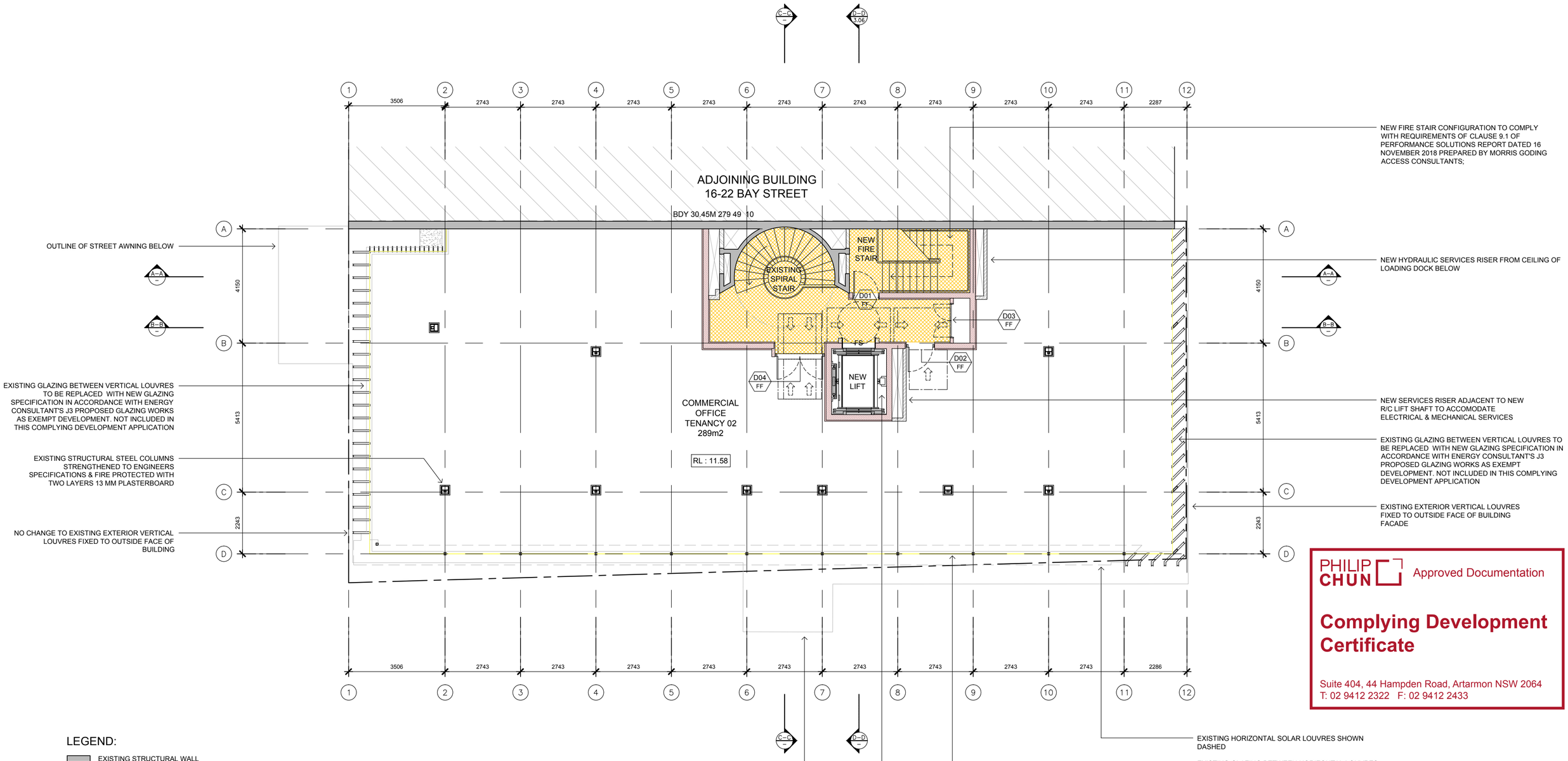
Level 1, 306-310 New South Head Road, Double Bay, Sydney, NSW 2028
p +61 2 93281198 e admin@howearchitects.com.au
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028
CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC FIRST FLOOR GENERAL ARRANGEMENT PLAN

SCALE: 1 : 100 @ A2
DATE: 10.10.2018
DRAWN: GO
PROJECT NO: 5055
DRAWING NO: CDC 1.017_04



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LEGEND:

- EXISTING STRUCTURAL WALL
- EXISTING PARTITION WALL
- NEW STRUCTURAL WALL - TYPE A
- NEW INTERNAL WALL - TYPE B
- EXISTING STEEL COLUMN
- NEW STEEL COLUMN
- SERVICE/PLANT RISER
- DISABLED ACCESS CIRCULATION
- FIRE COMPARTMENT/EGRESS
- 180/180/180 FIRE WALL
- 120/120/120 FIRE WALL
- FD FIRE DOOR
- FS FIRE SHUTTER
- PROPOSED WORKS NOT INCLUDED IN THIS COMPLYING DEVELOPMENT APPLICATION

NOTES:

1. THIS GENERAL ARRANGEMENT PLAN SHALL BE READ IN CONJUNCTION WITH ANY OTHER REQUIREMENT AS NOTED IN ARCHITECTURAL SECTIONS, COMPONENT, SCHEDULES AND ARCHITECTURAL DETAIL DRAWINGS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH REQUIREMENTS OF CLAUSES 2, 3, 4, 7, 8 & 12 OF ACCESSIBILITIES ISSUES REPORT V2 DATED 15 NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS

AREAS:

SITE AREA 386.7m²

EXISTING BUILDING AREA: 370.5m²

NETT LETTABLE : 289m²

GFA (LEP DEF.) : 294m²

N

0 1 2 3 4

ISSUED FOR CDC

NOTE:
DO NOT SCALE FROM DRAWINGS, USE FIGURED DIMENSIONS ONLY.
CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORKS
CONTRACTOR MUST MARK ANY PREVIOUS DRAWINGS AS "SUPERCEDED" AND USE ONLY CURRENT REVISION DRAWINGS ON SITE.

ISSUE:	DATE:	REVISION:
DRAFT	16.10.2018	NOTES AMENDED & DWG SIZE MODIFIED FROM A3 to A2
DRAFT	25.10.2018	GFA AMENDED, DOOR NOTATIONS ADDED
DRAFT	2.11.2018	HIGHLIGHTING & NOTES ADDED TO IDENTIFY WORKS NOT INCLUDED IN CDC APPLICATION
CDC	19.11.2018	DISABILITY ACCESS NOTATION ADDED, DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC SECOND FLOOR GENERAL ARRANGEMENT PLAN

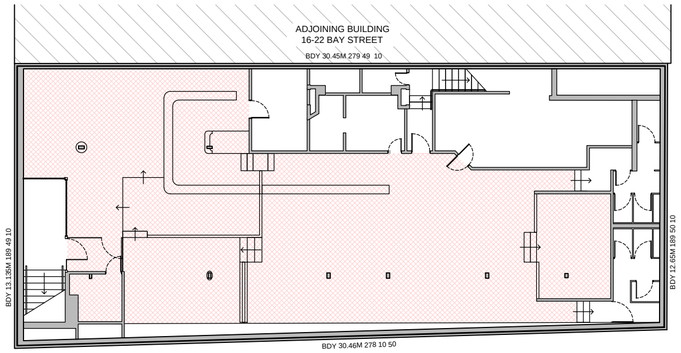
SCALE: 1 : 100 @ A2

DATE: 10.10.2018

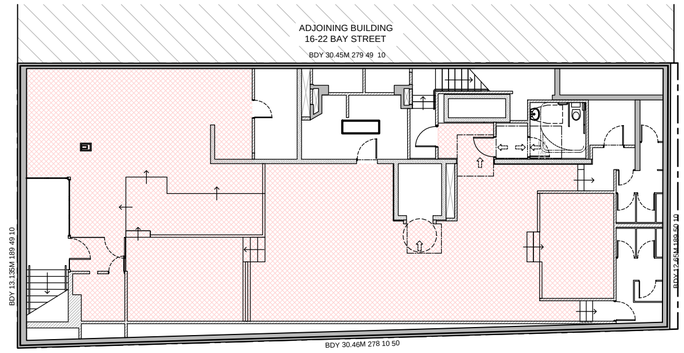
DRAWN: GO

PROJECT NO: 5055

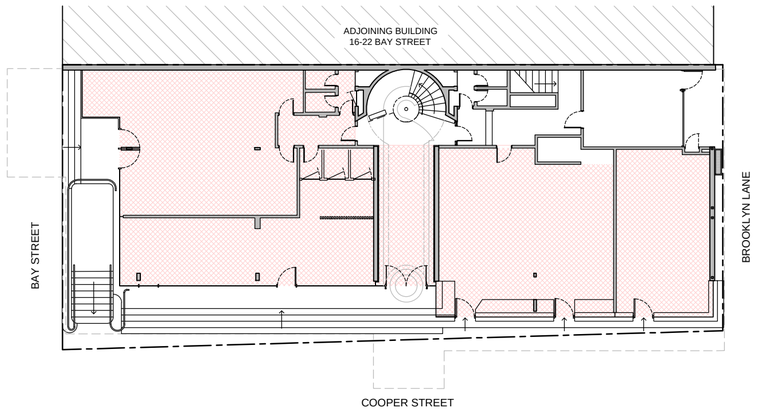
DRAWING NO: CDC 1.018_04



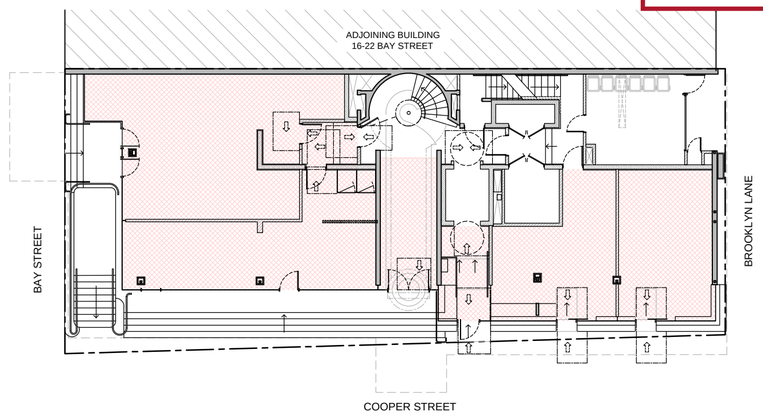
01 EXISTING BASEMENT PLAN : GFA 229 m2
1:200 @A2



02 PROPOSED BASEMENT PLAN : GFA 220 m2
1:200 @A2



03 EXISTING GROUND FLOOR PLAN : GFA 231 m2
1:200 @A2



04 EXISTING GROUND FLOOR PLAN : GFA 206 m2
1:200 @A2

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NOTES:

1. REFER TO FLOOR PLANS FOR INTERNAL ROOM IDENTIFICATION AND USE

LEGEND:

GROSS FLOOR AREA TO WLEP DEFINITION

N

0 1 2 3 4

ISSUED FOR CDC

NOTE:	ISSUE:	DATE:	REVISION:
DO NOT SCALE FROM DRAWINGS, USE FIGURED DIMENSIONS ONLY CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORKS CONTRACTOR MUST MARK ANY PREVIOUS DRAWINGS AS "SUPERCEDED" AND USE ONLY CURRENT REVISION DRAWINGS ON SITE. É COPYRIGHT IN ALL DESIGN AND DOCUMENTATION RESERVED	INFO	26.10.2018	GFA AMENDED
	CDC	19.11.2018	UNISEX TOILET AMENDED, DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CEILEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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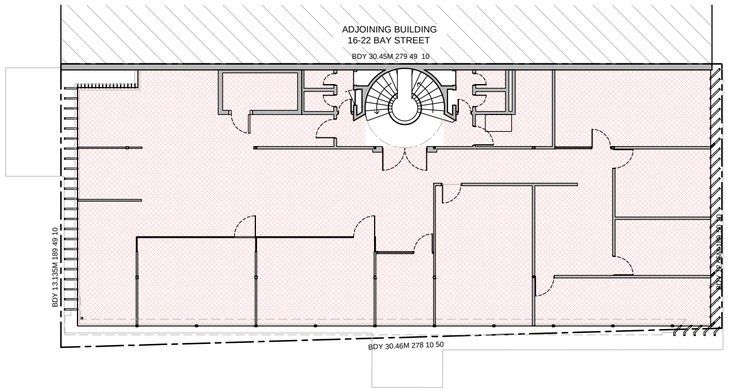
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

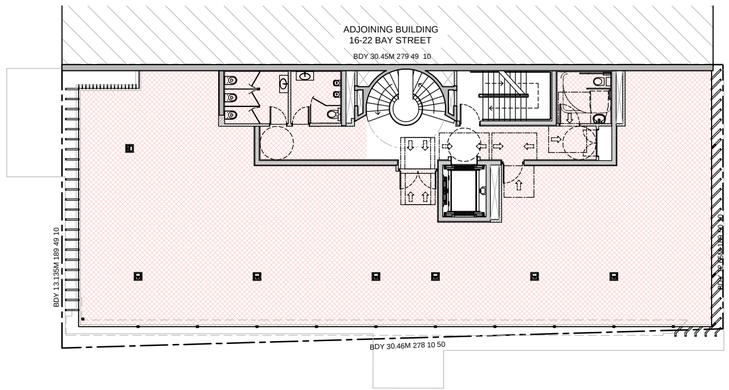
CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC BASEMENT & GROUND FLOOR GFA PLAN

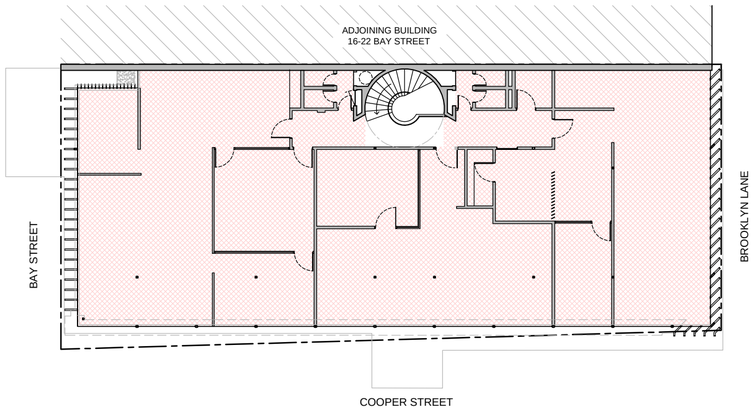
SCALE: 1 : 100 @ A2
DATE: 26.10.2018
DRAWN: SB
PROJECT NO: 5055
DRAWING NO: CDC 1.030_02



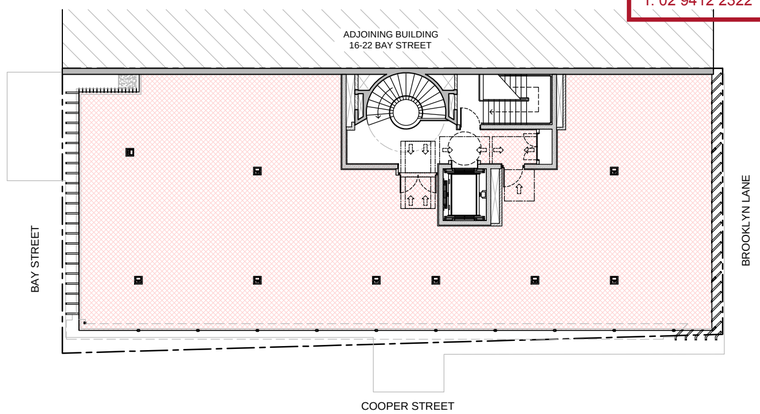
01 EXISTING FIRST FLOOR PLAN : GFA 324 m2
1:200 @A2



02 PROPOSED FIRST FLOOR PLAN : GFA 294 m2
1:200 @A2



03 EXISTING SECOND FLOOR PLAN : GFA 324 m2
1:200 @A2



04 PROPOSED SECOND FLOOR PLAN : GFA 294 m2
1:200 @A2

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N

0 1 2 3 4

ISSUED FOR CDC

NOTES:

1. REFER TO FLOOR PLANS FOR INTERNAL ROOM IDENTIFICATION AND USE

LEGEND:

GROSS FLOOR AREA TO WLEP DEFINITION

NOTE:
DO NOT SCALE FROM DRAWINGS, USE FIGURED DIMENSIONS ONLY
CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORKS
CONTRACTOR MUST MARK ANY PREVIOUS DRAWINGS AS "SUPERCEDED" AND USE ONLY CURRENT REVISION DRAWINGS ON SITE.

ISSUE:	DATE:	REVISION:
INFO	26.10.2018	GFA AMENDED
CDC	14.11.2018	DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CEILEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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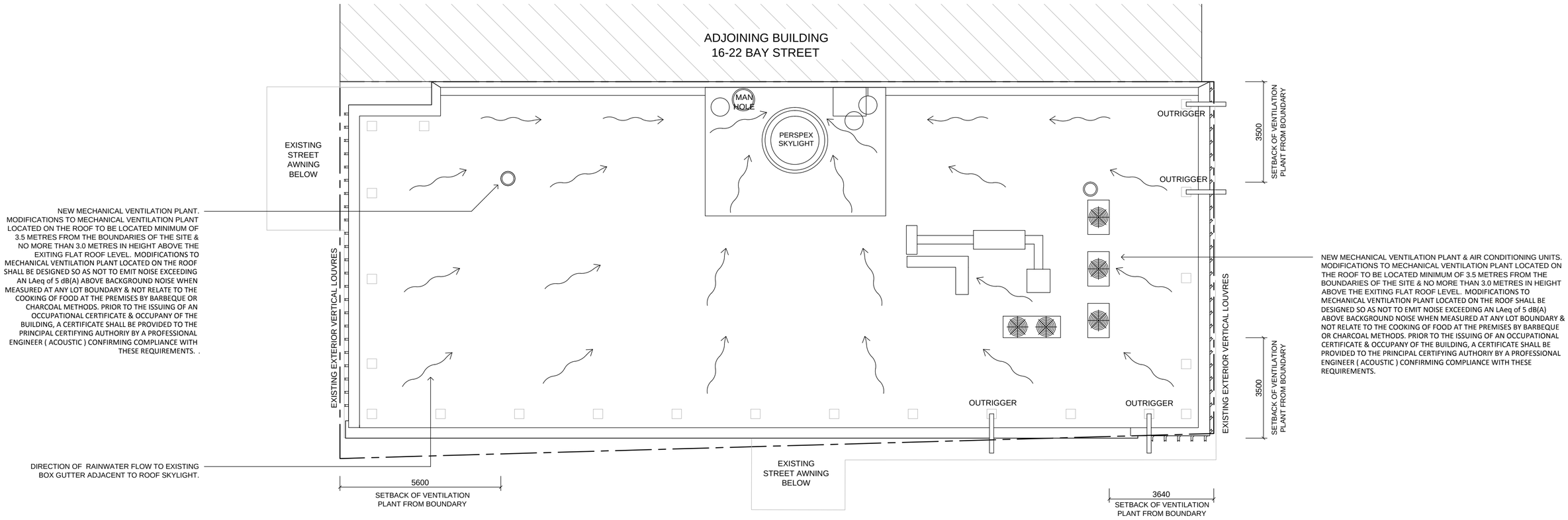
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028
CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC FIRST & SECOND FLOOR GFA PLAN

SCALE: 1 : 200 @ A2
DATE: 26.10.2018 DRAWN: SB
PROJECT NO: 5055 DRAWING NO: CDC 1.031_01



LEGEND:

EXISTING RAINWATER/STORMWATER FLOW DIRECTION (NO CHANGE)

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N

0 1 2 3 4

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ISSUE:	DATE:	REVISION:
CDC	14.11.2018	DRAFT REMOVED, ISSUED FOR CDC
CDC	21.11.2018	DIMENSIONS ADDED, NOTATIONS RE MECHANICAL PLANT AMENDED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CEILEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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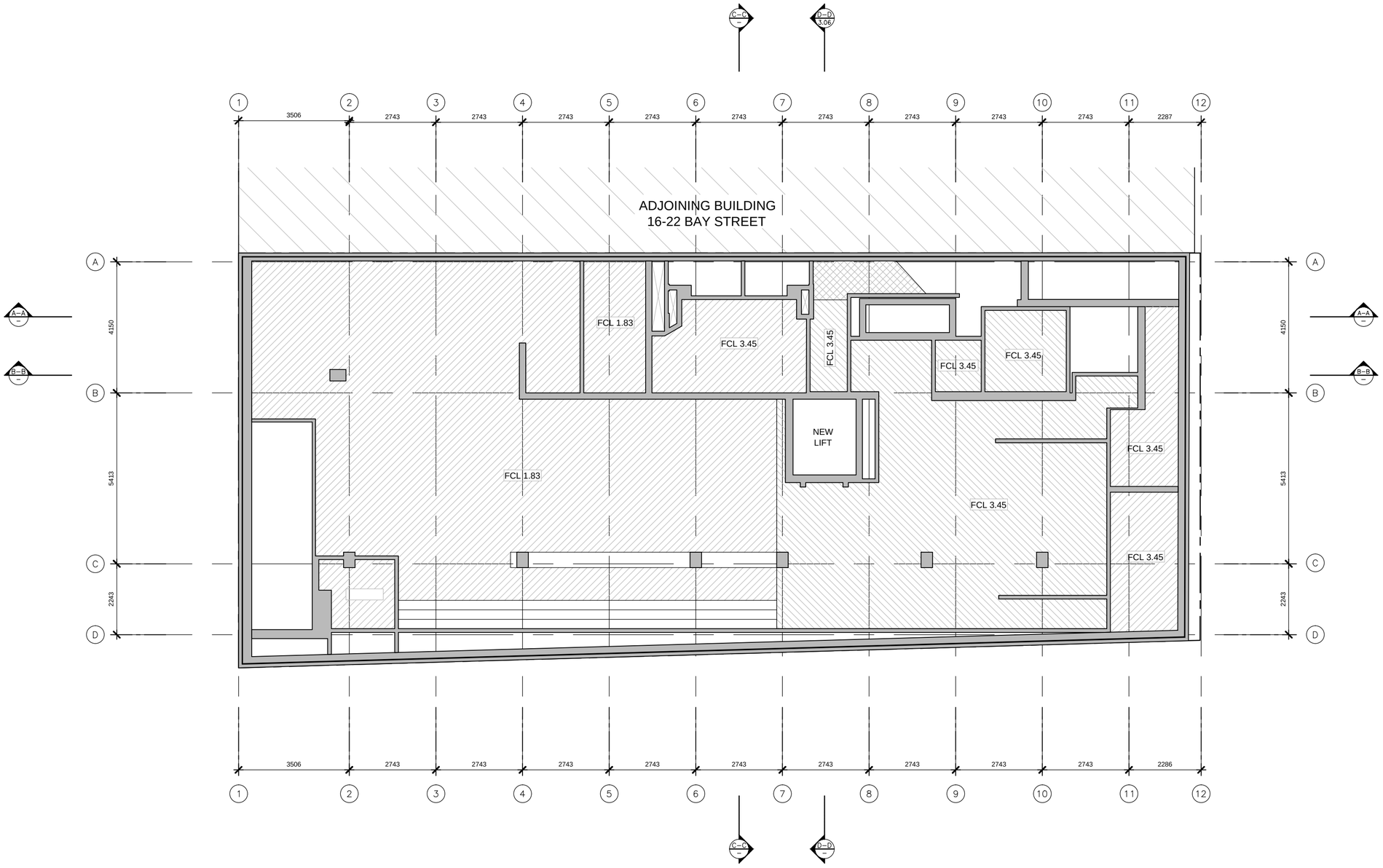
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028
CLIENT: AMA HOLDINGS PTY LTD

DRAWING: PROPOSED ROOF PLAN

SCALE: 1 : 100 @ A2
DATE: 2.11.2018 DRAWN: GO
PROJECT NO: 5055 DRAWING NO: CDC 1.050_01



LEGEND:

- EXISTING HARD SET CEILING
  FCL = RL 7.76
- EXPOSED UNDERSIDE OF CONCRETE
  SLAB ABOVE
- EXISTING PLASTERBOARD CEILING
  FCL = RL 7.34
- NEW PLASTERBOARD CEILING
  FCL = RL 7.34
- WALLS
- COLUMNS
- SERVICE RISERS/SHAFTS

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N

0 1 2 3 4

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ISSUE:	DATE:	REVISION:
CDC	19.11.2018	UNISEX TOILET AMENDED, DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CEILEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

CLIENT: AMA HOLDINGS PTY LTD

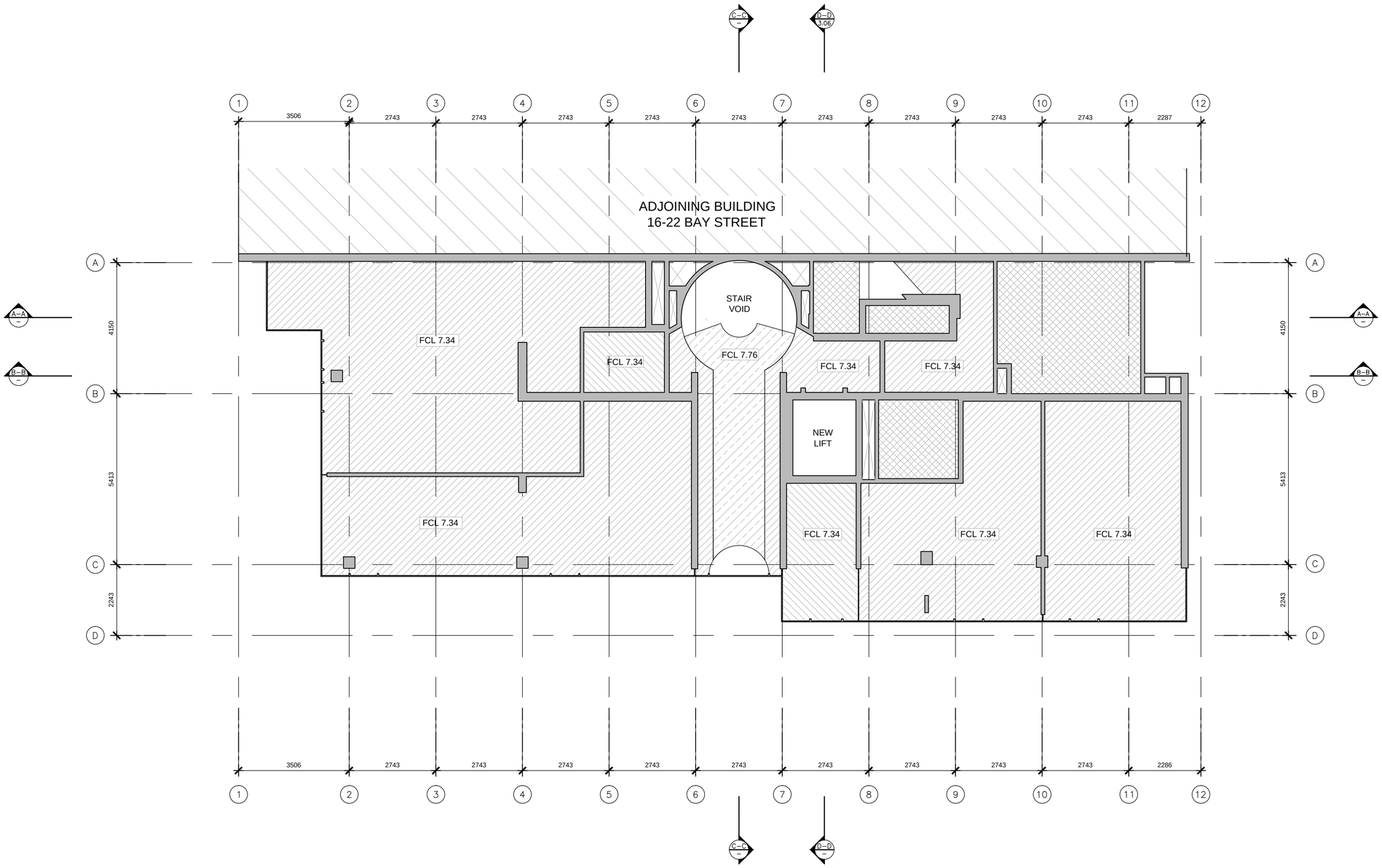
DRAWING: CDC BASEMENT RCP

SCALE: 1 : 100 @ A2

DATE: 17.10.2018 DRAWN: GO

PROJECT NO: 5055

DRAWING NO: CDC 1.701_01



LEGEND:

- EXISTING HARD SET CEILING FCL = RL 7.76
- EXPOSED UNDERSIDE OF CONCRETE SLAB ABOVE
- EXISTING PLASTERBOARD CEILING FCL = RL 7.34
- NEW PLASTERBOARD CEILING FCL = RL 7.34
- WALLS
- COLUMNS
- SERVICE RISERS/SHAFTS

PHILIP CHUN Approved Documentation

Complying Development Certificate

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N

0 1 2 3 4

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CONTRACTOR MUST MARK ANY PREVIOUS DRAWINGS AS "SUPERCEDED" AND USE ONLY CURRENT REVISION DRAWINGS ON SITE.

ISSUE:	DATE:	REVISION:
DRAFT	5.11.2018	LOCATION OF FIRE EGRESS WALLS & DOORS MODIFIED
CDC	14.11.2018	DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

CLIENT: AMA HOLDINGS PTY LTD

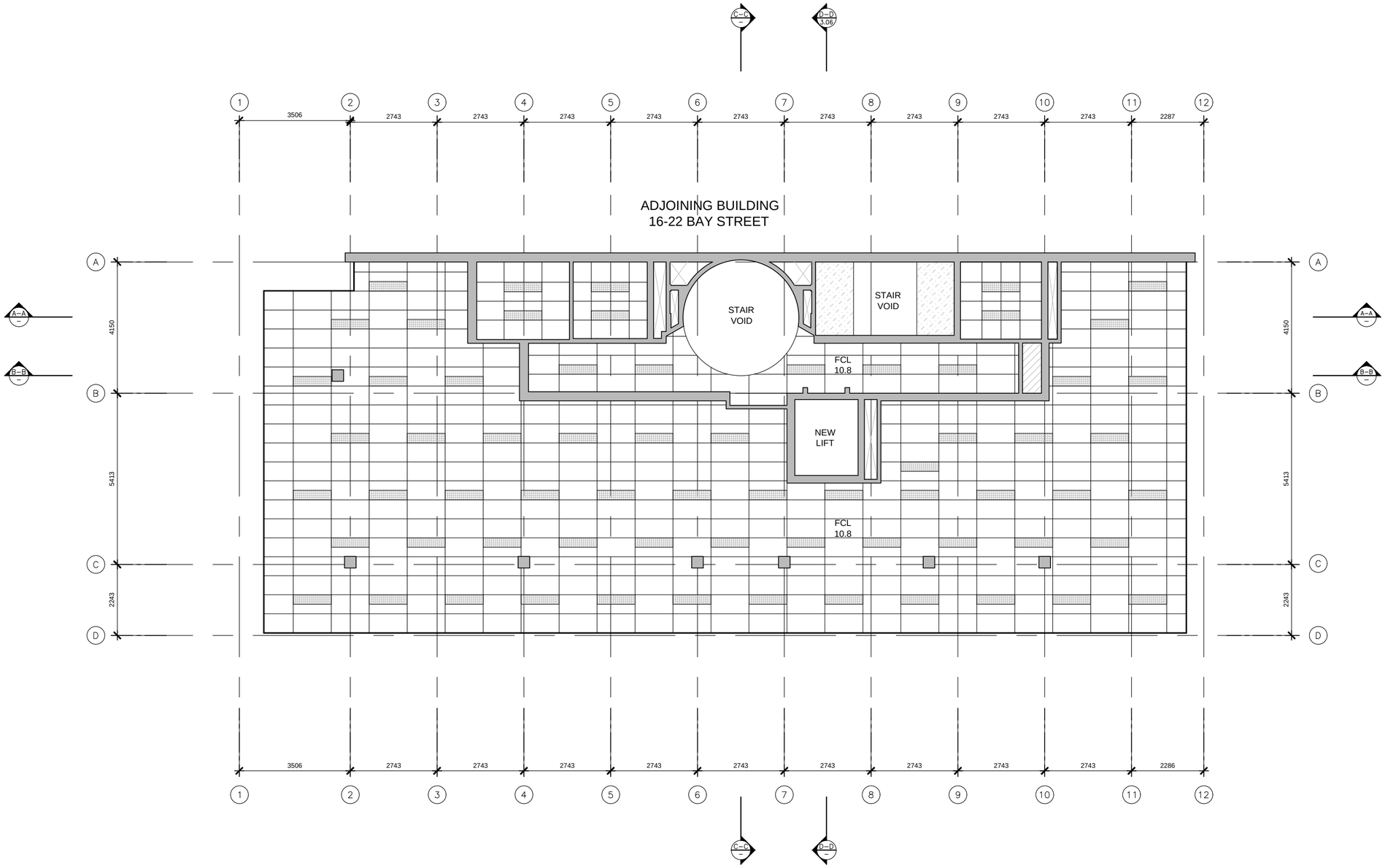
DRAWING: CDC GROUND FLOOR RCP

SCALE: 1 : 100 @ A2

DATE: 17.10.2018 DRAWN: GO

PROJECT NO: 5055

DRAWING NO: CDC 1.702_01



LEGEND:

- NEW RONDO SUSPENDED CEILING FCL = RL 10.8
- FLUSH MOUNTED FLUORESCENT PAN LIGHT FITTING
- EXPOSED UNDERSIDE OF CONCRETE STAIR LANDINGS
- NEW PLASTERBOARD CEILING FCL = RL 10.8
- WALLS
- COLUMNS
- SERVICE RISERS/SHAFTS

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ISSUE:	DATE:	REVISION:
CDC	14.11.2018	DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

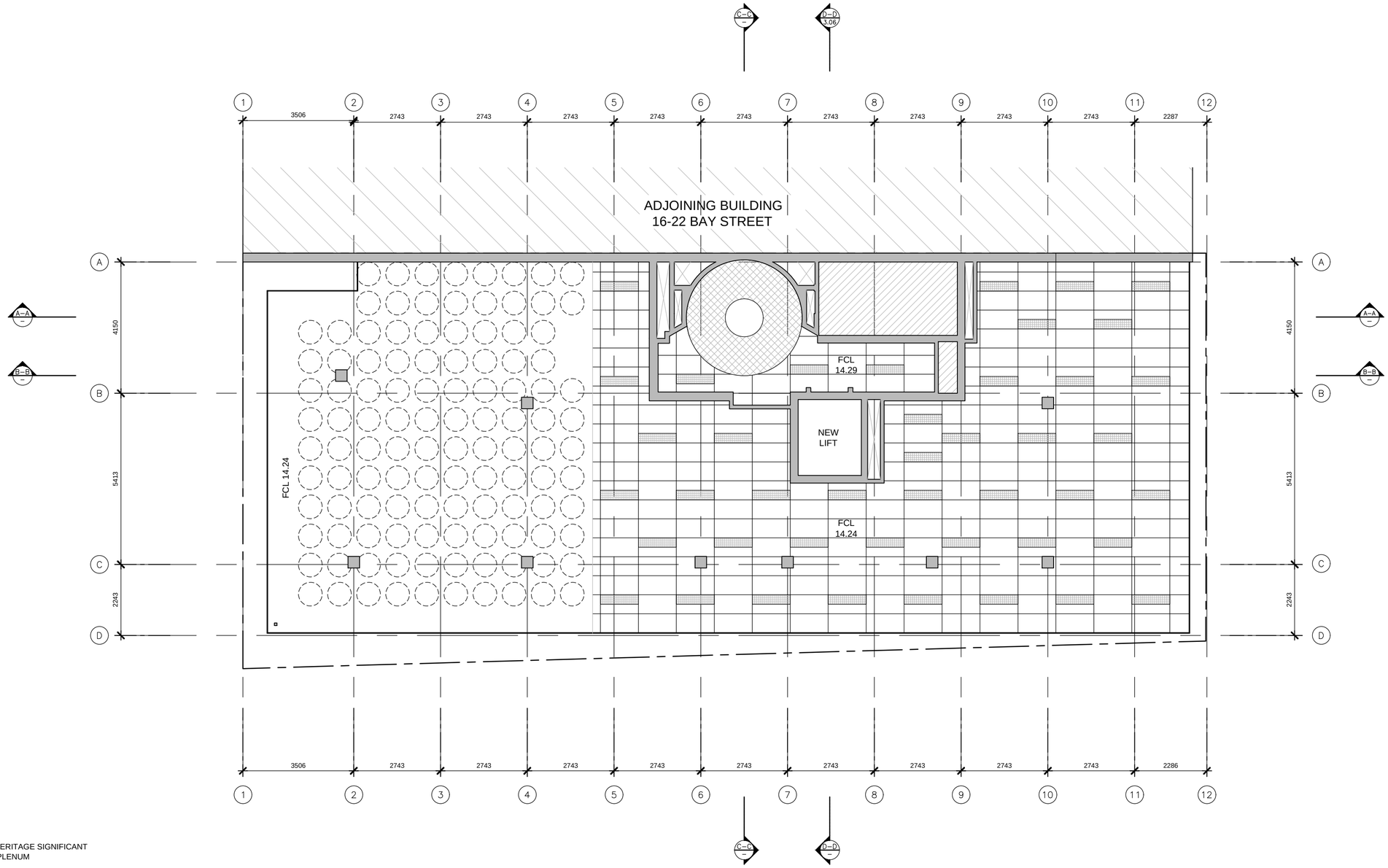
CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC FIRST FLOOR RCP

SCALE: 1 : 100 @ A2

DATE: 17.10.2018 DRAWN: GO

PROJECT NO: 5055 DRAWING NO: CDC 1.703_00



LEGEND:

- EXISTING HERITAGE SIGNIFICANT CEILING & PLENUM
- NEW RONDO SUSPENDED CEILING FCL = RL 14.24
- FLUSH MOUNTED FLUORESCENT PAN LIGHT FITTING
- EXISTING HARD SET CEILING FCL = RL 14.54
- NEW PLASTERBOARD CEILING FCL = RL 14.29
- WALLS
- COLUMNS
- SERVICE RISERS/SHAFTS

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ISSUE:	DATE:	REVISION:
CDC	14.11.2018	DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC SECOND FLOOR RCP

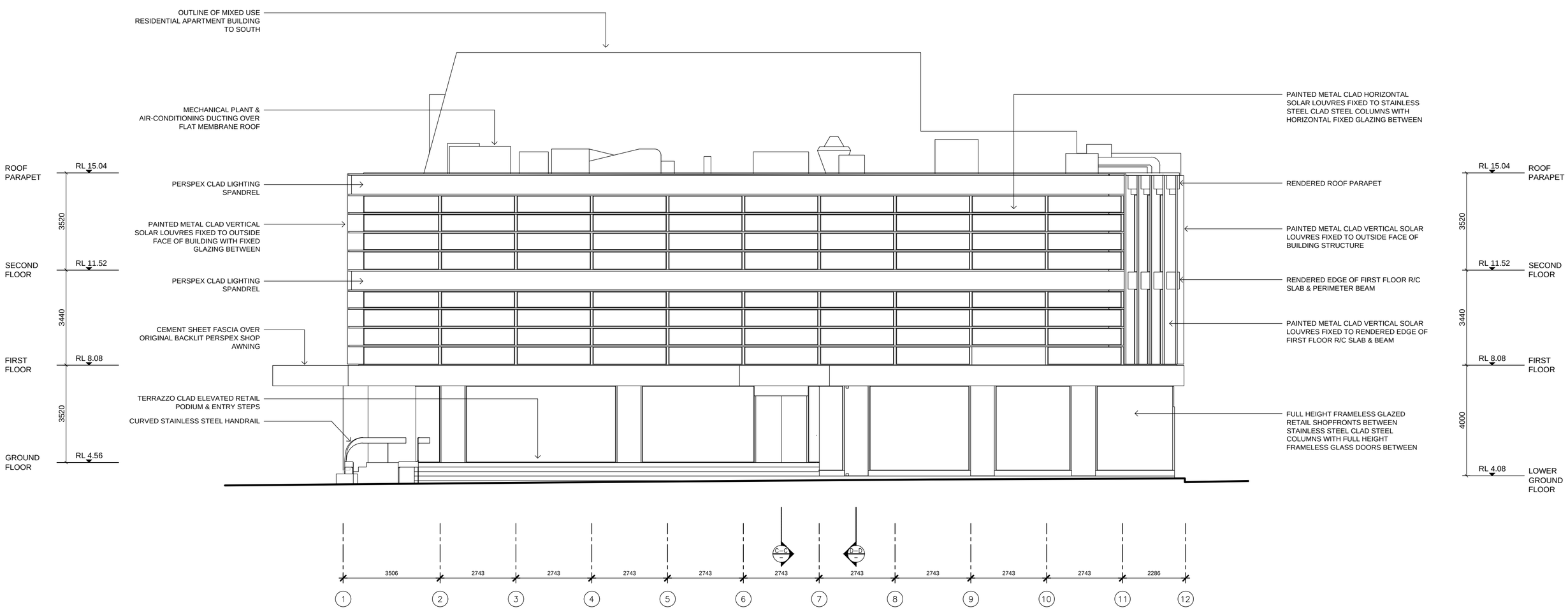
SCALE: 1 : 100 @ A2

DATE: 17.10.2018

DRAWN: GO

PROJECT NO: 5055

DRAWING NO: CDC 1.704_00



1 – EXISTING NORTH ELEVATION

1:100 @A2

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ISSUE:	DATE:	REVISION:
CDC	14.11.2018	ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
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PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

CLIENT: AMA HOLDINGS PTY LTD

DRAWING: EXISTING NORTH ELEVATION

SCALE: 1 : 100 @ A2	
DATE: 23.10.2018	DRAWN: SB
PROJECT NO: 5055	DRAWING NO: CDC 2.008_01

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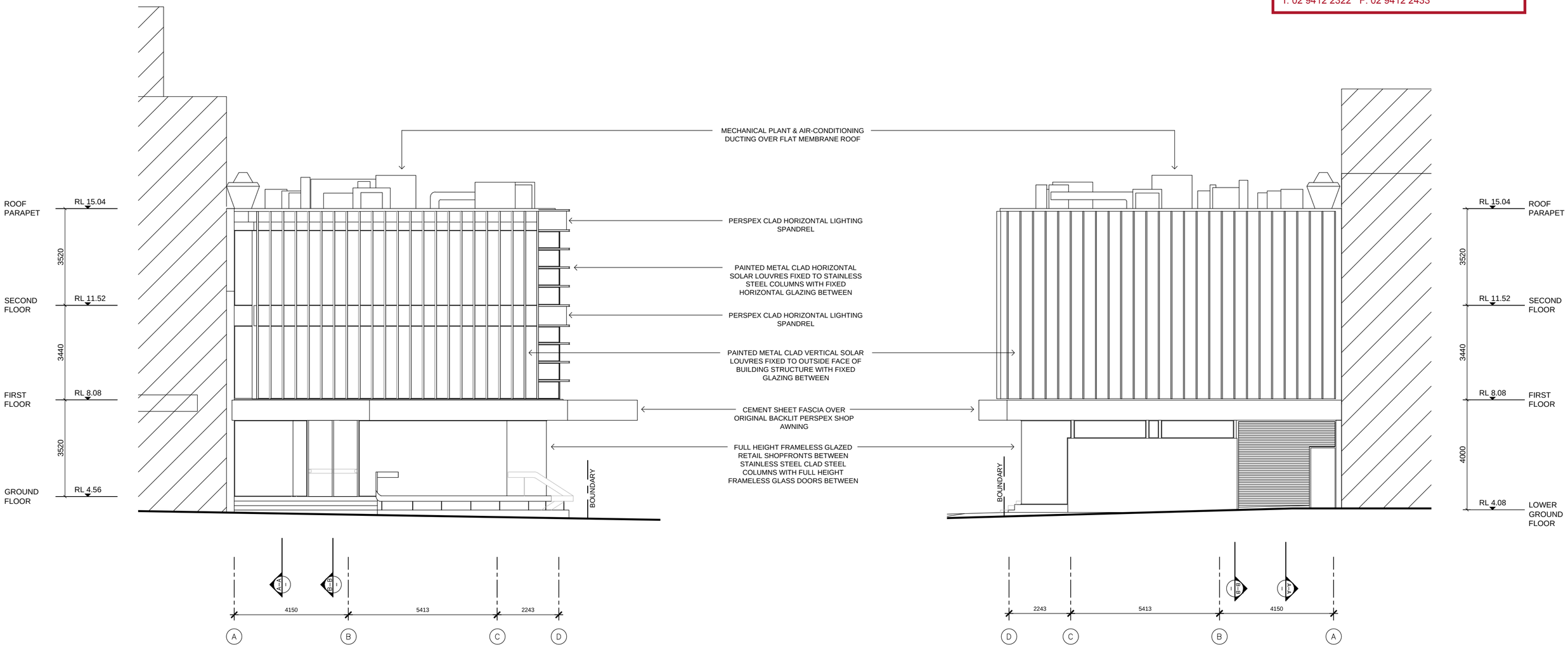

1 – EXISTING EAST ELEVATION
1:100 @A2

2 – EXISTING WEST ELEVATION
1:100 @A2

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NOTE:
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ISSUE:	DATE:	REVISION:
CDC	14.11.2018	ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
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AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
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CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
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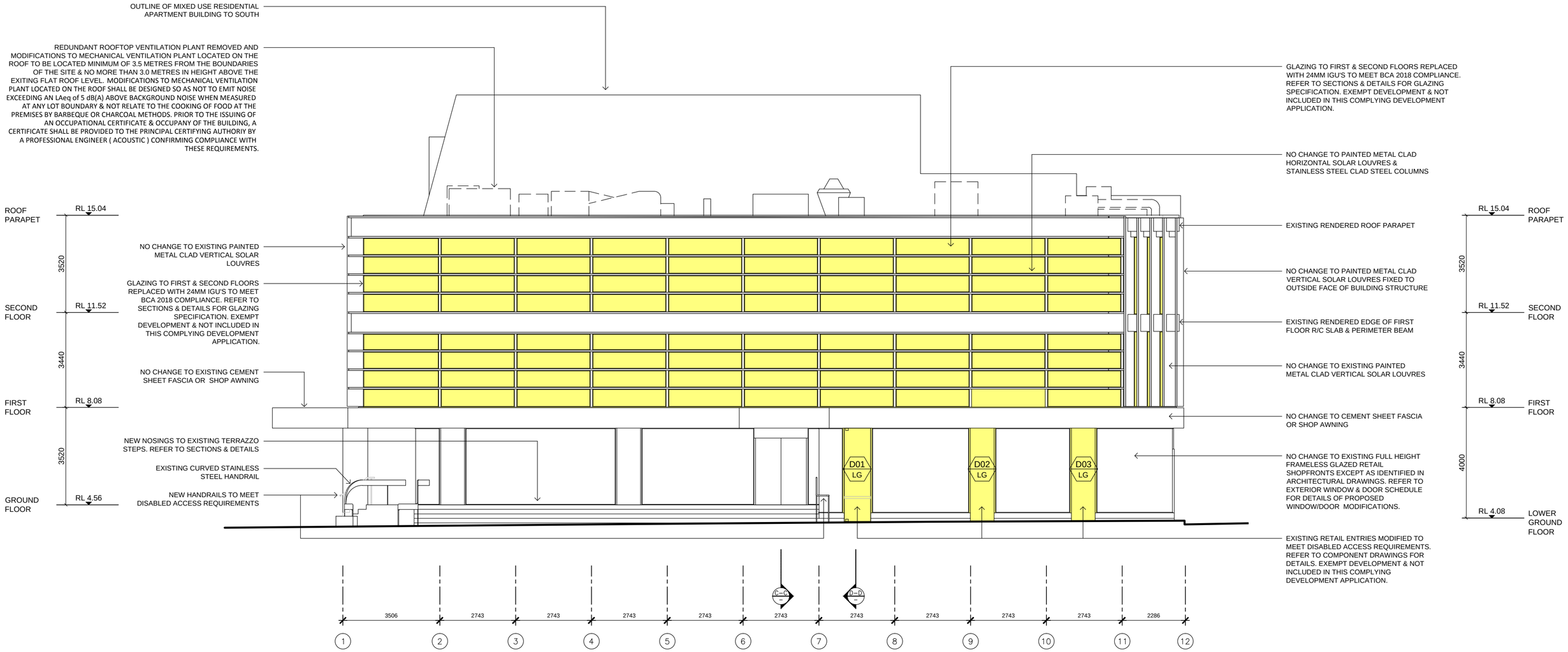
PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

CLIENT: AMA HOLDINGS PTY LTD

DRAWING: EXISTING EAST & WEST ELEVATIONS

SCALE: 1 : 100 @ A2	
DATE: 23.10.2018	DRAWN: SB
PROJECT NO: 5055	DRAWING NO: CDC 2.008_01



1 – PROPOSED NORTH ELEVATION

1:100 @A2

LEGEND:

PROPOSED WORKS NOT INCLUDED IN THIS COMPLYING DEVELOPMENT APPLICATION

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ISSUE:	DATE:	REVISION:
DRAFT	1.11.2018	ROOFTOP MECHANICAL PLANT NOTES AMENDED, EXEMPT WORKS IDENTIFIED & NOTED
CDC	14.11.2018	NOTATIONS AMENDED, ISSUED FOR CDC
CDC	21.11.2018	NOTATIONS RE ROOFTOP MECHANICAL PLANT AMENDED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
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CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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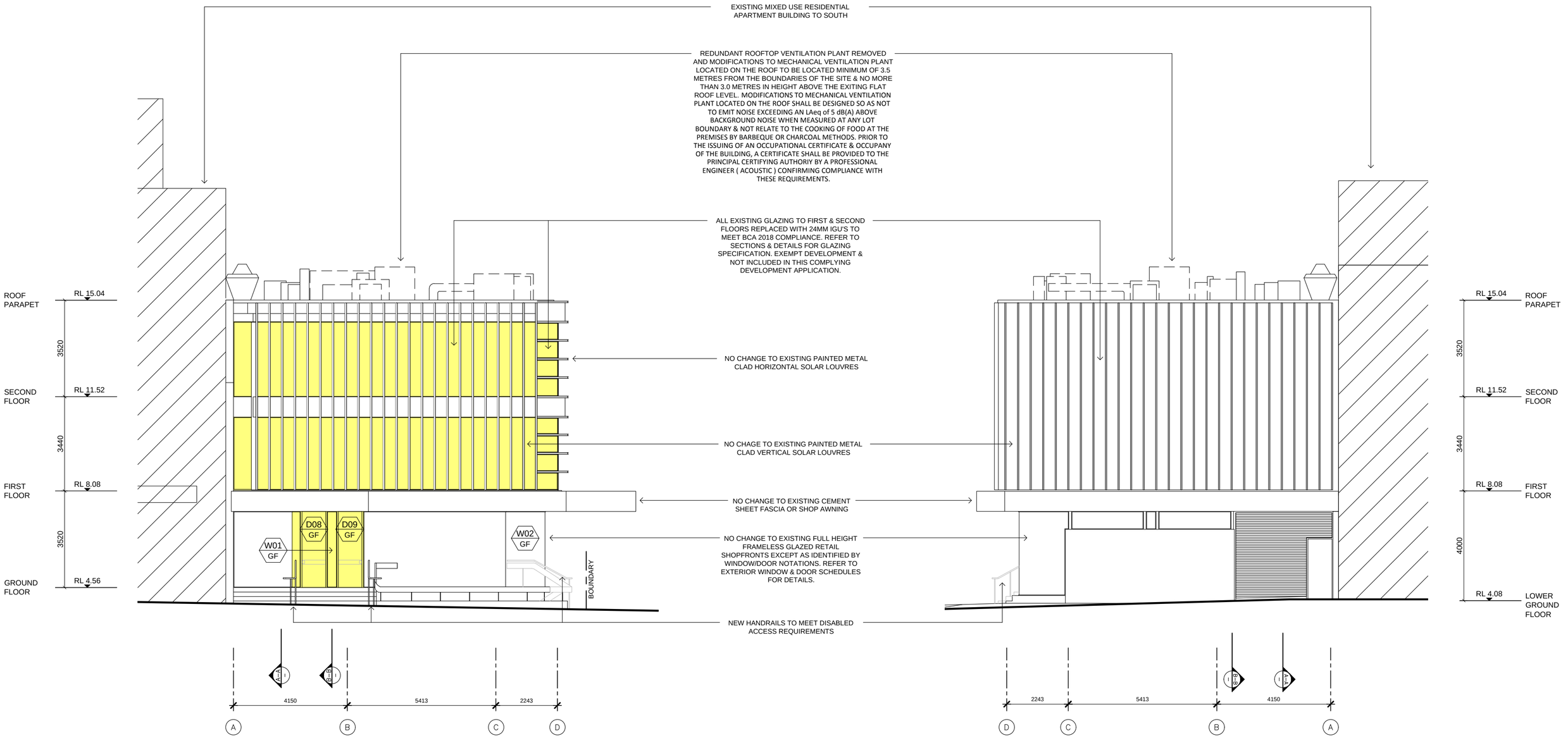
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

CLIENT: AMA HOLDINGS PTY LTD

DRAWING: PROPOSED NORTH ELEVATION

SCALE: 1 : 100 @ A2
DATE: 23.10.2018
DRAWN: SB
PROJECT NO: 5055
DRAWING NO: CDC 2.010_03



1 – PROPOSED EAST ELEVATION
1:100 @A2

2 – PROPOSED WEST ELEVATION
1:100 @A2

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LEGEND:

PROPOSED WORKS NOT INCLUDED IN THIS COMPLYING DEVELOPMENT APPLICATION

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ISSUE:	DATE:	REVISION:
DRAFT	1.11.2018	ROOFTOP MECHANICAL PLANT NOTES AMENDED, EXEMPT WORKS IDENTIFIED & NOTED
CDC	14.11.2018	NOTATIONS AMENDED, ISSUED FOR CDC
CDC	21.11.2018	NOTATIONS RE ROOFTOP MECHANICAL PLANT AMENDED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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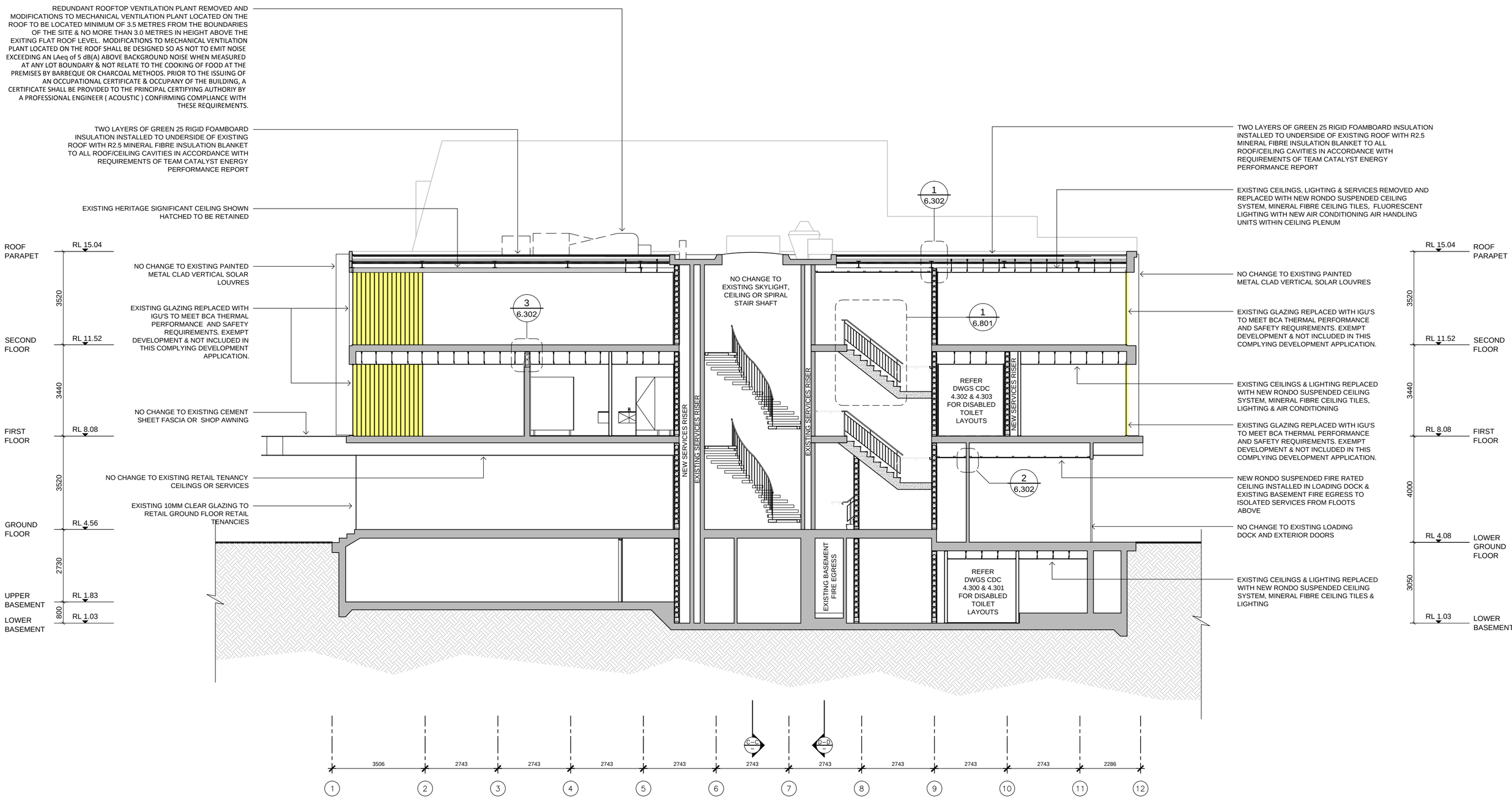
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

CLIENT: AMA HOLDINGS PTY LTD

DRAWING: PROPOSED EAST & WEST ELEVATIONS

SCALE: 1 : 100 @ A2
DATE: 23.10.2018
DRAWN: SB
PROJECT NO: 5055
DRAWING NO: CDC 2.011_03



1 – SECTION A – A
1:100 @A2

LEGEND:

PROPOSED WORKS NOT INCLUDED IN THIS COMPLYING DEVELOPMENT APPLICATION

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ISSUE:	DATE:	REVISION:
DRAFT	1.11.2018	ROOF MECHANICAL PLANT NOTES AMENDED, WORKS NOT INCLUDED IN CDC COLOURED
CDC	14.11.2018	NOTES & HIGHLIGHTING AMENDED, ISSUED FOR CDC
CDC	21.11.2018	NOTATIONS RE ROOFTOP MECHANICAL PLANT AMENDED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
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CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
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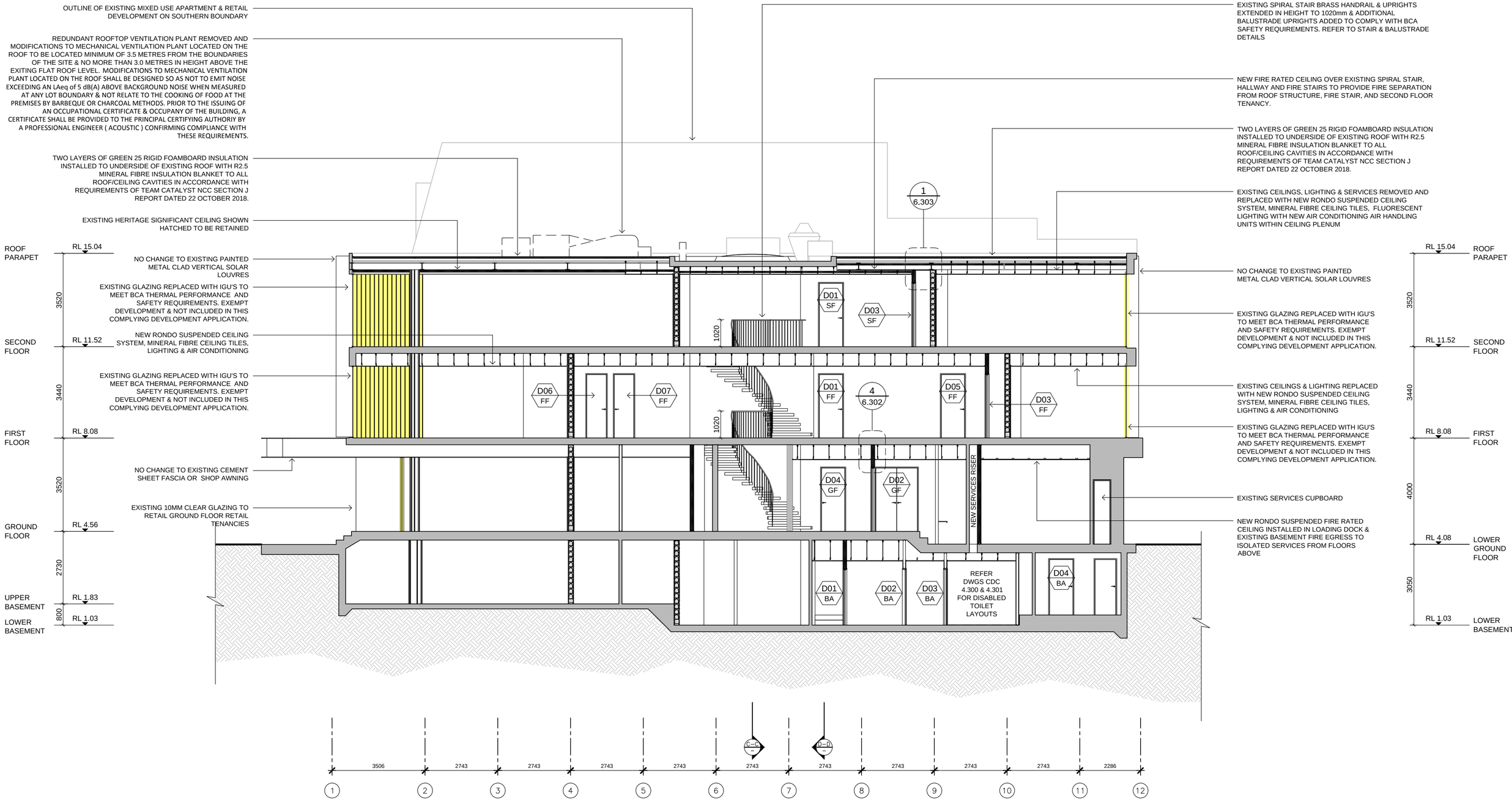
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC PROPOSED SECTION A - A

SCALE: 1 : 100 @ A2
DATE: 18.10.2018
DRAWN: GO
PROJECT NO: 5055
DRAWING NO: CDC 3.200_04



1 / – SECTION B – B

1:100 @A2

LEGEND:

PROPOSED WORKS NOT INCLUDED IN THIS COMPLYING DEVELOPMENT APPLICATION

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ISSUE:	DATE:	REVISION:
DRAFT	1.11.2018	ROOF MECHANICAL PLANT NOTES AMENDED, WORKS NOT INCLUDED IN CDC COLOURED
CDC	14.11.2018	NOTES & HIGHLIGHTING AMENDED, ISSUED FOR CDC
CDC	21.11.2018	NOTATIONS RE ROOFTOP MECHANICAL PLANT AMENDED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CEILEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
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BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
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CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC PROPOSED SECTION B - B

SCALE: 1 : 100 @ A2

DATE: 18.10.2018 DRAWN: GO

PROJECT NO: 5055 DRAWING NO: CDC 3.201_04

REDUNDANT ROOFTOP VENTILATION PLANT REMOVED AND MODIFICATIONS TO MECHANICAL VENTILATION PLANT LOCATED ON THE ROOF TO BE LOCATED MINIMUM OF 3.5 METRES FROM THE BOUNDARIES OF THE SITE & NO MORE THAN 3.0 METRES IN HEIGHT ABOVE THE EXITING FLAT ROOF LEVEL. MODIFICATIONS TO MECHANICAL VENTILATION PLANT LOCATED ON THE ROOF SHALL BE DESIGNED SO AS NOT TO EMIT NOISE EXCEEDING AN LAeq of 5 dB(A) ABOVE BACKGROUND NOISE WHEN MEASURED AT ANY LOT BOUNDARY & NOT RELATE TO THE COOKING OF FOOD AT THE PREMISES BY BARBEQUE OR CHARCOAL METHODS. PRIOR TO THE ISSUING OF AN OCCUPATIONAL CERTIFICATE & OCCUPANY OF THE BUILDING, A CERTIFICATE SHALL BE PROVIDED TO THE PRINCIPAL CERTIFYING AUTHORIY BY A PROFESSIONAL ENGINEER (ACOUSTIC) CONFIRMING COMPLIANCE WITH THESE REQUIREMENTS.

OUTLINE OF EXISTING MIXED USE RESIDENTIAL APARTMENT & RETAIL BUILDING ADJACENT TO SOUTHERN BOUNDARY

NEW LIFT SPECIFICATIONS TO COMPLY WITH REQUIREMENT 9.1 TO 9.11 OF MORRIS GODING ACCESS CONSULTANT REPORT 15.11.2018

EXISTING CEILINGS, LIGHTING & SERVICES REMOVED AND REPLACED WITH NEW RONDO SUSPENDED CEILING SYSTEM, MINERAL FIBRE CEILING TILES, & FLUORESCENT LIGHTING WITH NEW AIR CONDITIONING AIR HANDLING UNITS WITHIN CEILING PLENUM

TWO LAYERS OF GREEN 25 RIGID FOAMBOARD INSULATION INSTALLED TO UNDERSIDE OF EXISTING ROOF WITH R2.5 MINERAL FIBRE INSULATION BLANKET TO ALL ROOF/CEILING CAVITIES IN ACCORDANCE WITH REQUIREMENTS OF TEAM CATALYST SECTION J REPORT DATED 22 OCTOBER 2018

OUTLINE OF EXISTING MIXED USE RESIDENTIAL APARTMENT & RETAIL BUILDING ADJACENT TO SOUTHERN BOUNDARY

ROOF PARAPET RL 15.04
3520
SECOND FLOOR RL 11.52
3440
FIRST FLOOR RL 8.08
3520
GROUND FLOOR RL 4.56
LOWER GROUND RL 4.08
480
3050
BASEMENT RL 1.03

EXISTING HANDRAIL INCREASED IN HEIGHT & ADDITIONAL VERTICAL UPRIGHTS ADDED TO COMPLY WITH SECTION D2.16 OF THE BCA

EXISTING HANDRAIL INCREASED IN HEIGHT & ADDITIONAL VERTICAL UPRIGHTS ADDED TO COMPLY WITH SECTION D2.16 OF THE BCA

EXISTING HANDRAIL INCREASED IN HEIGHT & ADDITIONAL VERTICAL UPRIGHTS ADDED TO COMPLY WITH SECTION D2.16 OF THE BCA

NEW RONDO SUSPENDED CEILING SYSTEM, MINERAL FIBRE CEILING TILES, & FLUORESCENT LIGHTING WITH NEW AIR CONDITIONING AIR HANDLING UNITS WITHIN CEILING PLENUM

EXISTING GLAZING REPLACED WITH PYROPANEL-FORSTER INSULATED WINDOW FITTED WITH 18MM PILKINGTON PRYSTOP GLASS

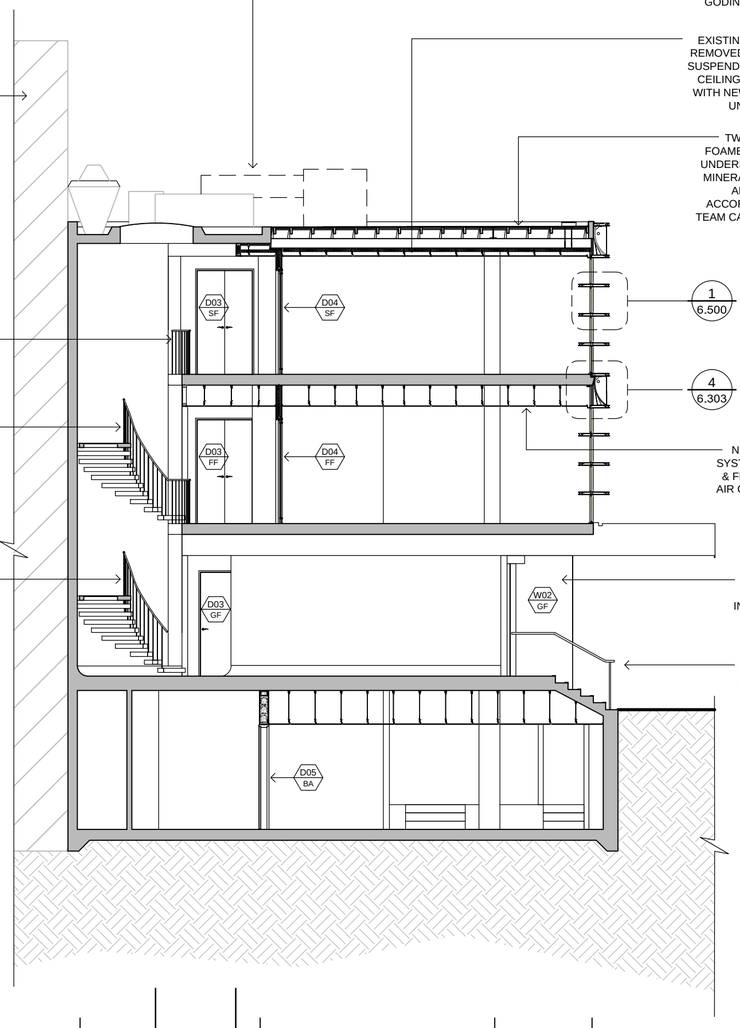
NEW HANDRAIL TO FRONT ENTRY STEPS TO COMPLY WITH FIGURE 26(A) AS 1428.1-2009

FFCP/FIP

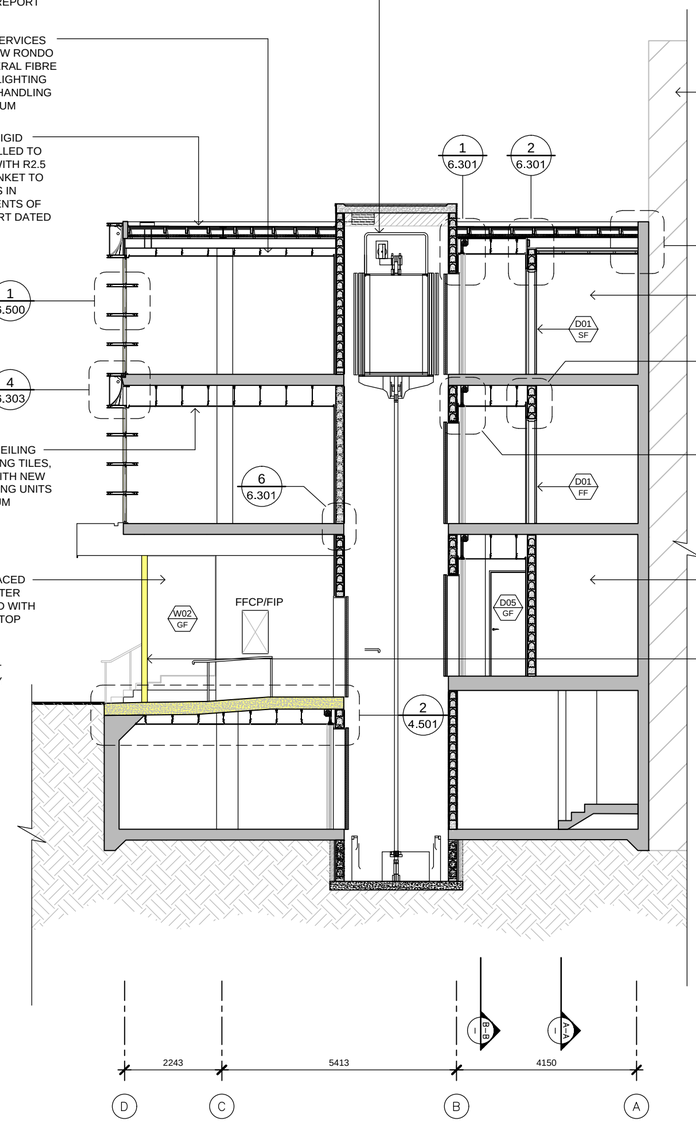
NEW FIRE STAIR & LANDINGS

NEW FIRE STAIR & LANDINGS

EXISTING GLAZING REPLACED WITH IGU'S TO MEET BCA THERMAL PERFORMANCE AND SAFETY REQUIREMENTS. EXEMPT DEVELOPMENT & NOT INCLUDED IN THIS COMPLYING DEVELOPMENT APPLICATION.



1 – SECTION C – C
1:100 @A2



2 – SECTION D – D
1:100 @A2

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Complying Development Certificate

Suite 404, 44 Hampden Road, Artarmon NSW 2064
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LEGEND:

PROPOSED WORKS NOT INCLUDED IN THIS COMPLYING DEVELOPMENT APPLICATION

0 1 2 3 4

ISSUED FOR CDC

NOTE:	ISSUE:	DATE:	REVISION:
DO NOT SCALE FROM DRAWINGS, USE FIGURED DIMENSIONS ONLY CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORKS CONTRACTOR MUST MARK ANY PREVIOUS DRAWINGS AS "SUPERCEDED" AND USE ONLY CURRENT REVISION DRAWINGS ON SITE.	DRAFT	1.11.2018	ROOF MECHANICAL PLANT NOTES AMENDED, WORKS NOT INCLUDED IN CDC COLOURED
	CDC	14.11.2018	NOTATION AMENDED, ISSUED FOR CDC
	CDC	21.11.2018	NOTATIONS RE ROOFTOP MECHANICAL PLANT AMENDED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP		
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL		
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS		
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY		
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED		
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING		
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES		
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS		
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING		

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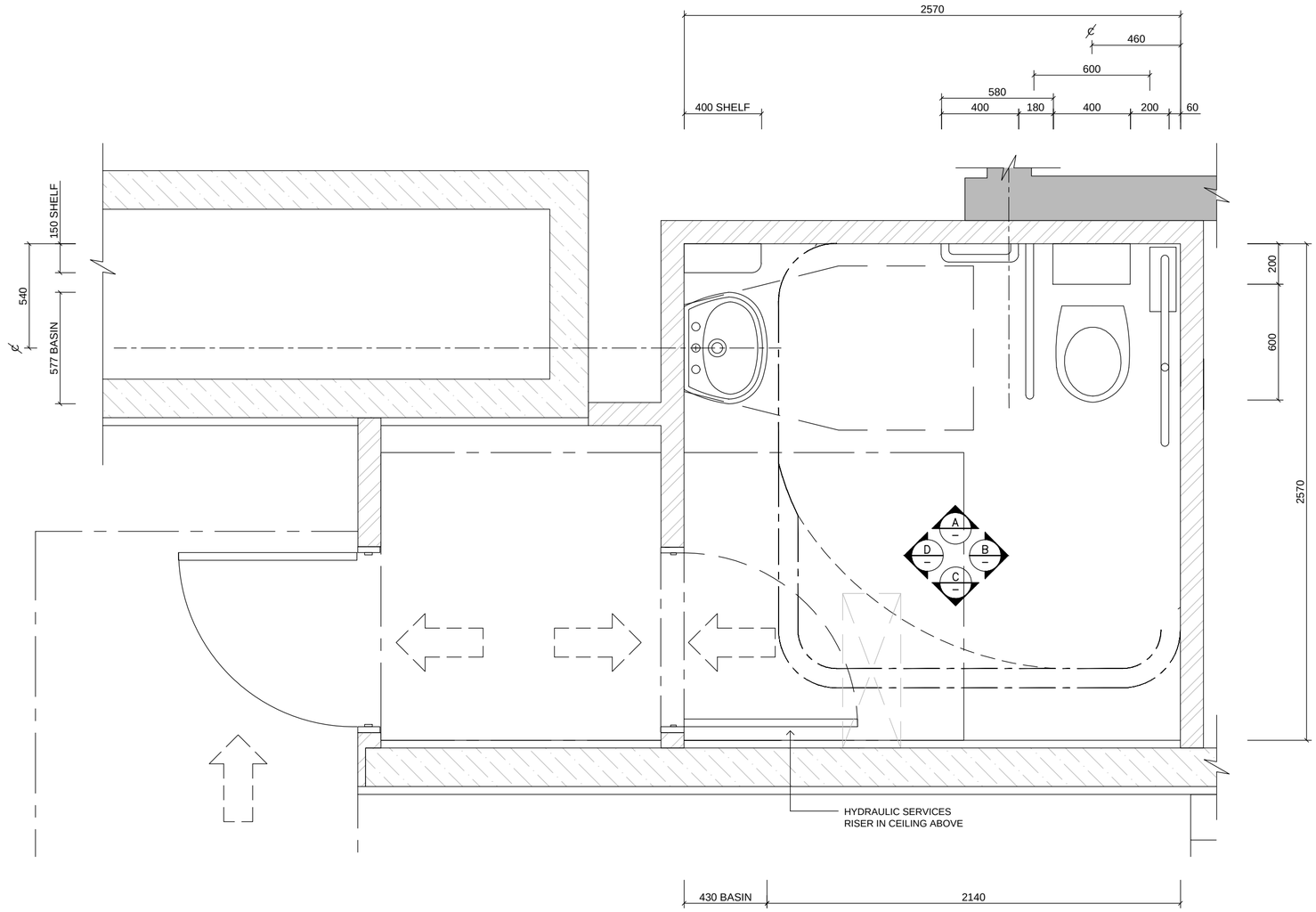
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC PROPOSED SECTIONS C-C & D-D

SCALE: 1 : 100 @ A2
DATE: 18.10.2018
DRAWN: GO
PROJECT NO: 5055
DRAWING NO: CDC 3.202_04



1 / – BASEMENT DISABLED TOILET PLAN
1:20 @A2

NOTES:

TOILET DESIGN & LAYOUTS TO COMPLY WITH REQUIREMENTS OF CLAUSE 10.2 TO 10.10 INCLUSIVE OF ACCESSIBILITY ISSUES REPORT V2 DATED 15 NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS

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N

0 1 2 3 4

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ISSUE:	DATE:	REVISION:
CDC	19.11.2018	DOORS AMENDED, ACCESSIBILITY NOTES ADDED, DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRIES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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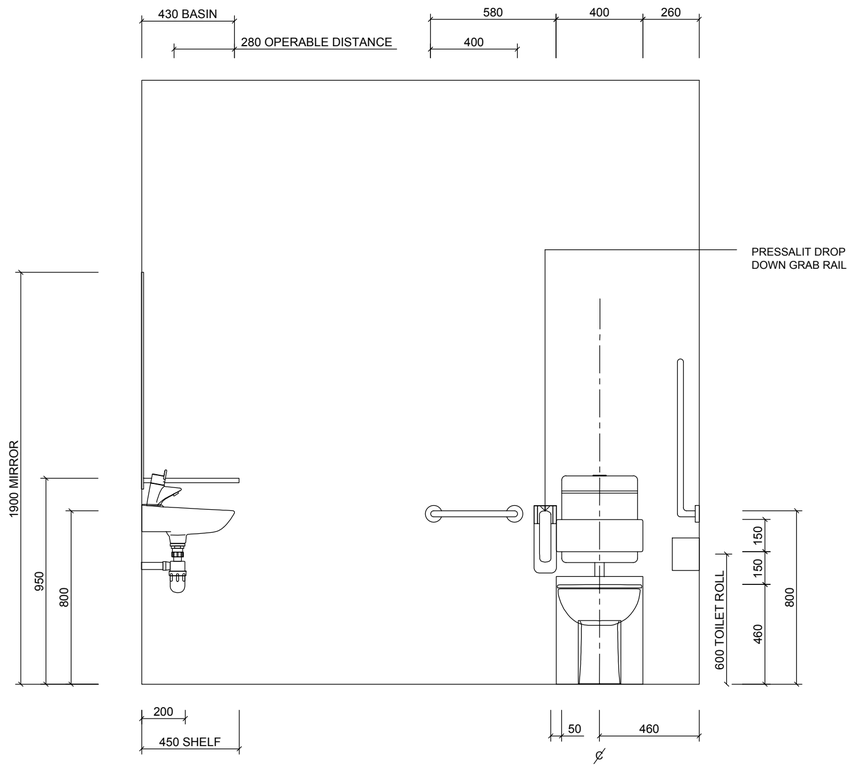
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

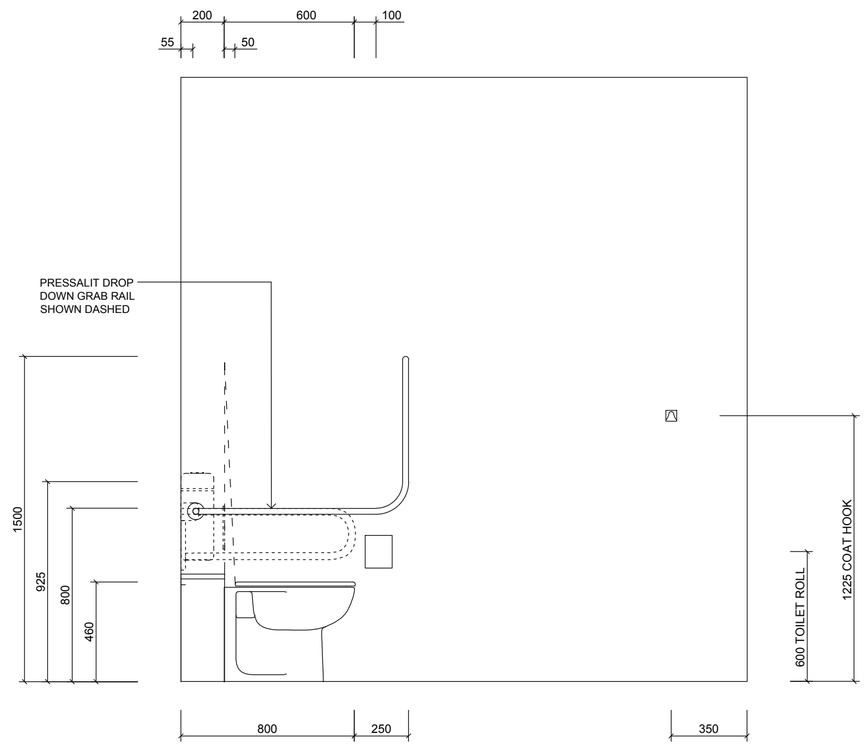
PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028
CLIENT: AMA HOLDINGS PTY LTD

DRAWING: BASEMENT FLOOR DISABLED TOILET SHEET 1

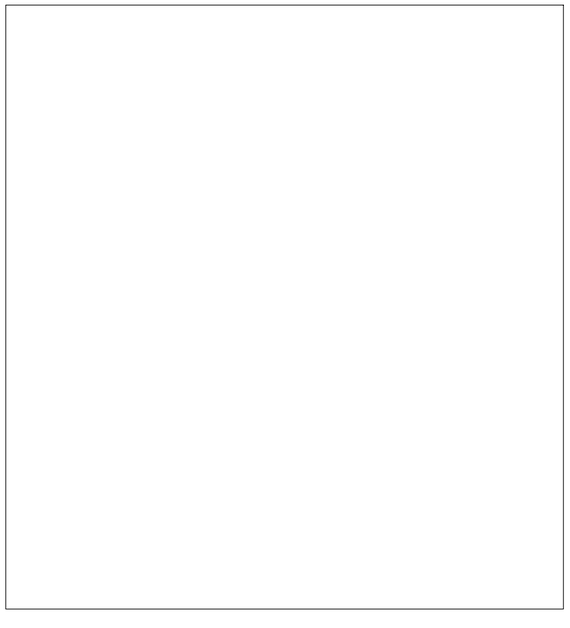
SCALE: 1 : 20 @ A2
DATE: 18.10.2018 DRAWN: SB
PROJECT NO: 5055 DRAWING NO: CDC 4.300_01



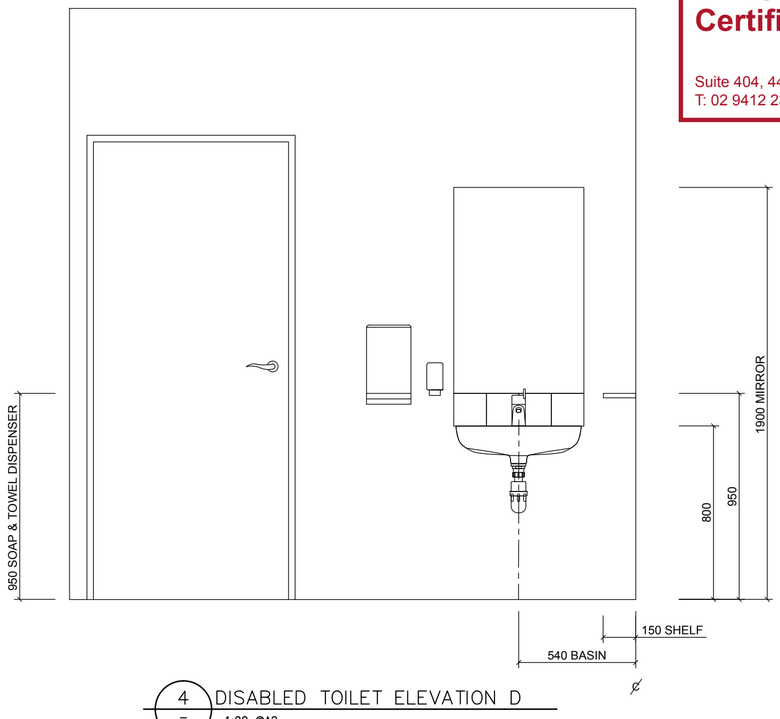
1 – DISABLED TOILET ELEVATION A
1:20 @A2



2 – DISABLED TOILET ELEVATION B
1:20 @A2



3 – DISABLED TOILET ELEVATION C
1:20 @A2



4 – DISABLED TOILET ELEVATION D
1:20 @A2

NOTES:

TOILET DESIGN & LAYOUTS TO COMPLY WITH REQUIREMENTS OF CLAUSE 10.2 TO 10.10 INCLUSIVE OF ACCESSIBILITY ISSUES REPORT V2 DATED 15 NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS

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ISSUE:	DATE:	REVISION:
CDC	16.10.2018	DIMENSIONS AMENDED & ADDED FITTINGS
CDC	19.11.2018	ACCESSIBILITY NOTES ADDED, DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AG	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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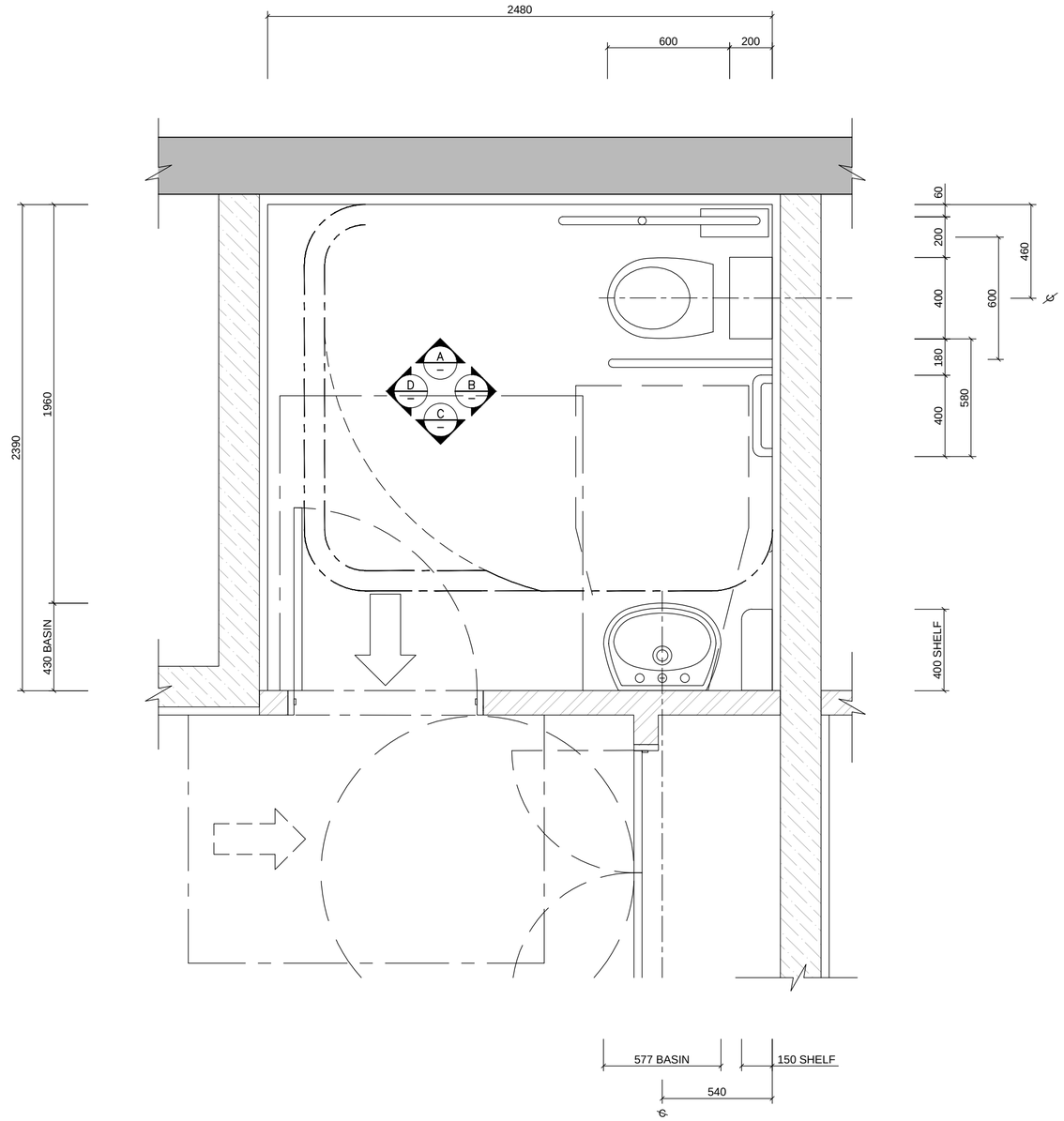
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

CLIENT: AMA HOLDINGS PTY LTD

DRAWING: BASEMENT DISABLED TOILET SHEET 2

SCALE: 1 : 20 @ A2	
DATE: 18.10.2018	DRAWN: SB
PROJECT NO: 5055	DRAWING NO: CDC 4.301_02



1 DISABLED TOILET PLAN
1:20 @A2

NOTES:

TOILET DESIGN & LAYOUTS TO COMPLY WITH REQUIREMENTS OF CLAUSE 10.2 TO 10.10 INCLUSIVE OF ACCESSIBILITY ISSUES REPORT V2 DATED 15 NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS

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ISSUE:	DATE:	REVISION:
CDC	19.11.2018	ACCESSIBILITY NOTES ADDED, DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
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BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
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CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
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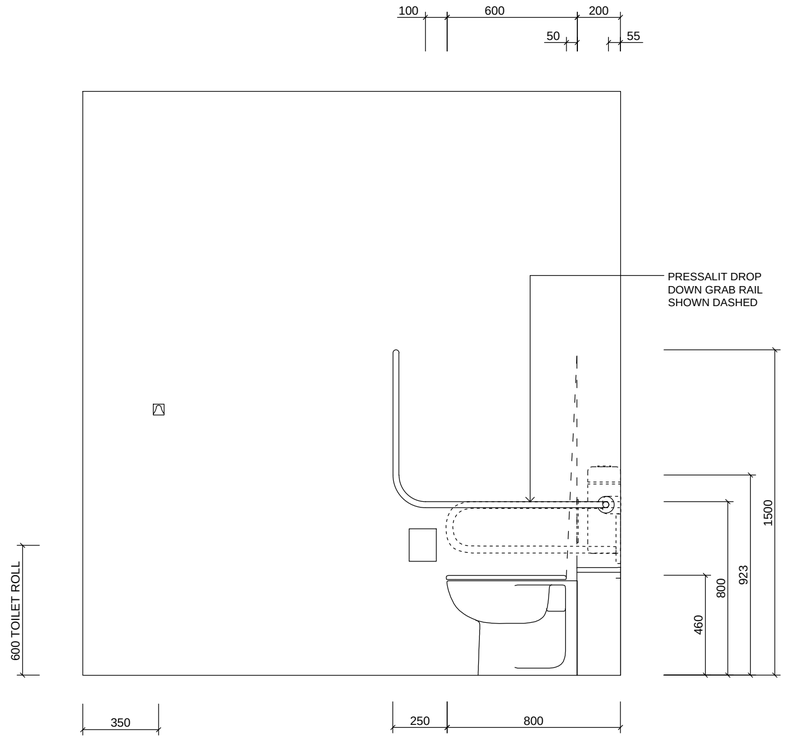
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

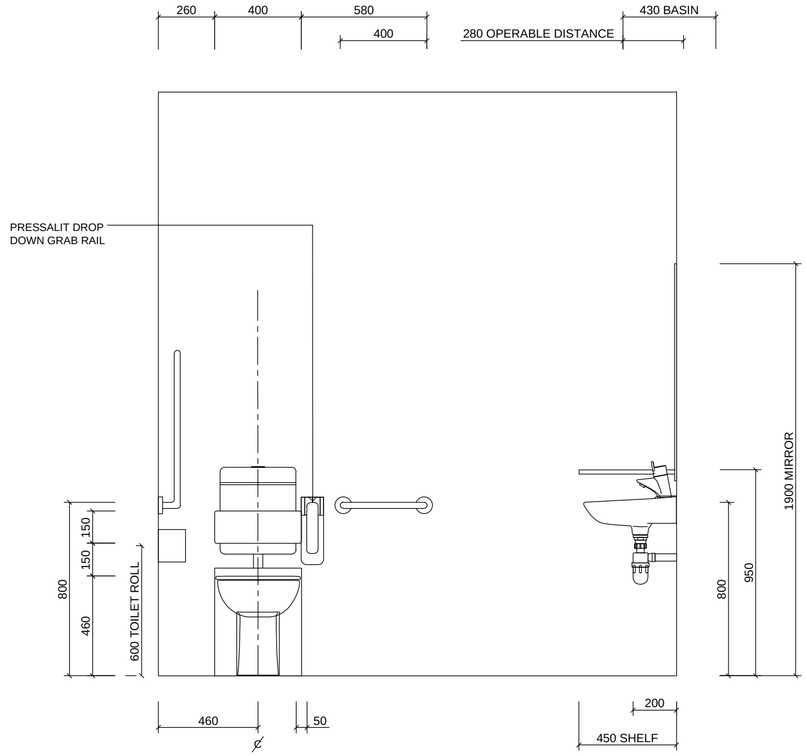
PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028
CLIENT: AMA HOLDINGS PTY LTD

DRAWING: FIRST FLOOR DISABLED TOILET SHEET 1

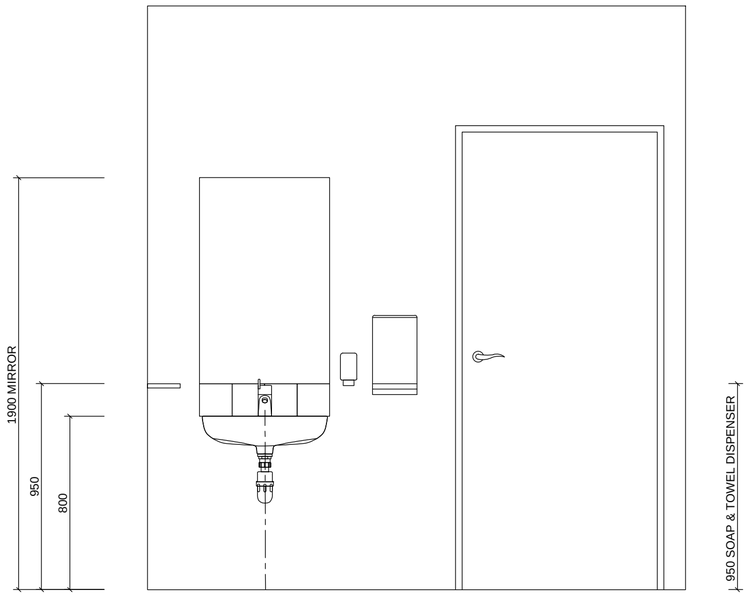
SCALE: 1 : 20 @ A2
DATE: 18.10.2018 DRAWN: SB
PROJECT NO: 5055 DRAWING NO: CDC 4.302_01



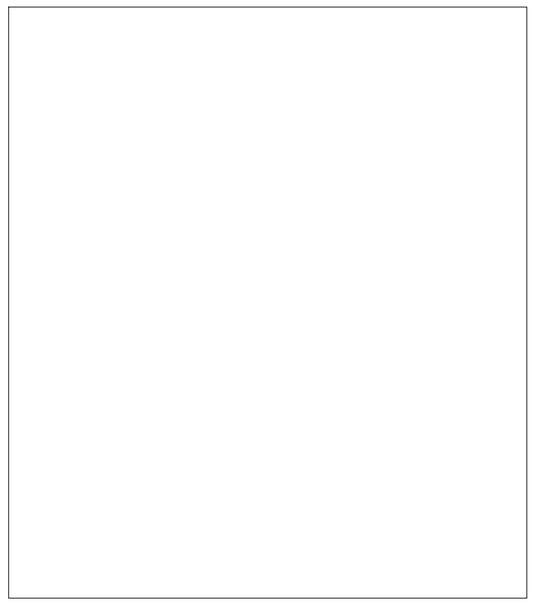
1 – DISABLED TOILET ELEVATION A
1:20 @A2



2 – DISABLED TOILET ELEVATION B
1:20 @A2



3 – DISABLED TOILET ELEVATION C
1:20 @A2



4 – DISABLED TOILET ELEVATION D
1:20 @A2

NOTES:

TOILET DESIGN & LAYOUTS TO COMPLY WITH REQUIREMENTS OF CLAUSE 10.2 TO 10.10 INCLUSIVE OF ACCESSIBILITY ISSUES REPORT V2 DATED 15 NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS

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	CDC	19.11.2018	ACCESSIBILITY NOTES ADDED, DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
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BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
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CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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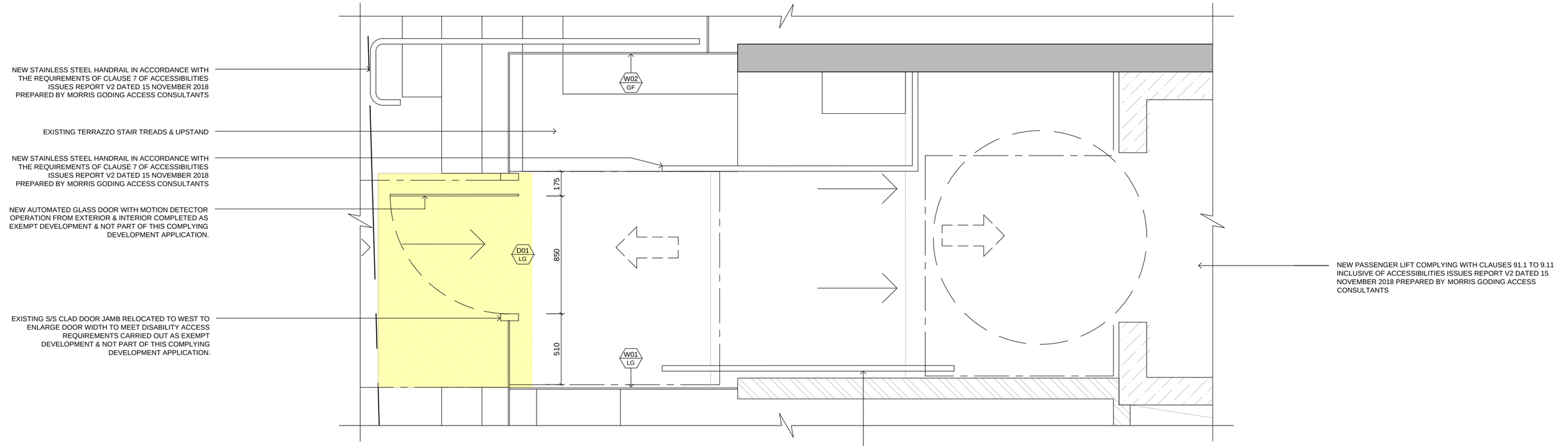
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

CLIENT: AMA HOLDINGS PTY LTD

DRAWING: FIRST FLOOR DISABLED TOILET SHEET 2

SCALE:	1 : 20 @ A2	
DATE:	18.10.2018	DRAWN: SB
PROJECT NO:	5055	DRAWING NO: CDC 4.303_02

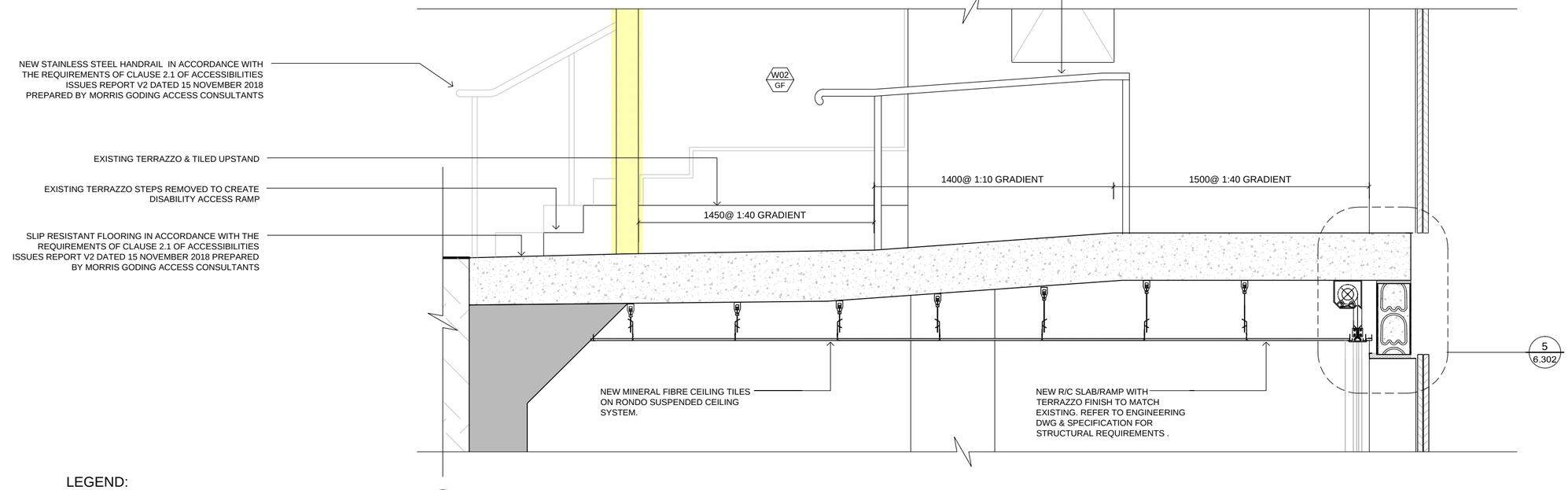


1 / 1.016 DISABILITY ENTRY PLAN

1:20 @ A2

NOTES:

1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH REQUIREMENTS OF CLAUSES 2, 3, 4, 6, 7, 8 & 12 OF ACCESSIBILITIES ISSUES REPORT V2 DATED 15 NOVEMBER 2018 TOGETHER WITH PERFORMANCE SOLUTIONS REPORT DATED 16th NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS



2 / 3.202 DISABILITY ACCESS CROSS SECTION

1:20 @ A2

LEGEND:

PROPOSED WORKS NOT INCLUDED IN THIS COMPLYING DEVELOPMENT APPLICATION

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LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
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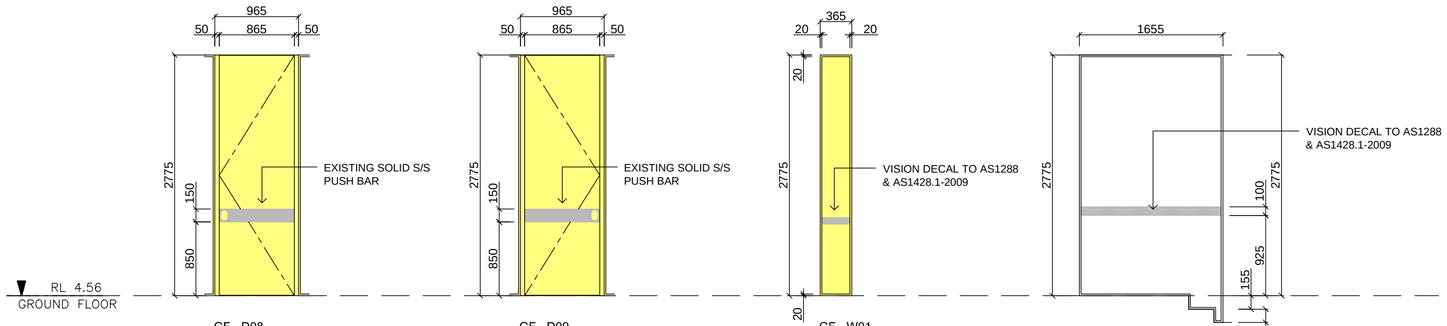
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT:	2A COOPER STREET DOUBLE BAY NSW 2028
CLIENT:	AMA HOLDINGS PTY LTD
DRAWING:	CDC DISABILITY ACCESS PLAN & SECTION
SCALE:	AS PER NOTATIONS
DATE:	18.10.2018
DRAWN:	GO
PROJECT NO:	5055
DRAWING NO:	CDC 4.501_01



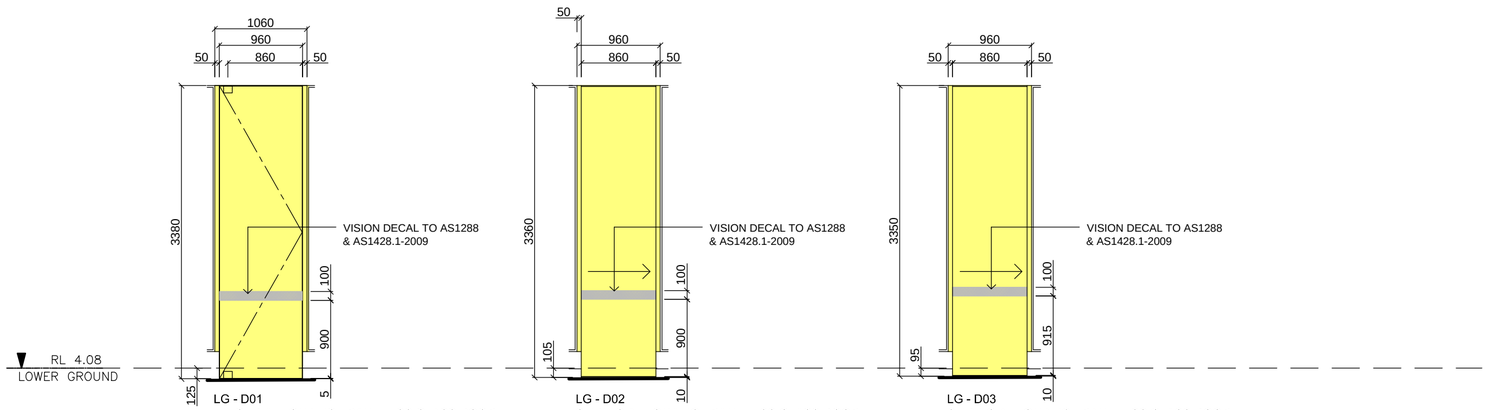
GF - D08
HINGED FRAMELESS GLASS DOOR
FRAME: Existing Stainless Steel Frame
FINISH: Polished Stainless Steel
GLASS: 10mm Clear Toughened
HARDWARE: Dorma Concealed Swivel Hinge
Existing Stainless Steel Handles

GF - D09
HINGED FRAMELESS GLASS DOOR
FRAME: Existing Stainless Steel Frame
FINISH: Polished Stainless Steel
GLASS: 10mm Clear Toughened
HARDWARE: Dorma Concealed Swivel Hinge
Existing Stainless Steel Handles

GF - W01
FIXED WINDOW
FRAME: Existing Stainless Steel Frame
FINISH: Polished Stainless Steel
GLASS: 10mm Clear Toughened
HARDWARE: N/A

GF - W02
FIXED FIRE RATED WINDOW
FRAME: PFWS - PS60/60 PyroPanel Window
with Forster Steel Frame
FINISH: Polished Stainless Steel
GLASS: 23/27mm Pilkington PyroStop Glass
HARDWARE: N/A

EXTERIOR JOINERY: GROUND FLOOR



LG - D01
HINGED AUTOMATIC FRAMELESS GLASS DOOR
FRAME: Existing Stainless Steel Frame
FINISH: Polished Stainless Steel
GLASS: 10mm Clear Toughened
HARDWARE: Dorma Concealed Automated Swivel Hinge

LG - D02
SLIDING AUTOMATIC FRAMELESS GLASS DOOR
FRAME: Existing Stainless Steel Frame
FINISH: Polished Stainless Steel
GLASS: 10mm Clear Toughened
HARDWARE: Selected Movement Activated Top Mounted
Concealed Automated Sliding Mechanism

LG - D03
SLIDING AUTOMATIC FRAMELESS GLASS DOOR
FRAME: Existing Stainless Steel Frame
FINISH: Polished Stainless Steel
GLASS: 10mm Clear Toughened
HARDWARE: Selected Movement Activated Top Mounted
Concealed Automated Sliding Mechanism

EXTERIOR JOINERY: LOWER GROUND FLOOR

NOTES:

FIRE DOORS:

1. FOR SELF CLOSING FIRE DOORS INCLUDE A SIGN ON THE DOOR IN CAPITAL LETTERS NOT LESS THAN 20mm HIGH IN A COLOUR CONTRASTING WITH THE BACKGROUND WHICH STATES;
"FIRE SAFETY DOOR - DO NOT OBSTRUCT - DO NOT KEEP OPEN"
WHERE THE DOOR FORMS PART OF A HORIZONTAL EXIT, IS A SMOKE DOOR WHICH SWINGS IN BOTH DIRECTIONS, OR LEADS FROM A FIRE ISOLATED EXIT TO A ROAD OR OPEN SPACE, INCLUDE THE SIGNAGE ON BOTH SIDES OF THE DOOR.

DISABILITY ACCESS:

2. BRAILLE & TACTILE SIGNAGE IS REQUIRED TO IDENTIFY EACH DOOR REQUIRED BY SECTION E4.5 OF THE BCA TO BE PROVIDED WITH AN EXIT SIGN WHICH STATES;
1. "EXIT"
2. "LEVEL" FOLLOWING BY THE FLOOR NUMBER.
SIGNS ARE REQUIRED TO BE LOCATED ON THE SIDE OF THE DOOR FACING A PERSON SEEKING EGRESS, AND ON THE LATCH SIDE OF THE DOOR WITH THE LEADING EDGE OF THE SIGN LOCATED BETWEEN 50MM AND 30MM FROM THE ARCHITRAVE.

DOORS GENERAL

3. ALL DOORS TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF CLAUSE 3.1 ACCESSIBILITY ISSUES REPORT V2 DATED 15 NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS

LEGEND:

PROPOSED WORKS TO BE CARRIED OUT AS EXEMPT DEVELOPMENT AND NOT INCLUDED IN THIS COMPLYING DEVELOPMENT APPLICATION

PHILIP CHUN Approved Documentation

Complying Development Certificate

Suite 404, 44 Hampden Road, Artarmon NSW 2064
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NOTE:	ISSUE:	DATE:	REVISION:
DO NOT SCALE FROM DRAWINGS, USE FIGURED DIMENSIONS ONLY CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORKS CONTRACTOR MUST MARK ANY PREVIOUS DRAWINGS AS "SUPERCEDED" AND USE ONLY CURRENT REVISION DRAWINGS ON SITE.	DRAFT	2.11.2018	HIGHLIGHTING & NOTES ADDED TO IDENTIFY WORKS NOT INCLUDED IN CDC APPLICATION
	CDC	13.11.2018	DIMENSION OF VISION BANDS AMENDED
	CDC	19.11.2018	DISABLED ACCESS REQUIREMENTS ADDED, DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CEILEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

howe ARCHITECTS PTY LTD
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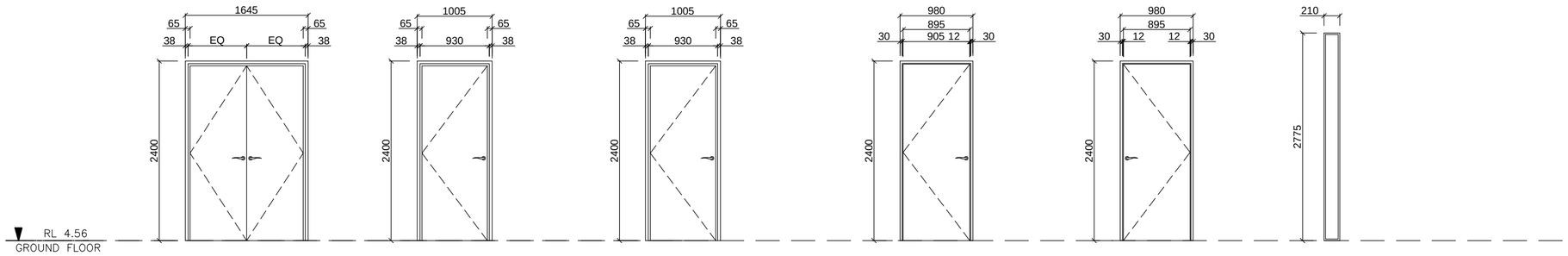
p +61 2 93281198 e admin@howearchitects.com.au
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028
CLIENT: AMA HOLDINGS PTY LTD

DRAWING: EXTERIOR JOINERY SCHEDULE SHEET 1

SCALE: 1 : 50 @ A2
DATE: 22.10.2018
DRAWN: GO
PROJECT NO: 5055
DRAWING NO: CDC 5.000_03



GF - D01 & GF - D02
FIRE DOOR
FRAME & DOOR: Pyropanel PFDS 120/38
FINISH: Paint
HARDWARE: Satin Chrome

GF - D03, GF - D04
FIRE DOOR
FRAME & DOOR: Pyropanel PFD 120/38
FINISH: Paint
HARDWARE: Satin Chrome

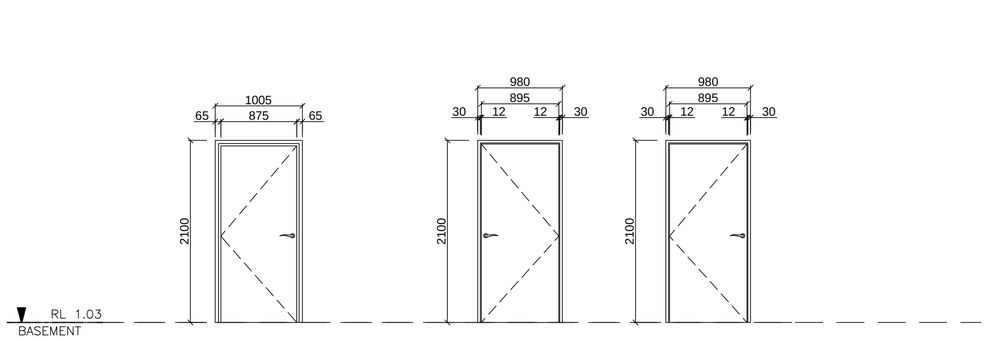
GF - D05
FIRE DOOR
FRAME & DOOR: Pyropanel PFD 120/38
FINISH: Paint
HARDWARE: Satin Chrome
Automated Opening Retainer Connected to Fire Detection/Alarm System

GF - D06
INTERNAL DOOR
FRAME: Timber
DOOR: Timber Hollow Core
FINISH: Paint
HARDWARE: Satin Chrome

GF - D07
INTERNAL DOOR
FRAME: Timber
DOOR: Timber Hollow Core
FINISH: Paint
HARDWARE: Satin Chrome

GF - W03
FIXED FIRE RATED WINDOW
FRAME: PFWS - PS60/60 PyroPanel Window with Forster Steel Frame
FINISH: Polished Stainless Steel
GLASS: 23/27mm Pilkington PyroStop Glass
HARDWARE: N/A

INTERIOR JOINERY: GROUND FLOOR

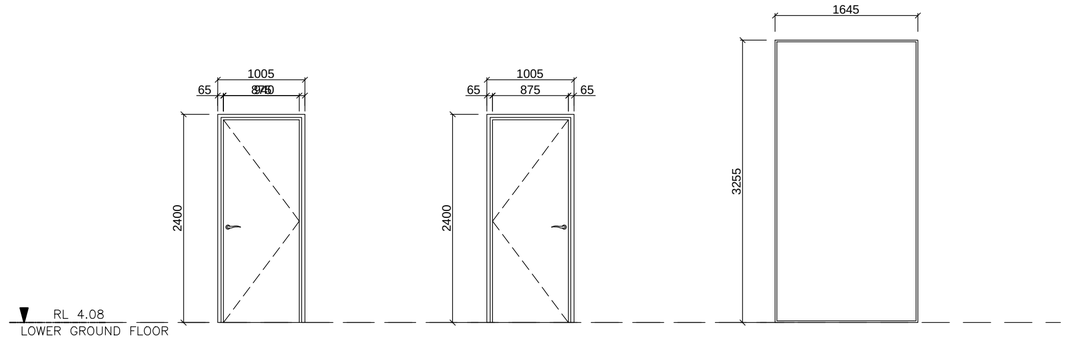


BA - D01
FIRE DOOR
FRAME & DOOR: Pyropanel PFD 240/38
FINISH: Paint
HARDWARE: Satin Chrome

BA - D02, BA - D03, BA - D05
INTERNAL DOOR
FRAME: Timber
DOOR: Timber Hollow Core
FINISH: Paint
HARDWARE: Satin Chrome

BA - D04
INTERNAL DOOR
FRAME: Timber
DOOR: Timber Hollow Core
FINISH: Paint
HARDWARE: Satin Chrome

INTERIOR JOINERY: BASEMENT FLOOR



LG - D04
FIRE DOOR
FRAME & DOOR: Pyropanel PFD 120/38
FINISH: Paint
HARDWARE: Satin Chrome

LG - D05
FIRE DOOR
FRAME & DOOR: Pyropanel PFD 120/38
FINISH: Paint
HARDWARE: Satin Chrome

LG - W01
FIXED FIRE RATED WINDOW
FRAME: PFWS - PS60/60 PyroPanel Window with Forster Steel Frame
FINISH: Polished Stainless Steel
GLASS: 23/27mm Pilkington PyroStop Glass
HARDWARE: N/A

INTERIOR JOINERY: LOWER GROUND FLOOR

NOTES:

FIRE DOORS:

1. FOR DOOR GF - D05 HELD OPEN BY AN AUTOMATIC HOLD OPEN DEVICE INCLUDE A SIGN ON BOTH SIDES OF THE DOOR IN CAPITAL LETTERS NOT LESS THAN 20mm HIGH IN A COLOUR CONTRASTING WITH THE BACKGROUND WHICH STATES; "FIRE SAFETY DOOR - DO NOT OBSTRUCT"
2. FOR ALL OTHER SELF CLOSING FIRE DOORS INCLUDE A SIGN ON THE DOOR IN CAPITAL LETTERS NOT LESS THAN 20mm HIGH IN A COLOUR CONTRASTING WITH THE BACKGROUND WHICH STATES;
"FIRE SAFETY DOOR - DO NOT OBSTRUCT - DO NOT KEEP OPEN"
WHERE THE DOOR FORMS PART OF A HORIZONTAL EXIT, IS A SMOKE DOOR WHICH SWINGS IN BOTH DIRECTIONS, OR LEADS FROM A FIRE ISOLATED EXIT TO A ROAD OR OPEN SPACE, INCLUDE THE SIGNAGE ON BOTH SIDES OF THE DOOR.

DISABILITY ACCESS:

3. BRAILLE & TACTILE SIGNAGE IS REQUIRED TO IDENTIFY EACH DOOR REQUIRED BY SECTION E4.5 OF THE BCA TO BE PROVIDED WITH AN EXIT SIGN WHICH STATES;
1. "EXIT"
2. "LEVEL" FOLLOWING BY THE FLOOR NUMBER.
SIGNS ARE REQUIRED TO BE LOCATED ON THE SIDE OF THE DOOR FACING A PERSON SEEKING EGRESS, AND ON THE LATCH SIDE OF THE DOOR WITH THE LEADING EDGE OF THE SIGN LOCATED BETWEEN 50MM AND 30MM FROM THE ARCHITRAVE.

DOORS GENERAL:

4. ALL DOORS TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF CLAUSE 3.1 ACCESSIBILITY ISSUES REPORT V2 DATED 15 NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS

PHILIP CHUN Approved Documentation

Complying Development Certificate

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NOTE:	ISSUE:	DATE:	REVISION:
DO NOT SCALE FROM DRAWINGS, USE FIGURED DIMENSIONS ONLY CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING ANY WORKS CONTRACTOR MUST MARK ANY PREVIOUS DRAWINGS AS "SUPERCEDED" AND USE ONLY CURRENT REVISION DRAWINGS ON SITE.	CDC	19.11.2018	DISABLED ACCESS REQUIREMENTS ADDED, DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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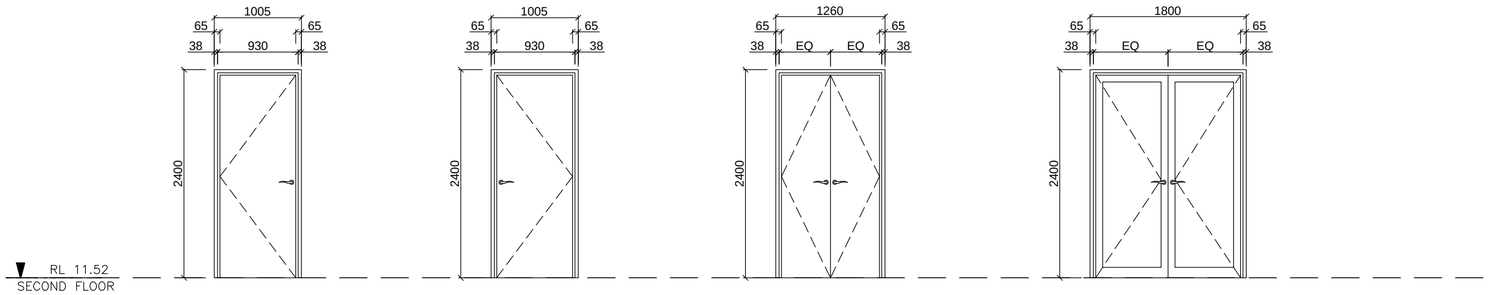
p +61 2 93281198 e admin@howearchitects.com.au
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028

CLIENT: AMA HOLDINGS PTY LTD

DRAWING: INTERIOR JOINERY SCHEDULE SHEET 1

SCALE: 1 : 50 @ A2
DATE: 22.10.2018
DRAWN: GO
PROJECT NO: 5055
DRAWING NO: CDC 5.200_01



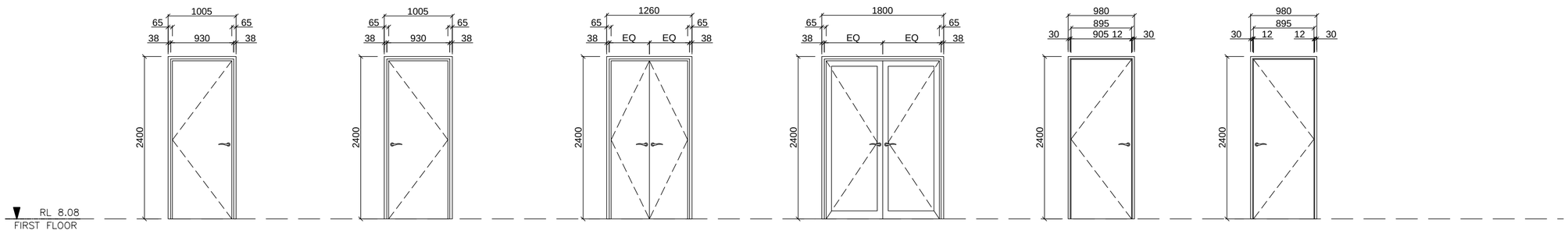
SF - D01
FIRE DOOR
FRAME & DOOR: Pyropanel PFD 120/38
FINISH: Paint
HARDWARE: Satin Chrome

SF - D02
FIRE DOOR
FRAME & DOOR: Pyropanel PFD 120/38
FINISH: Paint
HARDWARE: Satin Chrome

SF - D03
FIRE DOOR
FRAME & DOOR: Pyropanel PFDS 120/38
FINISH: Paint
HARDWARE: Satin Chrome

SF - D04
FIRE DOOR
FRAME & DOOR: Pyropanel PGMFD060-65
FINISH: Powdercoat
GLASS: 18mm Pilkington Pyrostop
HARDWARE: Satin Chrome

INTERIOR JOINERY: SECOND FLOOR



FF - D01
FIRE DOOR
FRAME & DOOR: Pyropanel PFD 120/38
FINISH: Paint
HARDWARE: Satin Chrome

FF - D02
FIRE DOOR
FRAME & DOOR: Pyropanel PFD 120/38
FINISH: Paint
HARDWARE: Satin Chrome

FF - D03
FIRE DOOR
FRAME & DOOR: Pyropanel PFDS 120/38
FINISH: Paint
HARDWARE: Satin Chrome

FF - D04
FIRE DOOR
FRAME & DOOR: Pyropanel PGMFD060-65
FINISH: Powdercoat
GLASS: 18mm Pilkington Pyrostop
HARDWARE: Satin Chrome

FF - D05 & FF - D06
INTERNAL DOOR
FRAME: Timber
DOOR: Timber Hollow Core
FINISH: Paint
HARDWARE: Satin Chrome

FF - D07
INTERNAL DOOR
FRAME: Timber
DOOR: Timber Hollow Core
FINISH: Paint
HARDWARE: Satin Chrome

INTERIOR JOINERY: FIRST FLOOR

NOTES:

FIRE DOORS:

1. FOR DOOR GF - D05 HELD OPEN BY AN AUTOMATIC HOLD OPEN DEVICE INCLUDE A SIGN ON BOTH SIDES OF THE DOOR IN CAPITAL LETTERS NOT LESS THAN 20mm HIGH IN A COLOUR CONTRASTING WITH THE BACKGROUND WHICH STATES; "FIRE SAFETY DOOR - DO NOT OBSTRUCT"
2. FOR ALL OTHER SELF CLOSING FIRE DOORS INCLUDE A SIGN ON THE DOOR IN CAPITAL LETTERS NOT LESS THAN 20mm HIGH IN A COLOUR CONTRASTING WITH THE BACKGROUND WHICH STATES;
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DISABILITY ACCESS:

3. BRAILLE & TACTILE SIGNAGE IS REQUIRED TO IDENTIFY EACH DOOR REQUIRED BY SECTION E4.5 OF THE BCA TO BE PROVIDED WITH AN EXIT SIGN WHICH STATES;
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DOORS GENERAL:

4. ALL DOORS TO BE IN ACCORDANCE WITH THE REQUIREMENTS OF CLAUSE 3.1 ACCESSIBILITY ISSUES REPORT V2 DATED 15 NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS

PHILIP CHUN Approved Documentation

Complying Development Certificate

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ISSUE:	DATE:	REVISION:
CDC	19.11.2018	DISABLED ACCESS REQUIREMENTS ADDED, DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CEILEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

howe ARCHITECTS PTY LTD
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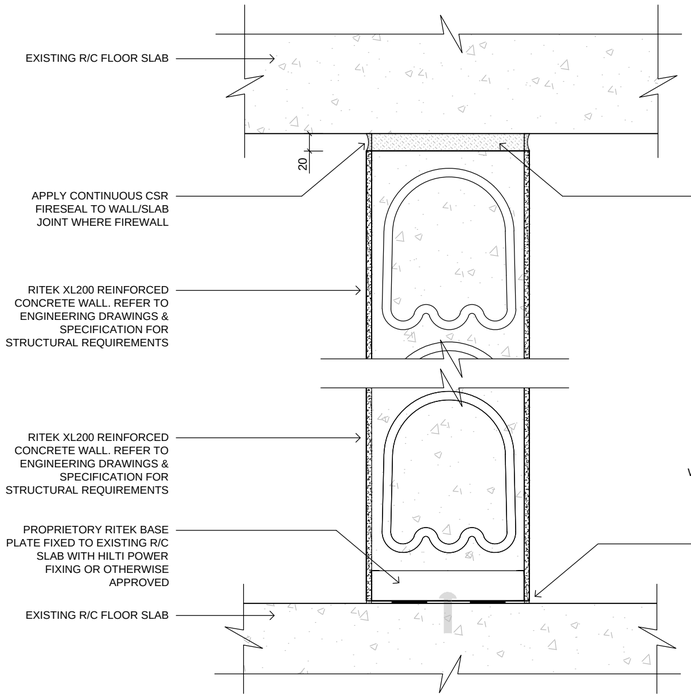
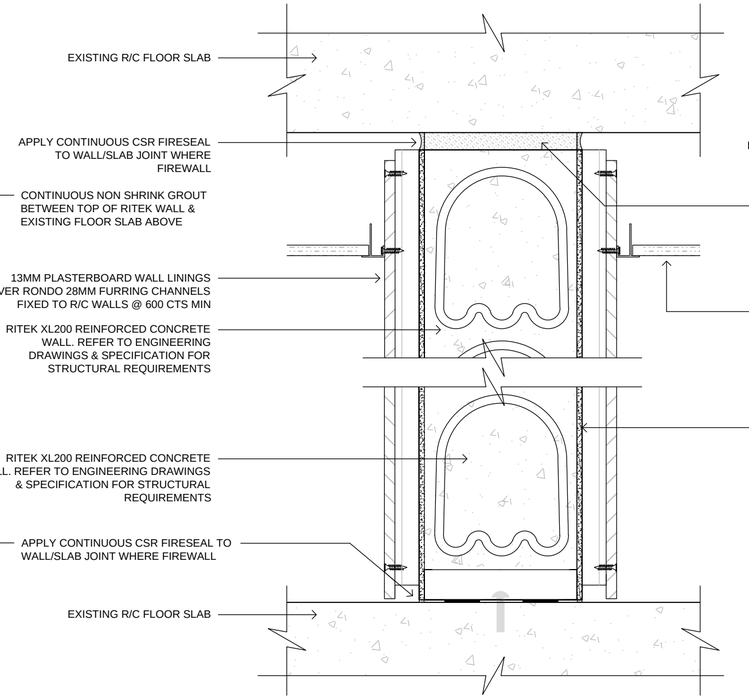
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

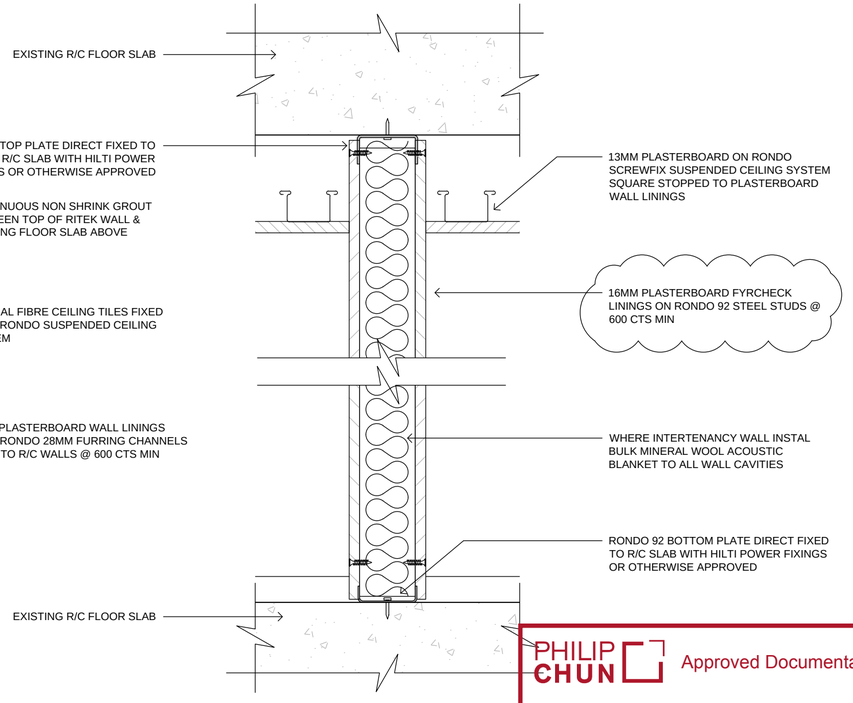
PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028
CLIENT: AMA HOLDINGS PTY LTD
DRAWING: INTERIOR JOINERY SCHEDULE SHEET 2
SCALE: 1 : 50 @ A2
DATE: 22.10.2018
DRAWN: GO
PROJECT NO: 5055
DRAWING NO: CDC 5.201_01



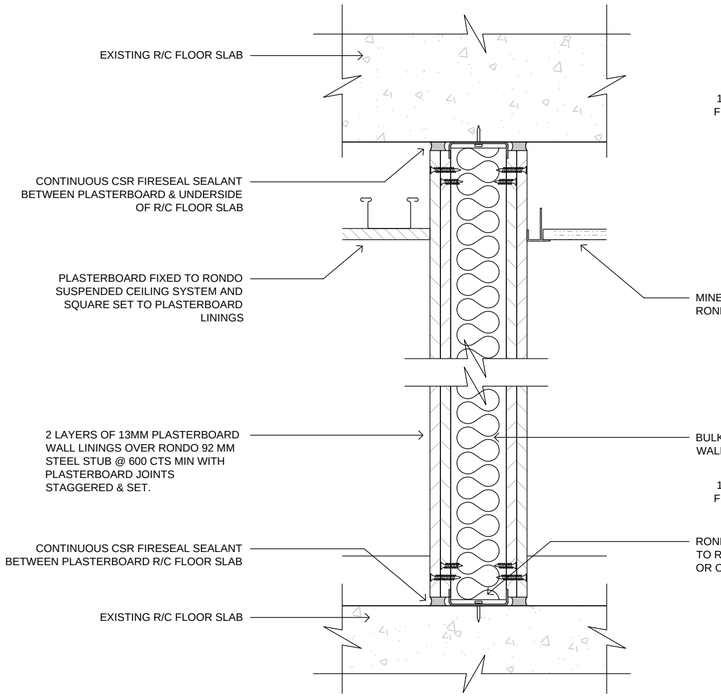
1 6.300 TYPE A STRUCTURAL/FIRE WALL – UNLINED
1:5 @ A2



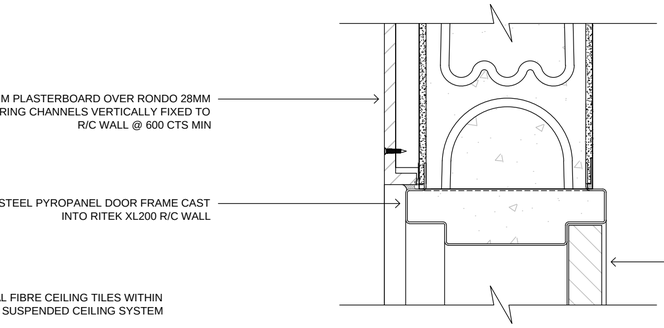
2 6.300 TYPE A STRUCTURAL/FIRE WALL – LINED
1:5 @ A2



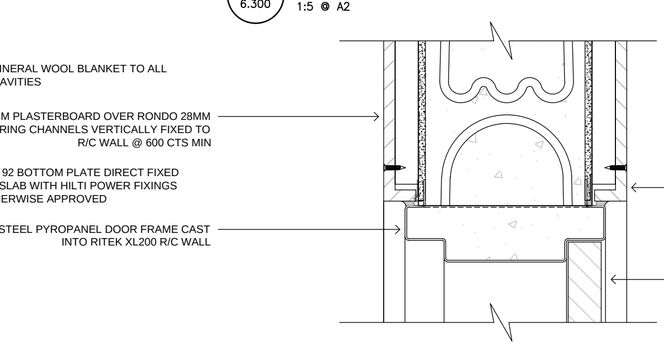
3 6.300 TYPE B PARTITION WALL
1:5 @ A2



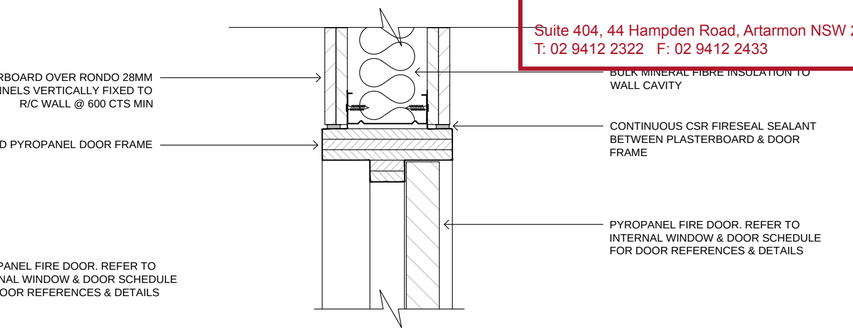
4 6.300 TYPE B FIRE WALL
1:5 @ A2



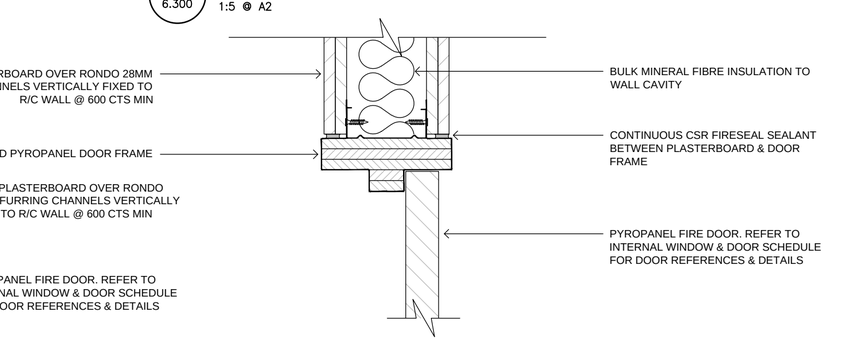
5 6.300 TYPE A STRUCTURAL/FIRE DOOR HEAD/JAMB 01
1:5 @ A2



6 6.300 TYPE A STRUCTURAL/FIRE DOOR HEAD/JAMB 02
1:5 @ A2



7 6.300 TYPE B PARTITION/FIRE DOOR HEAD
1:5 @ A2



8 6.300 TYPE B PARTITION/FIRE DOOR JAMB
1:5 @ A2

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ISSUE:	DATE:	REVISION:
CDC	13.11.2018	NOTES AMENDED
CDC	14.11.2018	DETAIL 03 MODIFIED, DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP		
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL		
AL	ALUMINIUM LOUVRES	FB	FACE BRICK	ME	MEMBRANE	TB	TIMBER BATTENS		
AW	AWNING WINDOW	FG	FIXED GLASS	RC	REINFORCED CONCRETE	TJ	TIMBER JOINERY		
BR	BRICK	GA	GRANITE	RT	ROOF TILES	TS	TIMBER STAINED		
BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING		
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES		
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS		
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING		

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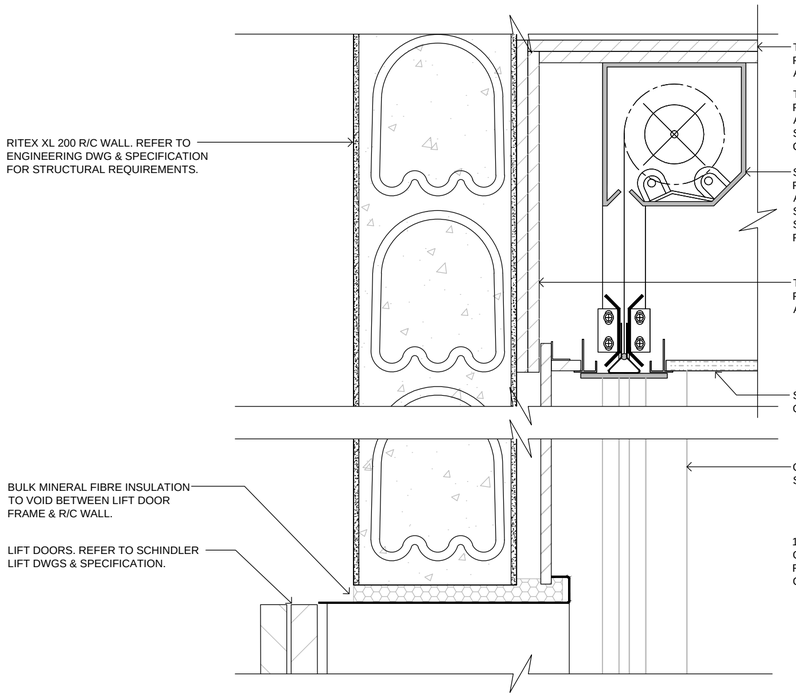
NOMINATED ARCHITECT: CHRIS HOWE NSW NO 6758 NZ REG NO 2973

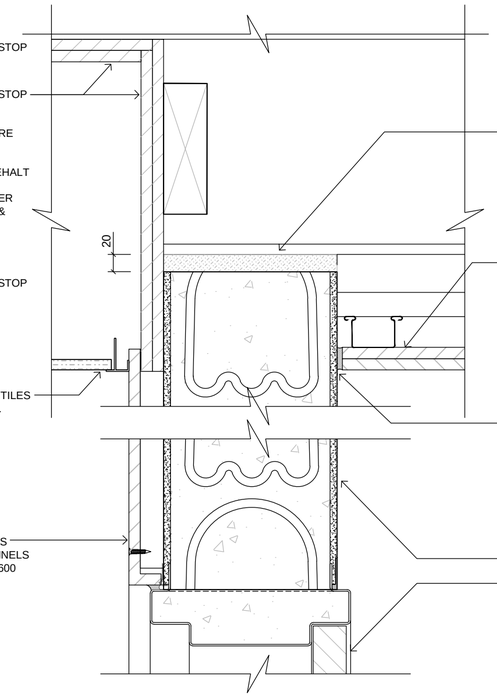
PROJECT: 2A COOPER STREET DOUBLE BAY NSW 2028
CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC CONSTRUCTION DETAILS SHEET 1

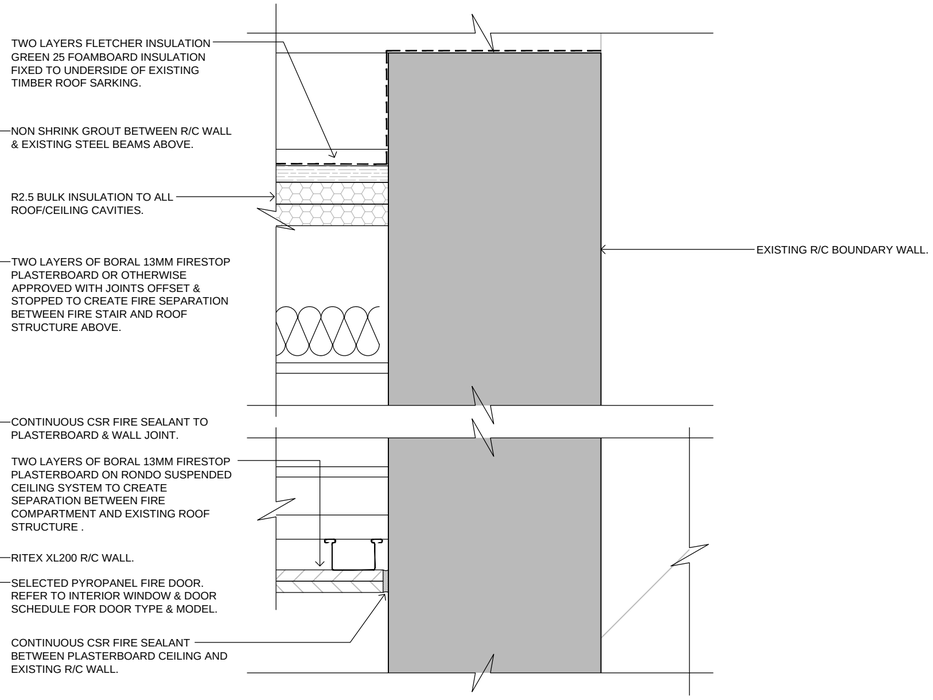
SCALE: AS PER NOTATIONS
DATE: 18.10.2018
DRAWN: SB
PROJECT NO: 5055
DRAWING NO: CDC 6.300_02



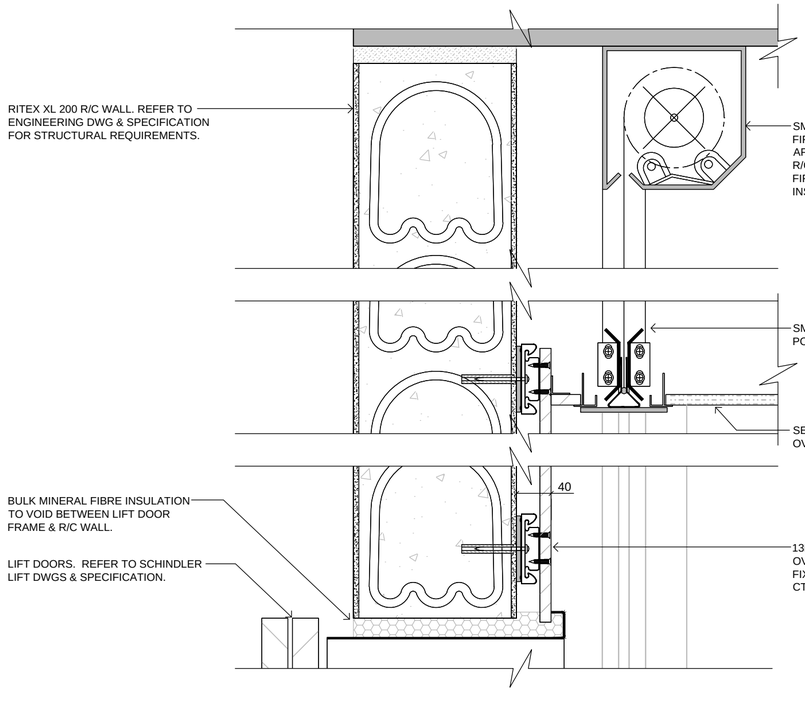
1 3.202 FIRE CURTAIN/WALL DETAIL .01
1:5 @ A2



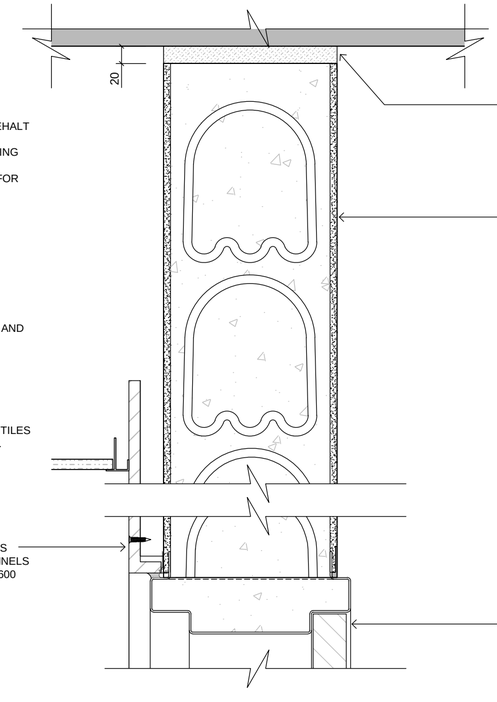
2 3.202 FIRE DOOR/WALL DETAIL .01
1:5 @ A2



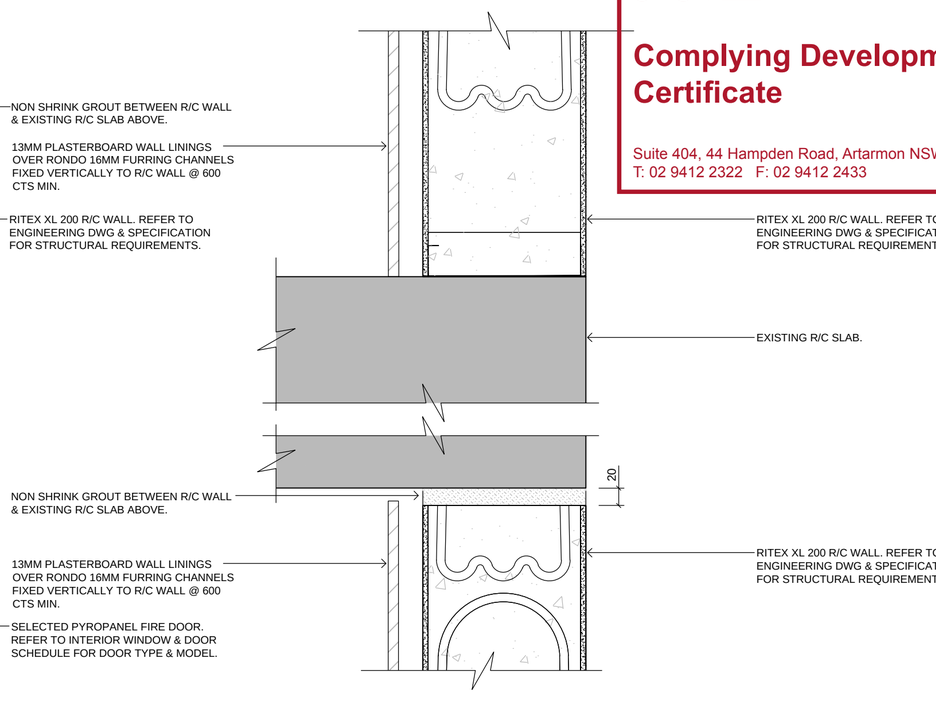
3 3.202 FIRE COMPARTMENT ROOF DETAIL
1:5 @ A2



4 3.202 FIRE CURTAIN/WALL DETAIL .02
1:5 @ A2



5 3.202 FIRE DOOR/WALL DETAIL .02
1:5 @ A2



6 3.202 WALL DETAIL .01
1:5 @ A2

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CDC	14.11.2018	DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
AJ	ALUMINIUM JOINERY	DP	DOWNPIPE	HR	HANDRAIL	SS	STAINLESS STEEL
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BI	BIFOLD DOOR	GD	GARAGE DOOR	SC	STONE CLADDING	VC	VERTICAL CLADDING
CO	CONCRETE	GT	GULLY TRAP	SE	STRUCTURAL STEEL	WT	WALL TILES
CC	COPPER CLADDING	GR	GRATE	SH	SHUTTERS	WB	WEATHERBOARDS
CR	CEMENT RENDER	GU	GUTTER	SL	SLIDING DOOR	ZC	ZINC CLADDING

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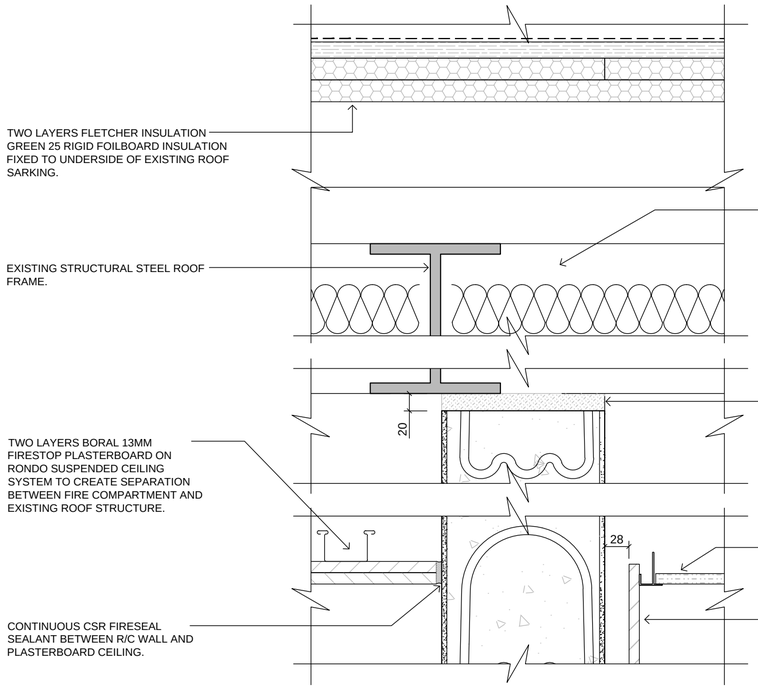
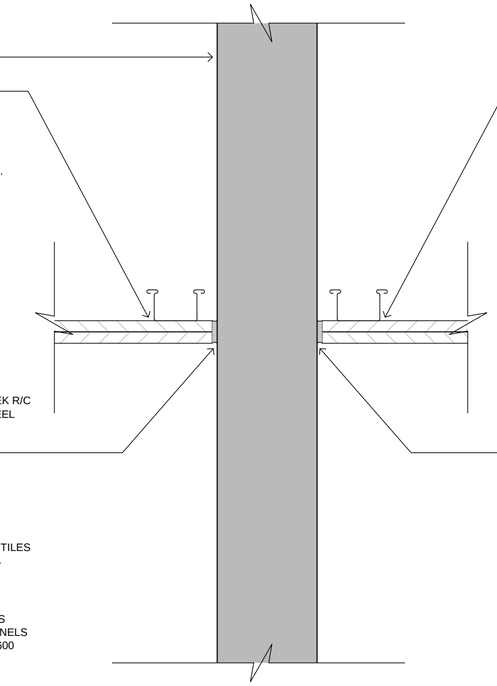
CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC CONSTRUCTION DETAILS SHEET 2

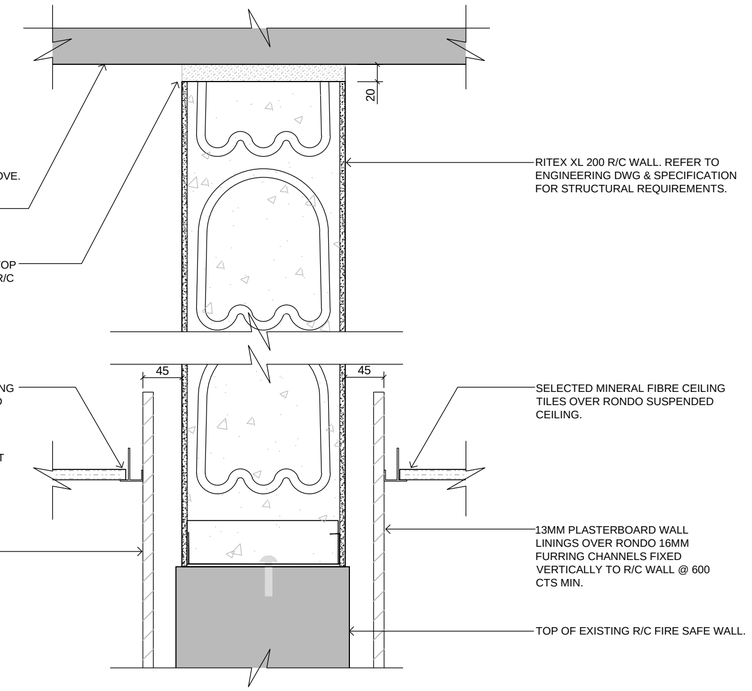
SCALE: AS PER NOTATIONS	
DATE: 18.10.2018	DRAWN: GO
PROJECT NO: 5055	DRAWING NO: CDC 6.301_01



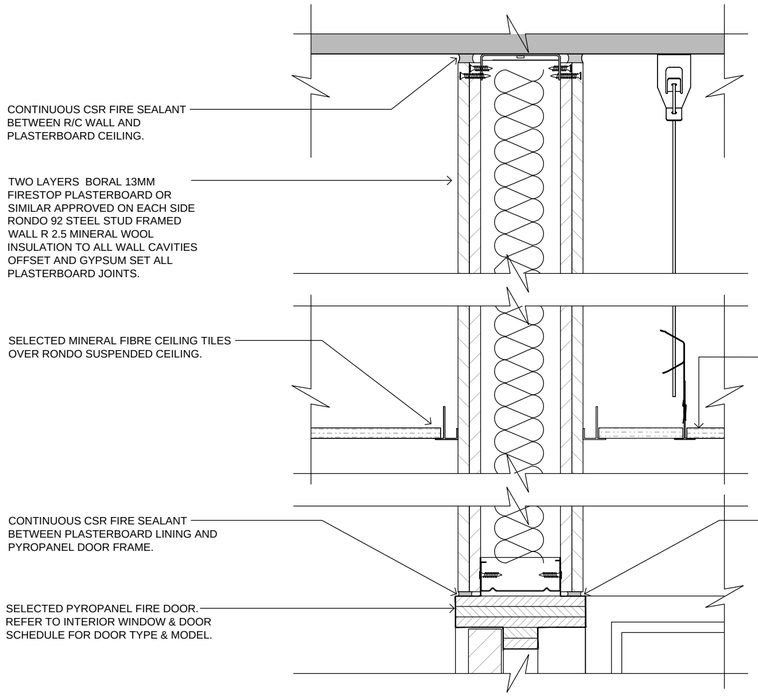
1 WALL & ROOF DETAIL
3.200 1:5 @ A2



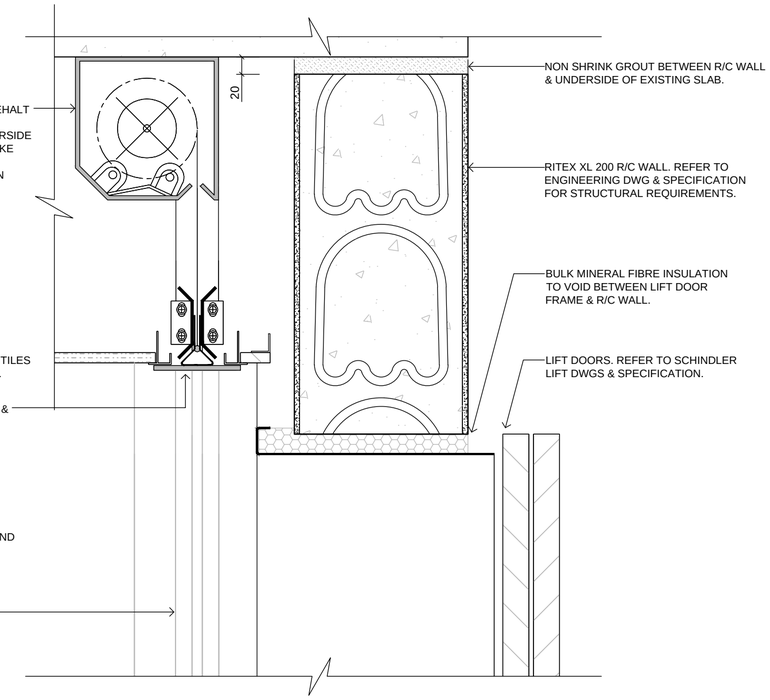
2 WALL & CEILING DETAIL
3.200 1:5 @ A2



3 WALL DETAIL .02
3.200 1:5 @ A2



4 WALL DETAIL .03
3.201 1:5 @ A2



5 FIRE CURTAIN/WALL DETAIL .02
6.304 1:5 @ A2

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CDC	14.11.2018	DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

AC	ALUMINIUM CLADDING	CL	CELEST WINDOW	HD	HINGED DOOR	ST	SILT TRAP
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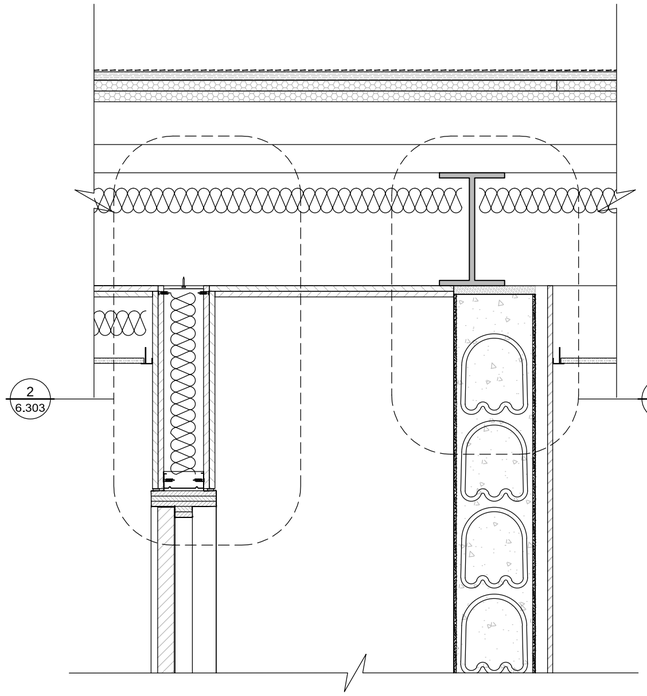
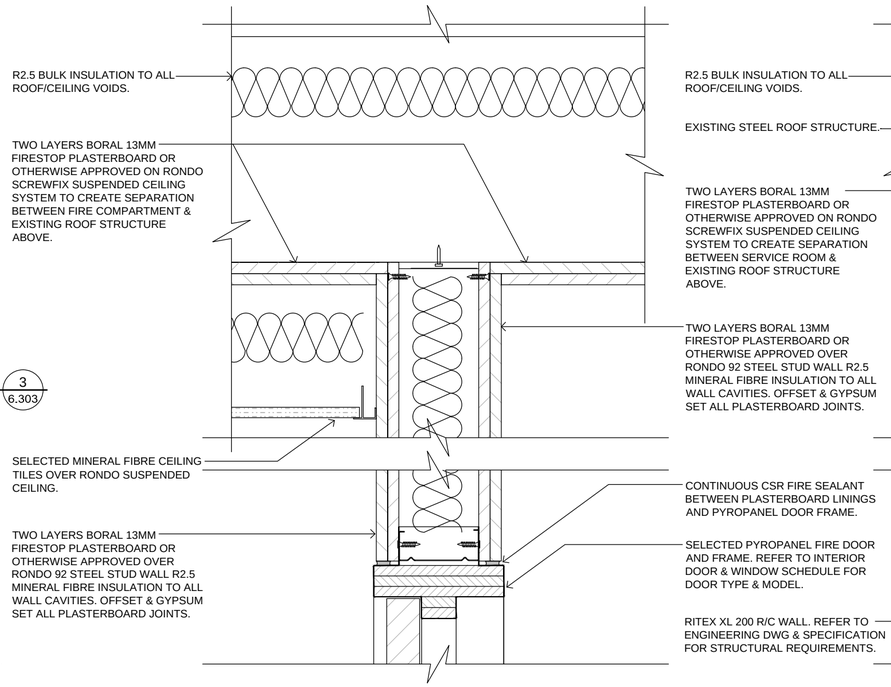
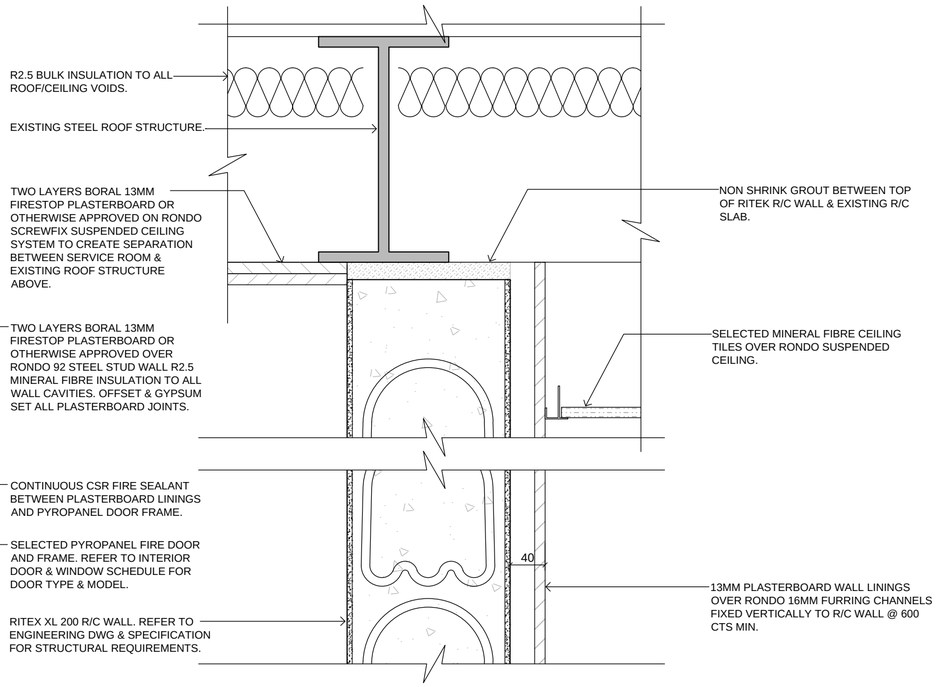
CLIENT: AMA HOLDINGS PTY LTD

DRAWING: CDC CONSTRUCTION DETAILS SHEET 3

SCALE: AS PER NOTATIONS
DATE: 18.10.2018 DRAWN: GO
PROJECT NO: 5055 DRAWING NO: CDC 6.302_01



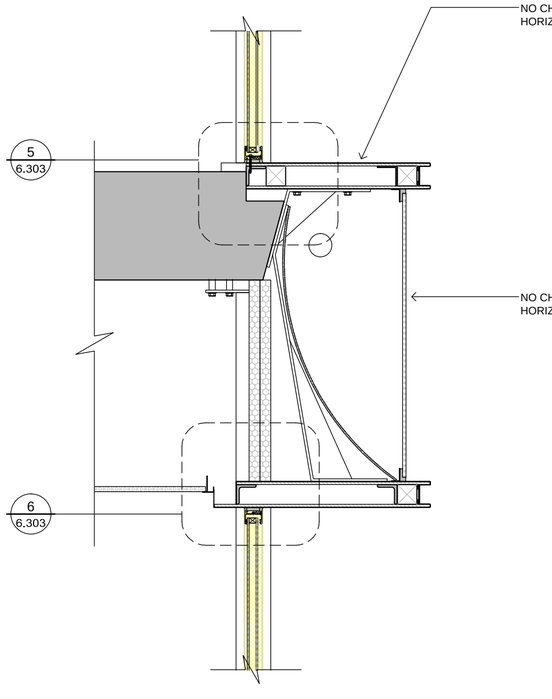


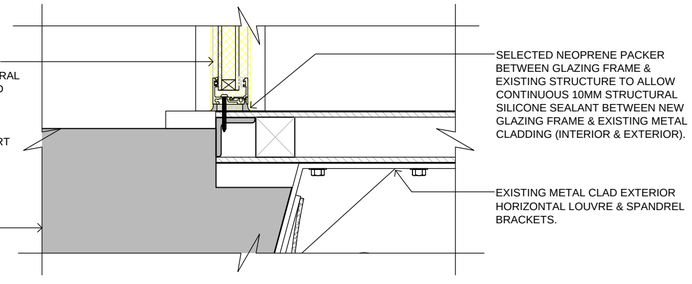


1 / 3.201 SERVICES ROOM WALL/CEILING DETAIL .01
1:10 @ A2

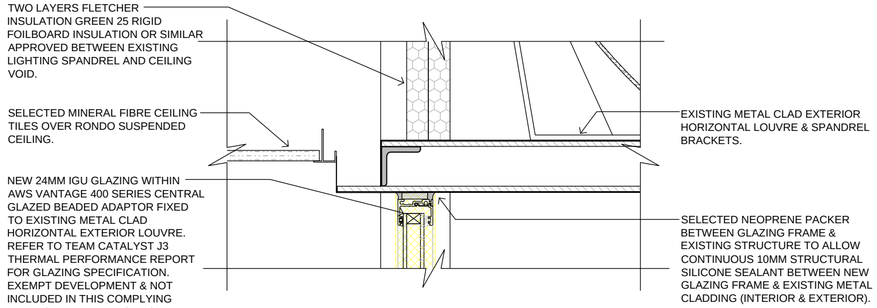
2 / 6.303 SERVICES ROOM WALL/CEILING DETAIL .02
1:5 @ A2

3 / 6.303 SERVICES ROOM WALL/CEILING DETAIL .03
1:5 @ A2





5 / 6.303 GLAZING DETAIL .01
1:5 @ A2



6 / 6.303 GLAZING DETAIL .02
1:5 @ A2

LEGEND:

PROPOSED WORKS NOT INCLUDED IN THIS COMPLYING DEVELOPMENT APPLICATION

4 / 3.202 LIGHTING SPANDREL DETAIL .01
1:10 @ A2

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ISSUE:	DATE:	REVISION:
DRAFT	2.11.2018	HIGHLIGHTING & NOTES ADDED TO IDENTIFY WORKS NOT INCLUDED IN CDC APPLICATION
CDC	14.11.2018	DRAFT REMOVED, ISSUED FOR CDC

LEGEND:

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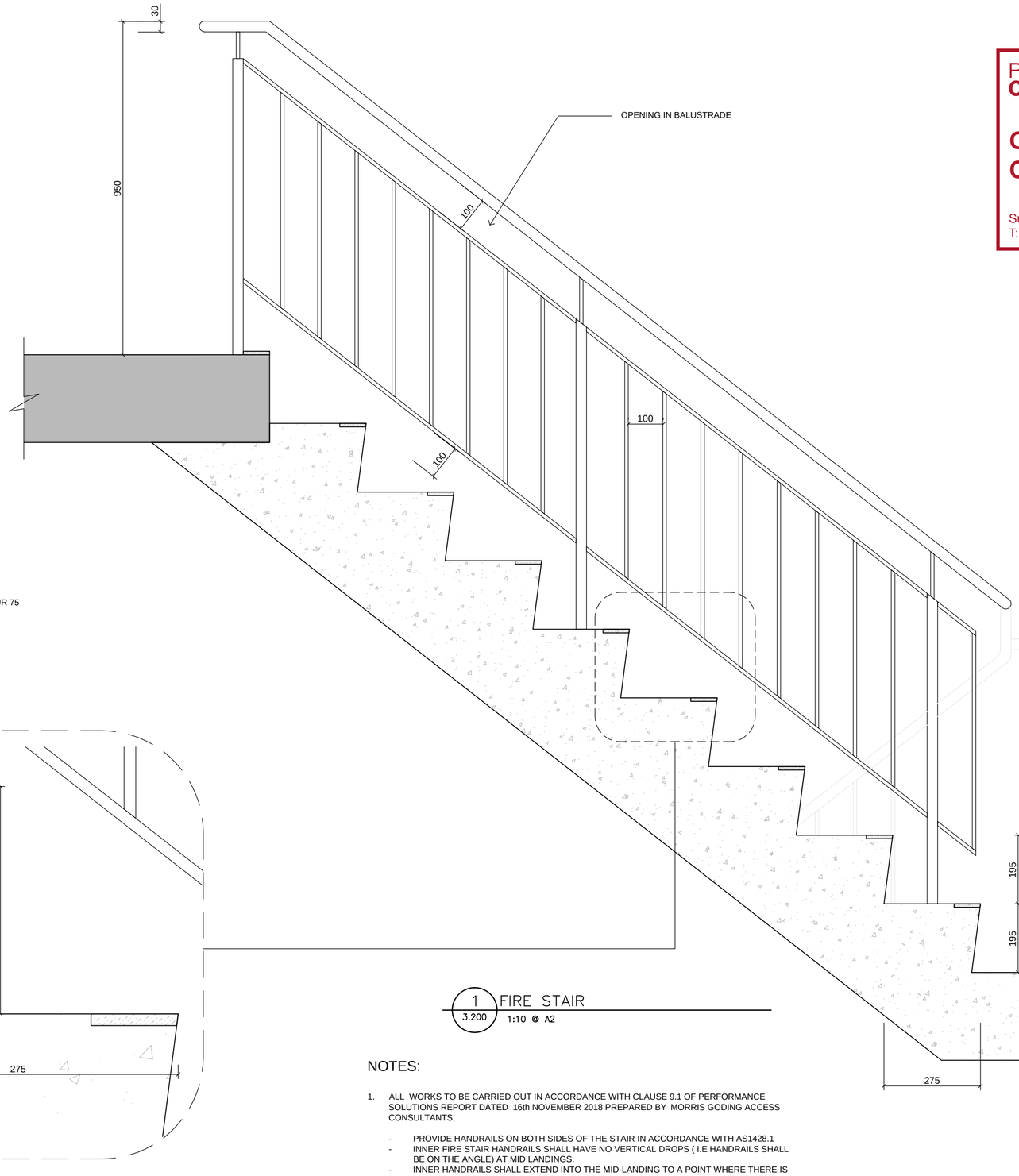
DRAWING: CDC CONSTRUCTION DETAILS SHEET 4

SCALE:	AS PER NOTATIONS
DATE: 18.10.2018	DRAWN: GO
PROJECT NO: 5055	DRAWING NO: CDC 6.303_02



2 6.801 STAIR NOSING PROFILE
1:1 @ A2

1 3.200 FIRE STAIR
1:10 @ A2

NOTES:

1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH CLAUSE 9.1 OF PERFORMANCE SOLUTIONS REPORT DATED 16th NOVEMBER 2018 PREPARED BY MORRIS GODING ACCESS CONSULTANTS;

- PROVIDE HANDRAILS ON BOTH SIDES OF THE STAIR IN ACCORDANCE WITH AS1428.1
- INNER FIRE STAIR HANDRAILS SHALL HAVE NO VERTICAL DROPS (I.E HANDRAILS SHALL BE ON THE ANGLE) AT MID LANDINGS.
- INNER HANDRAILS SHALL EXTEND INTO THE MID-LANDING TO A POINT WHERE THERE IS 1000MM CLEARANCE FROM HANDRAIL TO OPPOSITE WALL
- PROVIDE VISUAL CONTRAST STRIPS (50-70MM THICK) THAT HAVE AT LEAST 30% LUMINANCE CONTRAST ON EACH STEP NOSING IN ACCORDANCE WITH AS1428.1.
- PROVIDE TGSI IN ACCORDANCE WITH BCA PART D3.8
- PROVIDE DIRECTIONAL SIGNAGE ON GROUND FLOOR INFORMING BUILDING USERS OF THE FUNCTIONAL STAIR.

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ISSUE:	DATE:	REVISION:
CDC	19.11.2018	STAIR NOSINGS AMENDED, NOTES ADDED, DRAFT REMOVED, ISSUED FOR CDC

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DRAWING: CDC STAIR & RAMP DETAILS SHEET 1

SCALE: AS PER NOTATIONS
DATE: 25.10.2018 DRAWN: ME
PROJECT NO: 5055 DRAWING NO: CDC 6.801_01

Appendix C: Laboratory Results Summary Tables

ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

ADWG: AustralianDrinking Water Guidelines
ANZG Australian and New Zealand Guidelines
B(a)P: Benzo(a)pyrene
CRC: Cooperative Research Centre
ESLs: Ecological Screening Levels
GIL: Groundwater Investigation Levels
HILs: Health Investigation Levels
HSLs: Health Screening Levels
HSL-SSA: Health Screening Level-SiteSpecific Assessment
NA: Not Analysed
NC: Not Calculated
NEPM: National Environmental Protection Measure
NHMRC: National Health and Medical Research Council
NL: Not Limiting
NSL: No Set Limit
OCP: Organochlorine Pesticides
OPP: Organophosphorus Pesticides
PAHs: Polycyclic Aromatic Hydrocarbons
ppm: Parts per million
PCBs: Polychlorinated Biphenyls
PCE: Perchloroethylene (Tetrachloroethylene or Tetrachloroethene)
PQL: Practical Quantitation Limit
RS: Rinsate Sample
RSL: Regional Screening Levels
SAC: Site Assessment Criteria
SSA: Site Specific Assessment
SSHSLs Site Specific Health Screening Levels
TB: Trip Blank
TCA: 1,1,1 Trichloroethane (methyl chloroform)
TCE: Trichloroethylene (Trichloroethene)
TS: Trip Spike
TRH: Total Recoverable Hydrocarbons
UCL: Upper Level Confidence Limit on Mean Value
USEPA United States Environmental Protection Agency
VOCC: Volatile Organic Chlorinated Compounds
WHO: World Health Organisation

TABLE G1
SUMMARY OF GROUNDWATER LABORATORY RESULTS COMPARED TO ECOLOGICAL GILs SAC
All results in µg/L unless stated otherwise.

	PQL Envirolab Services	ANZG 2018 Marine Waters	SAMPLES						
			MW1	MW1 (dup)	MW2	MW4	WDUP1	WDUP2	WDUP2 (dup)
Inorganic Compounds and Parameters									
pH		7 - 8.5	6.9	NA	**7.2**	**7**	**7.2**	**7.1**	NA
Electrical Conductivity (µS/cm)	1	NSL	**700**	NA	**670**	**790**	**680**	**850**	NA
Turbidity (NTU)		NSL	NA	NA	NA	NA	NA	NA	NA
Metals and Metalloids									
Arsenic (As III)	1	2.3	**2**	NA	**10**	<1	**9**	<1	NA
Cadmium	0.1	0.7	<0.1	NA	<0.1	<0.1	<0.1	**0.1**	NA
Chromium (SAC for Cr III adopted)	1	27	<1	NA	<1	<1	<1	<1	NA
Copper	1	1.3	**14**	NA	<1	<1	<1	**3**	NA
Lead	1	4.4	**4**	NA	<1	<1	<1	<1	NA
Total Mercury (inorganic)	0.05	0.1	**0.08**	NA	<0.05	<0.05	<0.05	<1	NA
Nickel	1	7	**3**	NA	**6**	<1	**6**	**5**	NA
Zinc	1	15	**6**	NA	**7**	**3**	**8**	<0.05	NA
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)									
Benzene	1	500	<1	<1	<1	<1	<1	<1	<1
Toluene	1	180	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	5	<1	<1	<1	<1	<1	<1	<1
m+p-xylene	2	75	<2	<2	<2	<2	<2	<2	<2
o-xylene	1	350	<1	<1	<1	<1	<1	<1	<1
Total xylenes	2	NSL	<2	<2	<2	<2	<2	<2	<2
Volatile Organic Compounds (VOCs), including chlorinated VOCs									
Dichlorodifluoromethane	10	NSL	<10	<10	<10	<10	<10	<10	<10
Chloromethane	10	NSL	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride	10	100	<10	<10	<10	<10	<10	<10	<10
Bromomethane	10	NSL	<10	<10	<10	<10	<10	<10	<10
Chloroethane	10	NSL	<10	<10	<10	<10	<10	<10	<10
Trichlorofluoromethane	10	NSL	<10	<10	<10	<10	<10	<10	<10
1,1-Dichloroethene	1	700	<1	<1	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	1	250	<1	<1	<1	<1	<1	<1	<1
Cis-1,2-dichloroethene	1	NSL	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	1	NSL	<1	<1	<1	<1	<1	<1	<1
Chloroform	1	370	<1	<1	<1	<1	<1	<1	<1
2,2-dichloropropane	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	1	1900	<1	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	1	270	<1	<1	<1	<1	<1	<1	<1
1,1-dichloropropene	1	NSL	<1	<1	<1	<1	<1	<1	<1
Cyclohexane	1	NSL	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	1	240	<1	<1	<1	<1	<1	<1	<1
Benzene	1	500	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	1	900	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	1	330	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	1	NSL	<1	<1	<1	<1	<1	<1	<1
trans-1,3-dichloropropene	1	NSL	<1	<1	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	1	1900	<1	<1	<1	<1	<1	<1	<1
Toluene	1	180	<1	<1	<1	<1	<1	<1	<1
1,3-dichloropropane	1	1100	<1	<1	<1	<1	<1	<1	<1
Dibromochloromethane	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,2-dibromoethane	1	NSL	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	1	70	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	1	NSL	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	1	55	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	5	<1	<1	<1	<1	<1	<1	<1
Bromoform	1	NSL	<1	<1	<1	<1	<1	<1	<1
m+p-xylene	2	75	<2	<2	<2	<2	<2	<2	<2
Styrene	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	1	400	<1	<1	<1	<1	<1	<1	<1
o-xylene	1	350	<1	<1	<1	<1	<1	<1	<1
1,2,3-trichloropropane	1	NSL	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene	1	30	<1	<1	<1	<1	<1	<1	<1
Bromobenzene	1	NSL	<1	<1	<1	<1	<1	<1	<1
n-propyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1
2-chlorotoluene	1	NSL	<1	<1	<1	<1	<1	<1	<1
4-chlorotoluene	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1
Tert-butyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,3-dichlorobenzene	1	260	<1	<1	<1	<1	<1	<1	<1
Sec-butyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,4-dichlorobenzene	1	60	<1	<1	<1	<1	<1	<1	<1
4-isopropyl toluene	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	1	160	<1	<1	<1	<1	<1	<1	<1
n-butyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	1	20	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	1	3	<1	<1	<1	<1	<1	<1	<1
Polycyclic Aromatic Hydrocarbons (PAHs)									
Naphthalene	0.2	50	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	NA
Acenaphthylene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Acenaphthene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Fluorene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Phenanthrene	0.1	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Anthracene	0.1	0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Fluoranthene	0.1	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Pyrene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Benzo(a)anthracene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Chrysene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Benzo(b,j+k)fluoranthene	0.2	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA
Benzo(a)pyrene	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Indeno(1,2,3-c,d)pyrene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Dibenzo(a,h)anthracene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Benzo(g,h,i)perylene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA

Concentration above the SAC	**VALUE**
Concentration above the PQL	**Bold**
GIL >PQL	Red

TABLE G2
SUMMARY OF GROUNDWATER LABORATORY RESULTS COMPARED TO HUMAN CONTACT GILs
All results in µg/L unless stated otherwise.

	PQL Envirolab Services	Recreational (10 x NHMRC ADWG)	SAMPLES						
			MW1	MW1 (dup)	MW2	MW4	WDUP1	WDUP2	WDUP2 (dup)
Inorganic Compounds and Parameters									
pH		NSL	6.9	NA	7.2	7	7.2	7.1	NA
Electrical Conductivity (µS/cm)	1	NSL	**700**	NA	**670**	**790**	**680**	**850**	NA
Metals and Metalloids									
Arsenic (As III)	1	100	**2**	NA	**10**	<1	**9**	<1	NA
Cadmium	0.1	20	<0.1	NA	<0.1	<0.1	<0.1	**0.1**	NA
Chromium (total)	1	500	<1	NA	<1	<1	<1	<1	NA
Copper	1	20000	**14**	NA	<1	<1	<1	**3**	NA
Lead	1	100	**4**	NA	<1	<1	<1	<1	NA
Total Mercury (inorganic)	0.05	10	**0.08**	NA	<0.05	<0.05	<0.05	<1	NA
Nickel	1	200	**3**	NA	**6**	<1	**6**	**5**	NA
Zinc	1	30000	**6**	NA	**7**	**3**	**8**	<0.05	NA
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)									
Benzene	1	10	<1	<1	<1	<1	<1	<1	<1
Toluene	1	8000	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	3000	<1	<1	<1	<1	<1	<1	<1
m+p-xylene	2	NSL	<2	<2	<2	<2	<2	<2	<2
o-xylene	1	NSL	<1	<1	<1	<1	<1	<1	<1
Total xylenes	2	6000	<2	<2	<2	<2	<2	<2	<2
Volatile Organic Compounds (VOCs), including chlorinated VOCs									
Dichlorodifluoromethane	10	NSL	<10	<10	<10	<10	<10	<10	<10
Chloromethane	10	NSL	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride	10	3	<10	<10	<10	<10	<10	<10	<10
Bromomethane	10	NSL	<10	<10	<10	<10	<10	<10	<10
Chloroethane	10	NSL	<10	<10	<10	<10	<10	<10	<10
Trichlorofluoromethane	10	NSL	<10	<10	<10	<10	<10	<10	<10
1,1-Dichloroethene	1	300	<1	<1	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	1	600	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	1	NSL	<1	<1	<1	<1	<1	<1	<1
Cis-1,2-dichloroethene	1	600	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	1	2500	<1	<1	<1	<1	<1	<1	<1
Chloroform	1		<1	<1	<1	<1	<1	<1	<1
2,2-dichloropropane	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	1	30	<1	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,1-dichloropropene	1	NSL	<1	<1	<1	<1	<1	<1	<1
Cyclohexane	1	NSL	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	1	30	<1	<1	<1	<1	<1	<1	<1
Benzene	1	10	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	1	NSL	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	1	NSL	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	1	NSL	<1	<1	<1	<1	<1	<1	<1
trans-1,3-dichloropropene	1	1000	<1	<1	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	1	1000	<1	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	1	NSL	<1	<1	<1	<1	<1	<1	<1
Toluene	1	8000	<1	<1	<1	<1	<1	<1	<1
1,3-dichloropropane	1	NSL	<1	<1	<1	<1	<1	<1	<1
Dibromochloromethane	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,2-dibromoethane	1	NSL	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	1	500	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	1	NSL	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	1	3000	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	3000	<1	<1	<1	<1	<1	<1	<1
Bromoform	1	NSL	<1	<1	<1	<1	<1	<1	<1
m+p-xylene	2	NSL	<2	<2	<2	<2	<2	<2	<2
Styrene	1	300	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	1	NSL	<1	<1	<1	<1	<1	<1	<1
o-xylene	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,2,3-trichloropropane	1	NSL	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene	1	NSL	<1	<1	<1	<1	<1	<1	<1
Bromobenzene	1	NSL	<1	<1	<1	<1	<1	<1	<1
n-propyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1
2-chlorotoluene	1	NSL	<1	<1	<1	<1	<1	<1	<1
4-chlorotoluene	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1
Tert-butyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,3-dichlorobenzene	1	200	<1	<1	<1	<1	<1	<1	<1
Sec-butyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,4-dichlorobenzene	1	400	<1	<1	<1	<1	<1	<1	<1
4-isopropyl toluene	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	1	15000	<1	<1	<1	<1	<1	<1	<1
n-butyl benzene	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	1	NSL	<1	<1	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	1	300	<1	<1	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	1		<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	1	7	<1	<1	<1	<1	<1	<1	<1
Polycyclic Aromatic Hydrocarbons (PAHs)									
Naphthalene	0.2	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	NA
Acenaphthylene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Acenaphthene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Fluorene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Phenanthrene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Anthracene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Fluoranthene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Pyrene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Benzo(a)anthracene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Chrysene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Benzo(b,j+k)fluoranthene	0.2	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA
Benzo(a)pyrene	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Indeno(1,2,3-c,d)pyrene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Dibenzo(a,h)anthracene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
Benzo(g,h,i)perylene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA

Concentration above the SAC — **VALUE**
Concentration above the PQL — **Bold**
GIL >PQL — Red

TABLE G3
GROUNDWATER LABORATORY RESULTS COMPARED TO SITE SPECIFIC HSLs - RISK ASSESSMENT
All results in µg/L unless stated otherwise.

	PQL Envirolab Services	NHMRC ADWG 2011	WHO 2008	USEPA RSL Tapwater 2017	SAMPLES						
					MW1	MW1 (dup)	MW2	MW4	WDUP1	WDUP2	WDUP2 (dup)
Total Recoverable Hydrocarbons (TRH)											
C_6-C_9 Aliphatics (assessed using F1)	10	-	15000	-	<10	<10	<10	<10	<10	<10	<10
>C_9-C_{14} Aliphatics (assessed using F2)	50	-	100	-	<50	<50	<50	<50	<50	<50	NA
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)											
Benzene	1	1	-	-	<1	<1	<1	<1	<1	<1	<1
Toluene	1	800	-	-	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	300	-	-	<1	<1	<1	<1	<1	<1	<1
Total xylenes	2	600	-	-	<2	<2	<2	<2	<2	<2	<2
Polycyclic Aromatic Hydrocarbons (PAHs)											
Naphthalene	1	-	-	6.1	<1	<1	<1	<1	<1	<1	<1
Volatile Organic Compounds (VOCs), including chlorinated VOCs											
Dichlorodifluoromethane	10	-	-	-	<10	<10	<10	<10	<10	<10	<10
Chloromethane	10	-	-	-	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride	10	0.3	-	-	<10	<10	<10	<10	<10	<10	<10
Bromomethane	10	-	-	-	<10	<10	<10	<10	<10	<10	<10
Chloroethane	10	-	-	-	<10	<10	<10	<10	<10	<10	<10
Trichlorofluoromethane	10	-	-	-	<10	<10	<10	<10	<10	<10	<10
1,1-Dichloroethene	1	30	-	-	<1	<1	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	1	60	-	-	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
Cis-1,2-dichloroethene	1	60	-	-	<1	<1	<1	<1	<1	<1	<1
Bromochloromethane	1	250	-	-	<1	<1	<1	<1	<1	<1	<1
Chloroform	1		-	-	<1	<1	<1	<1	<1	<1	<1
2,2-dichloropropane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	1	3	-	-	<1	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
1,1-dichloropropene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
Cyclohexane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	1	3	-	-	<1	<1	<1	<1	<1	<1	<1
Benzene	1	1	-	-	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
Trichloroethene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
trans-1,3-dichloropropene	1	100	-	-	<1	<1	<1	<1	<1	<1	<1
cis-1,3-dichloropropene	1	100	-	-	<1	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
Toluene	1	800	-	-	<1	<1	<1	<1	<1	<1	<1
1,3-dichloropropane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
Dibromochloromethane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
1,2-dibromoethane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	1	50	-	-	<1	<1	<1	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	1	300	-	-	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	300	-	-	<1	<1	<1	<1	<1	<1	<1
Bromoform	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
m+p-xylene	2	-	-	-	<2	<2	<2	<2	<2	<2	<2
Styrene	1	30	-	-	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
o-xylene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
1,2,3-trichloropropane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
Isopropylbenzene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
Bromobenzene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
n-propyl benzene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
2-chlorotoluene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
4-chlorotoluene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
1,3,5-trimethyl benzene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
Tert-butyl benzene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
1,2,4-trimethyl benzene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
1,3-dichlorobenzene	1	20	-	-	<1	<1	<1	<1	<1	<1	<1
Sec-butyl benzene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
1,4-dichlorobenzene	1	40	-	-	<1	<1	<1	<1	<1	<1	<1
4-isopropyl toluene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	1	1500	-	-	<1	<1	<1	<1	<1	<1	<1
n-butyl benzene	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	1	-	-	-	<1	<1	<1	<1	<1	<1	<1
1,2,4-trichlorobenzene	1	30	-	-	<1	<1	<1	<1	<1	<1	<1
1,2,3-trichlorobenzene	1		-	-	<1	<1	<1	<1	<1	<1	<1
Hexachlorobutadiene	1	7	-	-	<1	<1	<1	<1	<1	<1	<1

Concentration above the SAC — **VALUE**
Concentration above the PQL — **Bold**
GIL >PQL — Red

TABLE G4
GROUNDWATER QA/QC SUMMARY

		Dichlorodifluoromethane	Chloromethane	Vinyl Chloride	Bromomethane	Chloroethane	Trichlorofluoromethane	1,1-Dichloroethene	Trans-1,2-dichloroethene	1,1-dichloroethane	Cis-1,2-dichloroethene	Bromochloromethane	Chloroform	2,2-dichloropropane	1,2-dichloroethane	1,1,1-trichloroethane	1,1-dichloropropene	Cyclohexane	Carbon tetrachloride	Benzene	Dibromomethane
	PQL Envirolab SYD	*10*	*10*	*10*	*10*	*10*	*10*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*
	PQL Envirolab VIC	*10*	*10*	*10*	*10*	*10*	*10*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*
Intra	MW2	<10	<10	<10	<10	<10	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
laboratory	WDUP1	<10	<10	<10	<10	<10	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	MW4	<10	<10	<10	<10	<10	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
laboratory	WDUP2	<10	<10	<10	<10	<10	<10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc

		1,2-dichloropropane	Trichloroethene	Bromodichloromethane	trans-1,3-dichloropropene	cis-1,3-dichloropropene	1,1,2-trichloroethane	Toluene	1,3-dichloropropane	Dibromochloromethane	1,2-dibromoethane	Tetrachloroethene	1,1,1,2-tetrachloroethane	Chlorobenzene	Ethylbenzene	Bromoform	m+p-xylene	Styrene	1,1,2,2-tetrachloroethane	o-xylene	1,2,3-trichloropropane
	PQL Envirolab SYD	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*2*	*1*	*1*	*1*	*1*
	PQL Envirolab VIC	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*2*	*1*	*1*	*1*	*1*
Intra	MW2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
laboratory	WDUP1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	MW4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
laboratory	WDUP2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc

		Isopropylbenzene	Bromobenzene	n-propyl benzene	2-chlorotoluene	4-chlorotoluene	1,3,5-trimethyl benzene	Tert-butyl benzene	1,2,4-trimethyl benzene	1,3-dichlorobenzene	Sec-butyl benzene	1,4-dichlorobenzene	4-isopropyl toluene	1,2-dichlorobenzene	n-butyl benzene	1,2-dibromo-3-chloropropane	1,2,4-trichlorobenzene	Hexachlorobutadiene	1,2,3-trichlorobenzene
	PQL Envirolab SYD	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*
	PQL Envirolab VIC	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*
Intra	MW2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
laboratory	WDUP1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	MW4	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
laboratory	WDUP2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc

		TRH C6 - C10	TRH >C10-C16	TRH >C16-C34	TRH >C34-C40	Benzene	Toluene	Ethylbenzene	m+p-xylene	o-Xylene
	PQL Envirolab SYD	*10*	*50*	*100*	*100*	*1*	*1*	*1*	*2*	*1*
	PQL Envirolab VIC	*10*	*50*	*100*	*100*	*1.0*	*1.0*	*1.0*	*2.0*	*1.0*
Intra	MW2	<10	<50	<100	<100	<1	<1	<1	<2	<1
laboratory	WDUP1	<10	<50	<100	<100	<1	<1	<1	<2	<1
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	MW4	<10	<50	<100	<100	<1	<1	<1	<2	<1
laboratory	WDUP2	<10	<50	<100	<100	<1	<1	<1	<2	<1
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc
Trip	TS	-	-	-	-	109%	116%	121%	112%	113%
Spike	5/01/2022									
Field	TB	NA	NA	NA	NA	<1	<1	<1	<2	<1
Blank	5/01/2022									

		Naphthalene	Acenaphthylene	Acenaph-thene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,j+k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthra-cene	Benzo(g,h,i)perylene
	PQL Envirolab SYD	*0.2*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.1*	*0.1*	*0.1*	*0.1*
	PQL Envirolab VIC	*0.2*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.1*	*0.1*	*0.1*	*0.1*
Intra	MW2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1
laboratory	WDUP1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	MW4	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1
laboratory	WDUP2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Trip	TS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spike	5/01/2022															
Field	TB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Blank	5/01/2022															

		Arsenic	Cadmium	Chromium VI	Copper	Lead	Mercury	Nickel	Zinc
	PQL Envirolab SYD	*1*	*0.1*	*1*	*1*	*1*	*0.05*	*1*	*1*
	PQL Envirolab VIC	*1*	*0.1*	*1*	*1*	*1*	*0.05*	*1*	*1*
Intra	MW2	10	<0.1	<1	<1	<1	<0.05	6	7
laboratory	WDUP1	9	<0.1	<1	<1	<1	<0.05	6	8
duplicate	MEAN	9.5	nc	nc	nc	nc	nc	6	7.5
	RPD %	11%	nc	nc	nc	nc	nc	0%	13%
Inter	MW4	<1	<0.1	<1	<1	<1	<0.05	<1	3
laboratory	WDUP2	<1	0.1	<1	3	<1	<1	5	<0.05
duplicate	MEAN	nc	0.075	nc	1.75	nc	nc	2.75	1.75
	RPD %	nc	67%	nc	143%	nc	nc	164%	143%
Trip	TS	-	-	-	-	-	-	-	
Spike	5/01/2022								
Field	TB	NA	NA	NA	NA	NA	NA	NA	NA
Blank	5/01/2022								

Result outside of QA/QC acceptance criteria Value

Appendix D: Borehole Logs

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **BH1/MW1** **1/1**

SDUP2: 0.48-0.58m

Client: BROOKLYN LANE INVESTMENT PTY LTD

Project: PROPOSED REDEVELOPMENT

Location: 2A COOPER STREET, DOUBLE BAY, NSW

Job No.: E34336PH **Method:** HAND AUGER **R.L. Surface:** +1.1m

Date: 8/9/21 **Datum:** AHD

Plant Type: - **Logged/Checked by:** N.M./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
SEEPAGE AT THE SURFACE	■				■		0			CONCRETE: 480mm.t				CONCRETE CEMENT COVER
							0.5		-	FILL: Silty clayey sand, fine to medium grained, brown, trace of clay nodules.	W			SCREEN: 2kg 0.48-0.58m NO FCF
	■	■	■				1							
										END OF BOREHOLE AT 1.2m				HAND AUGER REFUSAL CLASS 18 SLOTTED PVC INSTALLED TO A DEPTH OF APPROXIMATELY 1.0m, WITH A SPEAR POINT AND REMOVED FOLLOWING GROUNDWATER SAMPLING.
							1.5							
							2							
							2.5							
							3							
							3.5							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No. **BH2/MW2** **1/1**

SDUP1: 0.53-0.63m

Client: BROOKLYN LANE INVESTMENT PTY LTD

Project: PROPOSED REDEVELOPMENT

Location: 2A COOPER STREET, DOUBLE BAY, NSW

Job No.: E34336PH **Method:** HAND AUGER **R.L. Surface:** +0.6m

Date: 8/9/21 **Datum:** AHD

Plant Type: - **Logged/Checked by:** N.M./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
SEEPAGE AT THE SURFACE							0			CONCRETE: 530mm.t				CONCRETE CEMENT COVER
	■	■	■		■		0.5		-	FILL: Silty sand, fine to medium grained, brown, no inclusions.	W			SCREEN: 2.3kg 0.53-0.63m NO FCF
		■	■				1							
							1.5			END OF BOREHOLE AT 1.5m				SAMPLE IRRETRIEVABLE CLASS 18 SLOTTED PVC INSTALLED TO A DEPTH OF APPROXIMATELY 0.62m, WITH A SPEAR POINT AND REMOVED FOLLOWING GROUNDWATER SAMPLING.
							2							
							2.5							
							3							
							3.5							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Log No.
BH4/MW4
1/1

Client: BROOKLYN LANE INVESTMENT PTY LTD

Project: PROPOSED REDEVELOPMENT

Location: 2A COOPER STREET, DOUBLE BAY, NSW

Job No.: E34336PH **Method:** HAND AUGER **R.L. Surface:** +0.6m

Date: 8/9/21 **Datum:** AHD

Plant Type: - **Logged/Checked by:** N.M./T.H.

Groundwater Record	SAMPLES ES	SAMPLES ASS	SAMPLES ASB	SAMPLES SAL	SAMPLES DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
SEEPAGE AT THE SURFACE							0			CONCRETE: 480mm.t				CONCRETE CEMENT COVER
							0.5		-	FILL: Silty clayey sand, fine to medium grained, brown, trace of clay nodules.	W			SCREEN: 2.15kg 0.48-0.58m NO FCF
							1		SP	SAND: fine to medium grained, yellow brown, no inclusions.	W			ALLUVIAL
							1.5							
										END OF BOREHOLE AT 1.8m				SAMPLE IRRETRIEVABLE CLASS 18 SLOTTED PVC INSTALLED TO A DEPTH OF APPROXIMATELY 0.42m, WITH A SPEAR POINT AND REMOVED FOLLOWING GROUNDWATER SAMPLING.
							2							
							2.5							
							3							
							3.5							

ENVIRONMENTAL LOGS EXPLANATION NOTES

INTRODUCTION

These notes have been provided to amplify the environmental report in regard to classification methods, field procedures and certain matters relating to the logging of soil and rock. Not all notes are necessarily relevant to all reports.

Where geotechnical borehole logs are utilised for environmental purpose, reference should also be made to the explanatory notes included in the geotechnical report. Environmental logs are not suitable for geotechnical purposes.

The ground is a product of continuing natural and man-made processes and therefore exhibits a variety of characteristics and properties which vary from place to place and can change with time. Environmental studies include gathering and assimilating limited facts about these characteristics and properties in order to understand or predict the behaviour of the ground on a particular site under certain conditions. This report may contain such facts obtained by inspection, excavation, probing, sampling, testing or other means of investigation. If so, they are directly relevant only to the ground at the place where and time when the investigation was carried out.

DESCRIPTION AND CLASSIFICATION METHODS

The methods of description and classification of soils and rocks used in this report are based on Australian Standard 1726:2017 *'Geotechnical Site Investigations'*. In general, descriptions cover the following properties – soil or rock type, colour, structure, strength or density, and inclusions. Identification and classification of soil and rock involves judgement and the Company infers accuracy only to the extent that is common in current geoenvironmental practice.

Soil types are described according to the predominating particle size and behaviour as set out in the attached soil classification table qualified by the grading of other particles present (eg. sandy clay) as set out below:

Soil Classification	Particle Size
Clay	< 0.002mm
Silt	0.002 to 0.075mm
Sand	0.075 to 2.36mm
Gravel	2.36 to 63mm
Cobbles	63 to 200mm
Boulders	> 200mm

Non-cohesive soils are classified on the basis of relative density, generally from the results of Standard Penetration Test (SPT) as below:

Relative Density	SPT 'N' Value (blows/300mm)
Very loose (VL)	< 4
Loose (L)	4 to 10
Medium dense (MD)	10 to 30
Dense (D)	30 to 50
Very Dense (VD)	> 50

Cohesive soils are classified on the basis of strength (consistency) either by use of a hand penetrometer, vane shear, laboratory testing and/or tactile engineering examination. The strength terms are defined as follows.

Classification	Unconfined Compressive Strength (kPa)	Indicative Undrained Shear Strength (kPa)
Very Soft (VS)	≤ 25	≤ 12
Soft (S)	> 25 and ≤ 50	> 12 and ≤ 25
Firm (F)	> 50 and ≤ 100	> 25 and ≤ 50
Stiff (St)	> 100 and ≤ 200	> 50 and ≤ 100
Very Stiff (VSt)	> 200 and ≤ 400	> 100 and ≤ 200
Hard (Hd)	> 400	> 200
Friable (Fr)	Strength not attainable – soil crumbles	

Rock types are classified by their geological names, together with descriptive terms regarding weathering, strength, defects, etc. Where relevant, further information regarding rock classification is given in the text of the report. In the Sydney Basin, 'shale' is used to describe fissile mudstone, with a weakness parallel to bedding. Rocks with alternating inter-laminations of different grain size (eg. siltstone/claystone and siltstone/fine grained sandstone) are referred to as 'laminite'.

INVESTIGATION METHODS

The following is a brief summary of investigation methods currently adopted by the Company and some comments on their use and application. All methods except test pits, hand auger drilling and portable Dynamic Cone Penetrometers require the use of a mechanical rig which is commonly mounted on a truck chassis or track base.

Test Pits: These are normally excavated with a backhoe or a tracked excavator, allowing close examination of the insitu soils and 'weaker' bedrock if it is safe to descend into the pit. The depth of penetration is limited to about 3m for a backhoe and up to 6m for a large excavator. Limitations of test pits are the problems associated with disturbance and difficulty of reinstatement and the consequent effects on close-by structures. Care must be taken if construction is to be carried out near test pit locations to either properly recompact the backfill during construction or to design and construct the

structure so as not to be adversely affected by poorly compacted backfill at the test pit location.

Hand Auger Drilling: A borehole of 50mm to 100mm diameter is advanced by manually operated equipment. Refusal of the hand auger can occur on a variety of materials such as obstructions within any fill, tree roots, hard clay, gravel or ironstone, cobbles and boulders, and does not necessarily indicate rock level.

Continuous Spiral Flight Augers: The borehole is advanced using 75mm to 115mm diameter continuous spiral flight augers, which are withdrawn at intervals to allow sampling and insitu testing. This is a relatively economical means of drilling in clays and in sands above the water table. Samples are returned to the surface by the flights or may be collected after withdrawal of the auger flights, but they can be very disturbed and layers may become mixed. Information from the auger sampling (as distinct from specific sampling by SPTs or undisturbed samples) is of limited reliability due to mixing or softening of samples by groundwater, or uncertainties as to the original depth of the samples. Augering below the groundwater table is of even lesser reliability than augering above the water table.

Rock Augering: Use can be made of a Tungsten Carbide (TC) bit for auger drilling into rock to indicate rock quality and continuity by variation in drilling resistance and from examination of recovered rock cuttings. This method of investigation is quick and relatively inexpensive but provides only an indication of the likely rock strength and predicted values may be in error by a strength order. Where rock strengths may have a significant impact on construction feasibility or costs, then further investigation by means of cored boreholes may be warranted.

Wash Boring: The borehole is usually advanced by a rotary bit, with water being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be assessed from the cuttings, together with some information from "feel" and rate of penetration.

Mud Stabilised Drilling: Either Wash Boring or Continuous Core Drilling can use drilling mud as a circulating fluid to stabilise the borehole. The term 'mud' encompasses a range of products ranging from bentonite to polymers. The mud tends to mask the cuttings and reliable identification is only possible from intermittent intact sampling (eg. from SPT and U50 samples) or from rock coring, etc.

Continuous Core Drilling: A continuous core sample is obtained using a diamond tipped core barrel. Provided full core recovery is achieved (which is not always possible in very low strength rocks and granular soils), this technique provides a very reliable (but relatively expensive) method of investigation. In rocks, NMLC or HQ triple tube core barrels, which give a core of about 50mm and 61mm diameter, respectively, is usually used with water flush. The length of core recovered is compared to the length drilled and any length not recovered is shown as NO CORE. The location of NO CORE recovery is determined on site by the supervising engineer; where the location is uncertain, the loss is placed at the bottom of the drill run.

Standard Penetration Tests: Standard Penetration Tests (SPT) are used mainly in non-cohesive soils, but can also be used in cohesive soils, as a means of indicating density or strength and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289.6.3.1–2004 (R2016) *'Methods of Testing Soils for Engineering Purposes, Soil Strength and Consolidation Tests – Determination of the Penetration Resistance of a Soil – Standard Penetration Test (SPT)'*.

The test is carried out in a borehole by driving a 50mm diameter split sample tube with a tapered shoe, under the impact of a 63.5kg hammer with a free fall of 760mm. It is normal for the tube to be driven in three successive 150mm increments and the 'N' value is taken as the number of blows for the last 300mm. In dense sands, very hard clays or weak rock, the full 450mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form:

- In the case where full penetration is obtained with successive blow counts for each 150mm of, say, 4, 6 and 7 blows, as

  N = 13
  4, 6, 7

- In a case where the test is discontinued short of full penetration, say after 15 blows for the first 150mm and 30 blows for the next 40mm, as

  N > 30
  15, 30/40mm

The results of the test can be related empirically to the engineering properties of the soil.

A modification to the SPT is where the same driving system is used with a solid 60° tipped steel cone of the same diameter as the SPT hollow sampler. The solid cone can be continuously driven for some distance in soft clays or loose sands, or may be used where damage would otherwise occur to the SPT. The results of this Solid Cone Penetration Test (SCPT) are shown as 'N_c' on the borehole logs, together with the number of blows per 150mm penetration.

LOGS

The borehole or test pit logs presented herein are an interpretation of the subsurface conditions, and their reliability will depend to some extent on the frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will enable the most reliable assessment, but is not always practicable or possible to justify on economic grounds. In any case, the boreholes or test pits represent only a very small sample of the total subsurface conditions.

The terms and symbols used in preparation of the logs are defined in the following pages.

Interpretation of the information shown on the logs, and its application to design and construction, should therefore take into account the spacing of boreholes or test pits, the method of drilling or excavation, the frequency of sampling and testing and the possibility of other than 'straight line' variations between the boreholes or test pits. Subsurface conditions between boreholes or test pits may vary significantly from conditions encountered at the borehole or test pit locations.

GROUNDWATER

Where groundwater levels are measured in boreholes, there are several potential problems:

- Although groundwater may be present, in low permeability soils it may enter the hole slowly or perhaps not at all during the time it is left open.
- A localised perched water table may lead to an erroneous indication of the true water table.
- Water table levels will vary from time to time with seasons or recent weather changes and may not be the same at the time of construction.
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must be washed out of the hole or 'reverted' chemically if reliable water observations are to be made.

More reliable measurements can be made by installing standpipes which are read after the groundwater level has stabilised at intervals ranging from several days to perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from perched water tables or surface water.

FILL

The presence of fill materials can often be determined only by the inclusion of foreign objects (eg. bricks, steel, etc) or by distinctly unusual colour, texture or fabric. Identification of the extent of fill materials will also depend on investigation methods and frequency. Where natural soils similar to those at the site are used for fill, it may be difficult with limited testing and sampling to reliably assess the extent of the fill.

The presence of fill materials is usually regarded with caution as the possible variation in density and material type is much greater than with natural soil deposits. Consequently, there is an increased risk of adverse environmental characteristics or behaviour. If the volume and nature of fill is of importance to a project, then frequent test pit excavations are preferable to boreholes.

LABORATORY TESTING

Laboratory testing has not been undertaken to confirm the soil classification and rock strengths indicated on the environmental logs unless noted in the report.

SYMBOL LEGENDS

SOIL


FILL


TOPSOIL


CLAY (CL, CI, CH)


SILT (ML, MH)


SAND (SP, SW)


GRAVEL (GP, GW)


SANDY CLAY (CL, CI, CH)


SILTY CLAY (CL, CI, CH)


CLAYEY SAND (SC)


SILTY SAND (SM)


GRAVELLY CLAY (CL, CI, CH)


CLAYEY GRAVEL (GC)


SANDY SILT (ML, MH)


PEAT AND HIGHLY ORGANIC SOILS (Pt)

ROCK


CONGLOMERATE


SANDSTONE


SHALE/MUDSTONE


SILTSTONE


CLAYSTONE


COAL


LAMINITE


LIMESTONE


PHYLLITE, SCHIST


TUFF


GRANITE, GABBRO


DOLERITE, DIORITE


BASALT, ANDESITE


QUARTZITE

OTHER MATERIALS


BRICKS OR PAVERS


CONCRETE


ASPHALTIC CONCRETE

CLASSIFICATION OF COARSE AND FINE GRAINED SOILS

Major Divisions		Group Symbol	Typical Names	Field Classification of Sand and Gravel	Laboratory Classification	
Coarse grained soil (more than 65% of soil excluding oversize fraction is greater than 0.075mm)	GRAVEL (more than half of coarse fraction is larger than 2.36mm	GW	Gravel and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	$C_u > 4$ $1 < C_c < 3$
		GP	Gravel and gravel-sand mixtures, little or no fines, uniform gravels	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
		GM	Gravel-silt mixtures and gravel-sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	Fines behave as silt
		GC	Gravel-clay mixtures and gravel-sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	Fines behave as clay
	SAND (more than half of coarse fraction is smaller than 2.36mm)	SW	Sand and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	$C_u > 6$ $1 < C_c < 3$
		SP	Sand and gravel-sand mixtures, little or no fines	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
		SM	Sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	N/A
		SC	Sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	

Major Divisions		Group Symbol	Typical Names	Field Classification of Silt and Clay			Laboratory Classification
				Dry Strength	Dilatancy	Toughness	% < 0.075mm
ine grained soils (more than 35% of soil excluding oversize fraction is less than 0.075mm)	SILT and CLAY (low to medium plasticity)	ML	Inorganic silt and very fine sand, rock flour, silty or clayey fine sand or silt with low plasticity	None to low	Slow to rapid	Low	Below A line
		CL, CI	Inorganic clay of low to medium plasticity, gravelly clay, sandy clay	Medium to high	None to slow	Medium	Above A line
		OL	Organic silt	Low to medium	Slow	Low	Below A line
	SILT and CLAY (high plasticity)	MH	Inorganic silt	Low to medium	None to slow	Low to medium	Below A line
		CH	Inorganic clay of high plasticity	High to very high	None	High	Above A line
		OH	Organic clay of medium to high plasticity, organic silt	Medium to high	None to very slow	Low to medium	Below A line
	Highly organic soil	Pt	Peat, highly organic soil	–	–	–	–

Laboratory Classification Criteria

A well graded coarse grained soil is one for which the coefficient of uniformity $Cu > 4$ and the coefficient of curvature $1 < C_c < 3$. Otherwise, the soil is poorly graded. These coefficients are given by:

$$C_U = \frac{D_{60}}{D_{10}} \qquad and \qquad C_C = \frac{(D_{30})^2}{D_{10}\, D_{60}}$$

Where D_{10}, D_{30} and D_{60} are those grain sizes for which 10%, 30% and 60% of the soil grains, respectively, are smaller.

NOTES:

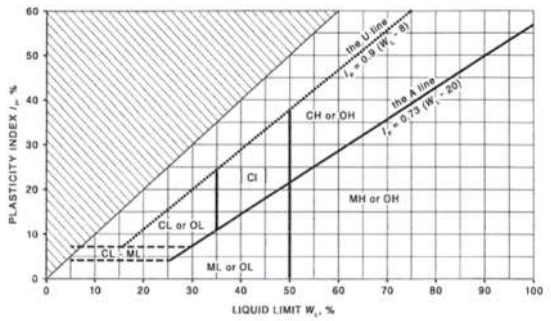
1 For a coarse grained soil with a fines content between 5% and 12%, the soil is given a dual classification comprising the two group symbols separated by a dash; for example, for a poorly graded gravel with between 5% and 12% silt fines, the classification is GP-GM.

2 Where the grading is determined from laboratory tests, it is defined by coefficients of curvature (C_c) and uniformity (C_u) derived from the particle size distribution curve.

3 Clay soils with liquid limits > 35% and ≤ 50% may be classified as being of medium plasticity.

4 The U line on the Modified Casagrande Chart is an approximate upper bound for most natural soils.

Modified Casagrande Chart for Classifying Silts and Clays according to their Behaviour



LOG SYMBOLS

Log Column	Symbol	Definition
Groundwater Record		Standing water level. Time delay following completion of drilling/excavation may be shown.
		Extent of borehole/test pit collapse shortly after drilling/excavation.
		Groundwater seepage into borehole or test pit noted during drilling or excavation.
Samples	ES	Sample taken over depth indicated, for environmental analysis.
	U50	Undisturbed 50mm diameter tube sample taken over depth indicated.
	DB	Bulk disturbed sample taken over depth indicated.
	DS	Small disturbed bag sample taken over depth indicated.
	ASB	Soil sample taken over depth indicated, for asbestos analysis.
	ASS	Soil sample taken over depth indicated, for acid sulfate soil analysis.
	SAL	Soil sample taken over depth indicated, for salinity analysis.
	PFAS	Soil sample taken over depth indicated, for analysis of Per- and Polyfluoroalkyl Substances.
Field Tests	N = 17 4, 7, 10	Standard Penetration Test (SPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration. 'Refusal' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	N_c = 5 7 3R	Solid Cone Penetration Test (SCPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration for 60° solid cone driven by SPT hammer. 'R' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	VNS = 25 PID = 100	Vane shear reading in kPa of undrained shear strength. Photoionisation detector reading in ppm (soil sample headspace test).
Moisture Condition (Fine Grained Soils)	w > PL $w \approx$ PL w < PL $w \approx$ LL w > LL	Moisture content estimated to be greater than plastic limit. Moisture content estimated to be approximately equal to plastic limit. Moisture content estimated to be less than plastic limit. Moisture content estimated to be near liquid limit. Moisture content estimated to be wet of liquid limit.
(Coarse Grained Soils)	D M W	DRY – runs freely through fingers. MOIST – does not run freely but no free water visible on soil surface. WET – free water visible on soil surface.
Strength (Consistency) Cohesive Soils	VS S F St VSt Hd Fr ( )	VERY SOFT – unconfined compressive strength ≤ 25kPa. SOFT – unconfined compressive strength > 25kPa and ≤ 50kPa. FIRM – unconfined compressive strength > 50kPa and ≤ 100kPa. STIFF – unconfined compressive strength > 100kPa and ≤ 200kPa. VERY STIFF – unconfined compressive strength > 200kPa and ≤ 400kPa. HARD – unconfined compressive strength > 400kPa. FRIABLE – strength not attainable, soil crumbles. Bracketed symbol indicates estimated consistency based on tactile examination or other assessment.
Density Index/ Relative Density (Cohesionless Soils)	VL L MD D VD ( )	**Density Index (I_D) Range (%)** / **SPT 'N' Value Range (Blows/300mm)** VERY LOOSE ≤ 15 / 0 – 4 LOOSE > 15 and ≤ 35 / 4 – 10 MEDIUM DENSE > 35 and ≤ 65 / 10 – 30 DENSE > 65 and ≤ 85 / 30 – 50 VERY DENSE > 85 / > 50 Bracketed symbol indicates estimated density based on ease of drilling or other assessment.

Log Column	Symbol	Definition
Hand Penetrometer Readings	300 250	Measures reading in kPa of unconfined compressive strength. Numbers indicate individual test results on representative undisturbed material unless noted otherwise.
Remarks	'V' bit	Hardened steel 'V' shaped bit.
	'TC' bit	Twin pronged tungsten carbide bit.
	T_{60}	Penetration of auger string in mm under static load of rig applied by drill head hydraulics without rotation of augers.
	Soil Origin	The geological origin of the soil can generally be described as: RESIDUAL – soil formed directly from insitu weathering of the underlying rock. No visible structure or fabric of the parent rock. EXTREMELY WEATHERED – soil formed directly from insitu weathering of the underlying rock. Material is of soil strength but retains the structure and/or fabric of the parent rock. ALLUVIAL – soil deposited by creeks and rivers. ESTUARINE – soil deposited in coastal estuaries, including sediments caused by inflowing creeks and rivers, and tidal currents. MARINE – soil deposited in a marine environment. AEOLIAN – soil carried and deposited by wind. COLLUVIAL – soil and rock debris transported downslope by gravity, with or without the assistance of flowing water. Colluvium is usually a thick deposit formed from a landslide. The description 'slopewash' is used for thinner surficial deposits. LITTORAL – beach deposited soil.

Classification of Material Weathering

Term		Abbreviation		Definition
Residual Soil		RS		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.
Extremely Weathered		XW		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible.
Highly Weathered	Distinctly Weathered (Note 1)	HW	DW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
Moderately Weathered		MW		The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable, but shows little or no change of strength from fresh rock.
Slightly Weathered		SW		Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
Fresh		FR		Rock shows no sign of decomposition of individual minerals or colour changes.

NOTE 1: The term 'Distinctly Weathered' is used where it is not practicable to distinguish between 'Highly Weathered' and 'Moderately Weathered' rock. 'Distinctly Weathered' is defined as follows: *'Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores'*. There is some change in rock strength.

Rock Material Strength Classification

Term	Abbreviation	Uniaxial Compressive Strength (MPa)	Guide to Strength	
			Point Load Strength Index $Is_{(50)}$ (MPa)	Field Assessment
Very Low Strength	VL	0.6 to 2	0.03 to 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30mm thick can be broken by finger pressure.
Low Strength	L	2 to 6	0.1 to 0.3	Easily scored with a knife; indentations 1mm to 3mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150mm long by 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium Strength	M	6 to 20	0.3 to 1	Scored with a knife; a piece of core 150mm long by 50mm diameter can be broken by hand with difficulty.
High Strength	H	20 to 60	1 to 3	A piece of core 150mm long by 50mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High Strength	VH	60 to 200	3 to 10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely High Strength	EH	> 200	> 10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

Appendix E: Laboratory Report(s) & COC Documents

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CERTIFICATE OF ANALYSIS 286315

Client Details

Client	JK Environments
Attention	Todd Hore
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E34336PH, Double Bay**
Number of Samples	6 Water
Date samples received	06/01/2022
Date completed instructions received	06/01/2022

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	10/01/2022
Date of Issue	10/01/2022

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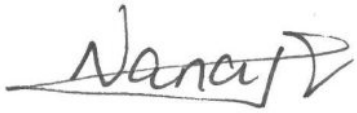
Results Approved By
Dragana Tomas, Senior Chemist
Giovanni Agosti, Group Technical Manager
Kyle Gavrily, Chemist
Priya Samarawickrama, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

VOCs in water					
Our Reference		286315-1	286315-2	286315-3	286315-4
Your Reference	UNITS	MW1	MW2	MW4	WDUP1
Date Sampled		05/01/2022	05/01/2022	05/01/2022	05/01/2022
Type of sample		Water	Water	Water	Water
Date extracted	-	07/01/2022	07/01/2022	07/01/2022	07/01/2022
Date analysed	-	07/01/2022	07/01/2022	07/01/2022	07/01/2022
Dichlorodifluoromethane	µg/L	<10	<10	<10	<10
Chloromethane	µg/L	<10	<10	<10	<10
Vinyl Chloride	µg/L	<10	<10	<10	<10
Bromomethane	µg/L	<10	<10	<10	<10
Chloroethane	µg/L	<10	<10	<10	<10
Trichlorofluoromethane	µg/L	<10	<10	<10	<10
1,1-Dichloroethene	µg/L	<1	<1	<1	<1
Trans-1,2-dichloroethene	µg/L	<1	<1	<1	<1
1,1-dichloroethane	µg/L	<1	<1	<1	<1
Cis-1,2-dichloroethene	µg/L	<1	<1	<1	<1
Bromochloromethane	µg/L	<1	<1	<1	<1
Chloroform	µg/L	<1	<1	<1	<1
2,2-dichloropropane	µg/L	<1	<1	<1	<1
1,2-dichloroethane	µg/L	<1	<1	<1	<1
1,1,1-trichloroethane	µg/L	<1	<1	<1	<1
1,1-dichloropropene	µg/L	<1	<1	<1	<1
Cyclohexane	µg/L	<1	<1	<1	<1
Carbon tetrachloride	µg/L	<1	<1	<1	<1
Benzene	µg/L	<1	<1	<1	<1
Dibromomethane	µg/L	<1	<1	<1	<1
1,2-dichloropropane	µg/L	<1	<1	<1	<1
Trichloroethene	µg/L	<1	<1	<1	<1
Bromodichloromethane	µg/L	<1	<1	<1	<1
trans-1,3-dichloropropene	µg/L	<1	<1	<1	<1
cis-1,3-dichloropropene	µg/L	<1	<1	<1	<1
1,1,2-trichloroethane	µg/L	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1
1,3-dichloropropane	µg/L	<1	<1	<1	<1
Dibromochloromethane	µg/L	<1	<1	<1	<1
1,2-dibromoethane	µg/L	<1	<1	<1	<1
Tetrachloroethene	µg/L	<1	<1	<1	<1
1,1,1,2-tetrachloroethane	µg/L	<1	<1	<1	<1
Chlorobenzene	µg/L	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1

VOCs in water					
Our Reference		286315-1	286315-2	286315-3	286315-4
Your Reference	UNITS	MW1	MW2	MW4	WDUP1
Date Sampled		05/01/2022	05/01/2022	05/01/2022	05/01/2022
Type of sample		Water	Water	Water	Water
Bromoform	µg/L	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2
Styrene	µg/L	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	µg/L	<1	<1	<1	<1
o-xylene	µg/L	<1	<1	<1	<1
1,2,3-trichloropropane	µg/L	<1	<1	<1	<1
Isopropylbenzene	µg/L	<1	<1	<1	<1
Bromobenzene	µg/L	<1	<1	<1	<1
n-propyl benzene	µg/L	<1	<1	<1	<1
2-chlorotoluene	µg/L	<1	<1	<1	<1
4-chlorotoluene	µg/L	<1	<1	<1	<1
1,3,5-trimethyl benzene	µg/L	<1	<1	<1	<1
Tert-butyl benzene	µg/L	<1	<1	<1	<1
1,2,4-trimethyl benzene	µg/L	<1	<1	<1	<1
1,3-dichlorobenzene	µg/L	<1	<1	<1	<1
Sec-butyl benzene	µg/L	<1	<1	<1	<1
1,4-dichlorobenzene	µg/L	<1	<1	<1	<1
4-isopropyl toluene	µg/L	<1	<1	<1	<1
1,2-dichlorobenzene	µg/L	<1	<1	<1	<1
n-butyl benzene	µg/L	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	µg/L	<1	<1	<1	<1
1,2,4-trichlorobenzene	µg/L	<1	<1	<1	<1
Hexachlorobutadiene	µg/L	<1	<1	<1	<1
1,2,3-trichlorobenzene	µg/L	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	101	99	102	101
Surrogate toluene-d8	%	94	102	101	95
Surrogate 4-BFB	%	102	97	110	108

vTRH(C6-C10)/BTEXN in Water						
Our Reference		286315-1	286315-2	286315-3	286315-4	286315-5
Your Reference	UNITS	MW1	MW2	MW4	WDUP1	TS
Date Sampled		05/01/2022	05/01/2022	05/01/2022	05/01/2022	05/01/2022
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	07/01/2022	07/01/2022	07/01/2022	07/01/2022	07/01/2022
Date analysed	-	07/01/2022	07/01/2022	07/01/2022	07/01/2022	07/01/2022
TRH C_6 - C_9	µg/L	<10	<10	<10	<10	[NA]
TRH C_6 - C_{10}	µg/L	<10	<10	<10	<10	[NA]
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	<10	[NA]
Benzene	µg/L	<1	<1	<1	<1	109%
Toluene	µg/L	<1	<1	<1	<1	116%
Ethylbenzene	µg/L	<1	<1	<1	<1	121%
m+p-xylene	µg/L	<2	<2	<2	<2	112%
o-xylene	µg/L	<1	<1	<1	<1	113%
Naphthalene	µg/L	<1	<1	<1	<1	[NT]
Surrogate Dibromofluoromethane	%	101	99	102	101	102
Surrogate toluene-d8	%	94	102	101	95	103
Surrogate 4-BFB	%	102	97	110	108	114

vTRH(C6-C10)/BTEXN in Water		
Our Reference		286315-6
Your Reference	UNITS	TB
Date Sampled		05/01/2022
Type of sample		Water
Date extracted	-	07/01/2022
Date analysed	-	07/01/2022
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	99
Surrogate toluene-d8	%	99
Surrogate 4-BFB	%	106

svTRH (C10-C40) in Water					
Our Reference		286315-1	286315-2	286315-3	286315-4
Your Reference	UNITS	MW1	MW2	MW4	WDUP1
Date Sampled		05/01/2022	05/01/2022	05/01/2022	05/01/2022
Type of sample		Water	Water	Water	Water
Date extracted	-	10/01/2022	10/01/2022	10/01/2022	10/01/2022
Date analysed	-	10/01/2022	10/01/2022	10/01/2022	10/01/2022
TRH C_{10} - C_{14}	µg/L	<50	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100	<100
Total +ve TRH (C10-C36)	µg/L	<50	<50	<50	<50
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	µg/L	<50	<50	<50	<50
Surrogate o-Terphenyl	%	85	97	96	95

PAHs in Water - Low Level					
Our Reference	UNITS	286315-1	286315-2	286315-3	286315-4
Your Reference		MW1	MW2	MW4	WDUP1
Date Sampled		05/01/2022	05/01/2022	05/01/2022	05/01/2022
Type of sample		Water	Water	Water	Water
Date extracted	-	10/01/2022	10/01/2022	10/01/2022	10/01/2022
Date analysed	-	10/01/2022	10/01/2022	10/01/2022	10/01/2022
Naphthalene	µg/L	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1	<0.1
Surrogate p-Terphenyl-d14	%	78	78	76	74

HM in water - dissolved					
Our Reference	UNITS	286315-1	286315-2	286315-3	286315-4
Your Reference		MW1	MW2	MW4	WDUP1
Date Sampled		05/01/2022	05/01/2022	05/01/2022	05/01/2022
Type of sample		Water	Water	Water	Water
Date prepared	-	10/01/2022	10/01/2022	10/01/2022	10/01/2022
Date analysed	-	10/01/2022	10/01/2022	10/01/2022	10/01/2022
Arsenic-Dissolved	µg/L	2	10	<1	9
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1	<1
Copper-Dissolved	µg/L	14	<1	<1	<1
Lead-Dissolved	µg/L	4	<1	<1	<1
Mercury-Dissolved	µg/L	0.08	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	3	6	<1	6
Zinc-Dissolved	µg/L	6	7	3	8

Miscellaneous Inorganics					
Our Reference	UNITS	286315-1	286315-2	286315-3	286315-4
Your Reference		MW1	MW2	MW4	WDUP1
Date Sampled		05/01/2022	05/01/2022	05/01/2022	05/01/2022
Type of sample		Water	Water	Water	Water
Date prepared	-	06/01/2022	06/01/2022	06/01/2022	06/01/2022
Date analysed	-	06/01/2022	06/01/2022	06/01/2022	06/01/2022
pH	pH Units	6.9	7.2	7.0	7.2
Electrical Conductivity	µS/cm	700	670	790	680

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			07/01/2022	1	07/01/2022	10/01/2022		07/01/2022	[NT]
Date analysed	-			07/01/2022	1	07/01/2022	10/01/2022		07/01/2022	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	94	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	1	<1	<1	0	102	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	105	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	95	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	90	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	95	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	87	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	89	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	101	1	101	106	5	104	[NT]
Surrogate toluene-d8	%		Org-023	95	1	94	98	4	97	[NT]
Surrogate 4-BFB	%		Org-023	102	1	102	99	3	101	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			07/01/2022	1	07/01/2022	10/01/2022		07/01/2022	[NT]
Date analysed	-			07/01/2022	1	07/01/2022	10/01/2022		07/01/2022	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	<10	<10	0	95	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	<10	<10	0	95	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	96	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	95	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	95	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	95	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	91	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	101	1	101	106	5	104	[NT]
Surrogate toluene-d8	%		Org-023	95	1	94	98	4	97	[NT]
Surrogate 4-BFB	%		Org-023	102	1	102	99	3	101	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			10/01/2022	1	10/01/2022	10/01/2022		10/01/2022	[NT]
Date analysed	-			10/01/2022	1	10/01/2022	10/01/2022		10/01/2022	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	1	<50	<50	0	108	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	1	<100	<100	0	91	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	1	<100	<100	0	109	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	1	<50	<50	0	108	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	1	<100	<100	0	91	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	1	<100	<100	0	109	[NT]
Surrogate o-Terphenyl	%		Org-020	92	1	85	86	1	71	[NT]

QUALITY CONTROL: PAHs in Water - Low Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	286315-2
Date extracted	-			10/01/2022	1	10/01/2022	10/01/2022		10/01/2022	10/01/2022
Date analysed	-			10/01/2022	1	10/01/2022	10/01/2022		10/01/2022	10/01/2022
Naphthalene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	80	90
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	81	89
Fluorene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	97
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	98	110
Anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	102	110
Pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	105	113
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	83	83
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	108	118
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	79	1	78	89	13	85	79

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			10/01/2022	[NT]	[NT]	[NT]	[NT]	10/01/2022	[NT]
Date analysed	-			10/01/2022	[NT]	[NT]	[NT]	[NT]	10/01/2022	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	106	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			06/01/2022	[NT]	[NT]	[NT]	[NT]	06/01/2022	[NT]
Date analysed	-			06/01/2022	[NT]	[NT]	[NT]	[NT]	06/01/2022	[NT]
pH	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	101	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	JK Environments
Attention	Todd Hore

Sample Login Details

Your reference	E34336PH, Double Bay
Envirolab Reference	286315
Date Sample Received	06/01/2022
Date Instructions Received	06/01/2022
Date Results Expected to be Reported	10/01/2022

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	6 Water
Turnaround Time Requested	2 days
Temperature on Receipt (°C)	13
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
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Sample ID	VOCs in water	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water - Low Level	HM in water - dissolved	pH	Electrical Conductivity
MW1	✓	✓	✓	✓	✓	✓	✓
MW2	✓	✓	✓	✓	✓	✓	✓
MW4	✓	✓	✓	✓	✓	✓	✓
WDUP1	✓	✓	✓	✓	✓	✓	✓
TS		✓					
TB		✓					

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E34336PH Date Results Required: 48hr Page: 1 of 1	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Todd Hore thore@jkenvironments.com.au

Location:	Double Bay	Sample Preserved in Esky on Ice
Sampler:	NM	Tests Required

Date Sampled	Lab Ref:	Sample Number	Sample Containers	PID	Sample Description	Combo 2	Combo 3L	VOCs	pH / EC	8 Metals	PAHs	TRH/BTEX	BTEX	Hardness			
5/01/2022	1	MW1	2x G1, 4x V, H, PVC		Water		X	X	X								
5/01/2022	2	MW2	2x G1, 4x V, H, PVC		Water		X	X	X								
5/01/2022	3	MW4	2x G1, 4x V, H, PVC		Water		X	X	X								
5/01/2022	4	WDUP1	2x G1, 4x V, H, PVC		Duplicate		X	X	X								
5/01/2022	—	WDUP2	2x G1, 4x V, H, PVC		Duplicate		X	X	X	Please Send to Melbourne for analysis							
5/01/2022	5	TS	V										X				
5/01/2022	6	TB	V										X				

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 286315
Date Received: 6/1/22
Time Received: 1330
Received By: TE
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Remarks (comments/detection limits required):	Sample Containers:
Please forward WDUP2 to Melbourne for analysis PQLs to ANZECC (2000) Detection Limits Please. All	G1 - 500mL Amber Glass Bottle G2 - 1L Amber Glass Bottle V - BTEX Vial H - HNO3 Wash PVC PVC - HDPE Plastic Bottles

Relinquished By:	Date: 6/1/21	Time: 9am	Received By: ELS Syd TRoberts	Date: 6/1/22 1330

IP 13°c

Envirolab Services Pty Ltd
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ph 03 9763 2500 fax 03 9763 2633
melbourne@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 29438

Client Details

Client	JK Environments
Attention	Todd Hore
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E34336PH**
Number of Samples	1 Water
Date samples received	10/01/2022
Date completed instructions received	10/01/2022

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	12/01/2022
Date of Issue	12/01/2022

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Chaminda Gunasekara, Inorganics Team Leader
Chris De Luca, Operations Manager

Authorised By

Pamela Adams, Laboratory Manager

VOCs in water		
Our Reference		29438-1
Your Reference	UNITS	WDUP2
Date Sampled		05/01/2022
Type of sample		Water
Date extracted	-	11/01/2022
Date analysed	-	11/01/2022
Dichlorodifluoromethane	µg/L	<10
Chloromethane	µg/L	<10
Vinyl Chloride	µg/L	<10
Bromomethane	µg/L	<10
Chloroethane	µg/L	<10
Trichlorofluoromethane	µg/L	<10
1,1-Dichloroethene	µg/L	<1
Trans-1,2-dichloroethene	µg/L	<1
1,1-dichloroethane	µg/L	<1
Cis-1,2-dichloroethene	µg/L	<1
Bromochloromethane	µg/L	<1
Chloroform	µg/L	<1
2,2-dichloropropane	µg/L	<1
1,2-dichloroethane	µg/L	<1
1,1,1-trichloroethane	µg/L	<1
1,1-dichloropropene	µg/L	<1
Cyclohexane	µg/L	<1
Carbon tetrachloride	µg/L	<1
Benzene	µg/L	<1
Dibromomethane	µg/L	<1
1,2-dichloropropane	µg/L	<1
Trichloroethene	µg/L	<1
Bromodichloromethane	µg/L	<1
trans-1,3-dichloropropene	µg/L	<1
cis-1,3-dichloropropene	µg/L	<1
1,1,2-trichloroethane	µg/L	<1
Toluene	µg/L	<1
1,3-dichloropropane	µg/L	<1
Dibromochloromethane	µg/L	<1
1,2-dibromoethane	µg/L	<1
Tetrachloroethene	µg/L	<1
1,1,1,2-tetrachloroethane	µg/L	<1
Chlorobenzene	µg/L	<1
Ethylbenzene	µg/L	<1

VOCs in water		
Our Reference		29438-1
Your Reference	UNITS	WDUP2
Date Sampled		05/01/2022
Type of sample		Water
Bromoform	µg/L	<1
m+p-xylene	µg/L	<2
Styrene	µg/L	<1
1,1,2,2-tetrachloroethane	µg/L	<1
o-xylene	µg/L	<1
1,2,3-trichloropropane	µg/L	<1
Isopropylbenzene	µg/L	<1
Bromobenzene	µg/L	<1
n-propyl benzene	µg/L	<1
2-chlorotoluene	µg/L	<1
4-chlorotoluene	µg/L	<1
1,3,5-trimethyl benzene	µg/L	<1
Tert-butyl benzene	µg/L	<1
1,2,4-trimethyl benzene	µg/L	<1
1,3-dichlorobenzene	µg/L	<1
Sec-butyl benzene	µg/L	<1
1,4-dichlorobenzene	µg/L	<1
4-isopropyl toluene	µg/L	<1
1,2-dichlorobenzene	µg/L	<1
n-butyl benzene	µg/L	<1
1,2-dibromo-3-chloropropane	µg/L	<1
1,2,4-trichlorobenzene	µg/L	<1
Hexachlorobutadiene	µg/L	<1
1,2,3-trichlorobenzene	µg/L	<1
Surrogate Dibromofluoromethane	%	102
Surrogate toluene-d8	%	99
Surrogate 4-BFB	%	101

vTRH(C6-C10)/BTEXN in Water		
Our Reference	UNITS	29438-1
Your Reference		WDUP2
Date Sampled		05/01/2022
Type of sample		Water
Date extracted	-	11/01/2022
Date analysed	-	11/01/2022
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 -C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Total +ve Xylenes	µg/L	<1
Total BTEX in water	µg/L	<1
Surrogate Dibromofluoromethane	%	105
Surrogate toluene-d8	%	101
Surrogate 4-BFB	%	102

TRH Water(C10-C40) NEPM		
Our Reference		29438-1
Your Reference	UNITS	WDUP2
Date Sampled		05/01/2022
Type of sample		Water
Date extracted	-	12/01/2022
Date analysed	-	12/01/2022
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
Total +ve TRH (C10-C36)	µg/L	<50
TRH >C_{10} - C_{16}	µg/L	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Total +ve TRH (>C10-C40)	µg/L	<50
Surrogate o-Terphenyl	%	89

PAHs in Water - Low Level		
Our Reference		29438-1
Your Reference	UNITS	WDUP2
Date Sampled		05/01/2022
Type of sample		Water
Date extracted	-	12/01/2022
Date analysed	-	12/01/2022
Naphthalene	µg/L	<0.1
Acenaphthylene	µg/L	<0.1
Acenaphthene	µg/L	<0.1
Fluorene	µg/L	<0.1
Phenanthrene	µg/L	<0.1
Anthracene	µg/L	<0.1
Fluoranthene	µg/L	<0.1
Pyrene	µg/L	<0.1
Benzo(a)anthracene	µg/L	<0.1
Chrysene	µg/L	<0.1
Benzo(b,j&k)fluoranthene	µg/L	<0.2
Benzo(a)pyrene	µg/L	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1
Total +ve PAH's	µg/L	NIL (+)VE PAH
Benzo(a)pyrene TEQ	µg/L	<0.5
Surrogate p-Terphenyl-d_{14}	%	122

HM in water - dissolved		
Our Reference	UNITS	29438-1
Your Reference		WDUP2
Date Sampled		05/01/2022
Type of sample		Water
Date prepared	-	12/01/2022
Date analysed	-	12/01/2022
Arsenic-Dissolved	µg/L	<1
Cadmium-Dissolved	µg/L	0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	3
Lead-Dissolved	µg/L	<1
Nickel-Dissolved	µg/L	<1
Zinc-Dissolved	µg/L	5
Mercury-Dissolved	µg/L	<0.05

Miscellaneous Inorganics		
Our Reference		29438-1
Your Reference	UNITS	WDUP2
Date Sampled		05/01/2022
Type of sample		Water
Date prepared	-	10/01/2022
Date analysed	-	10/01/2022
pH	pH Units	7.1
Electrical Conductivity	µS/cm	850

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA latest edition 2510 and Rayment & Lyons.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Metals-022 ICP-MS	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-022	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			11/01/2022	1	11/01/2022	11/01/2022		11/01/2022	[NT]
Date analysed	-			11/01/2022	1	11/01/2022	11/01/2022		11/01/2022	[NT]
Dichlorodifluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Vinyl Chloride	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Bromomethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Chloroethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
Trichlorofluoromethane	µg/L	10	Org-023	<10	1	<10	<10	0	[NT]	[NT]
1,1-Dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trans-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	106	[NT]
Cis-1,2-dichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chloroform	µg/L	1	Org-023	<1	1	<1	<1	0	109	[NT]
2,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	107	[NT]
1,1,1-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	111	[NT]
1,1-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Cyclohexane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Carbon tetrachloride	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromomethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Trichloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	111	[NT]
Bromodichloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	105	[NT]
trans-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
cis-1,3-dichloropropene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2-trichloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Dibromochloromethane	µg/L	1	Org-023	<1	1	<1	<1	0	105	[NT]
1,2-dibromoethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tetrachloroethene	µg/L	1	Org-023	<1	1	<1	<1	0	111	[NT]
1,1,1,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Chlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromoform	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	[NT]	[NT]
Styrene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,1,2,2-tetrachloroethane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]

QUALITY CONTROL: VOCs in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Isopropylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Bromobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-propyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
2-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-chlorotoluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3,5-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Tert-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trimethyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,3-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Sec-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,4-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
4-isopropyl toluene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
n-butyl benzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2-dibromo-3-chloropropane	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,4-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Hexachlorobutadiene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
1,2,3-trichlorobenzene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	105	1	102	99	3	98	[NT]
Surrogate toluene-d8	%		Org-023	99	1	99	99	0	100	[NT]
Surrogate 4-BFB	%		Org-023	100	1	101	99	2	98	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			11/01/2022	1	11/01/2022	11/01/2022		11/01/2022	[NT]
Date analysed	-			11/01/2022	1	11/01/2022	11/01/2022		11/01/2022	[NT]
TRH C_6 - C_9	µg/L	10	Org-023	<10	1	<10	<10	0	108	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-023	<10	1	<10	<10	0	108	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	101	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	107	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	110	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	111	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	107	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	90	[NT]
Surrogate Dibromofluoromethane	%		Org-023	107	1	105	101	4	97	[NT]
Surrogate toluene-d8	%		Org-023	102	1	101	102	1	100	[NT]
Surrogate 4-BFB	%		Org-023	101	1	102	100	2	96	[NT]

QUALITY CONTROL: TRH Water(C10-C40) NEPM					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			12/01/2022	[NT]	[NT]	[NT]	[NT]	12/01/2022	[NT]
Date analysed	-			12/01/2022	[NT]	[NT]	[NT]	[NT]	12/01/2022	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	79	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	93	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	107	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	79	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	93	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	107	[NT]
Surrogate o-Terphenyl	%		Org-020	88	[NT]	[NT]	[NT]	[NT]	94	[NT]

QUALITY CONTROL: PAHs in Water - Low Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			12/01/2022	[NT]	[NT]	[NT]	[NT]	12/01/2022	[NT]
Date analysed	-			12/01/2022	[NT]	[NT]	[NT]	[NT]	12/01/2022	[NT]
Naphthalene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Acenaphthylene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	118	[NT]
Fluorene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	130	[NT]
Phenanthrene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	130	[NT]
Anthracene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	138	[NT]
Pyrene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	138	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	112	[NT]
Benzo(b,j&k)fluoranthene	µg/L	0.2	Org-022	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	140	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d_{14}	%		Org-022	114	[NT]	[NT]	[NT]	[NT]	114	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	29438-1
Date prepared	-			12/01/2022	[NT]	[NT]	[NT]	[NT]	12/01/2022	12/01/2022
Date analysed	-			12/01/2022	[NT]	[NT]	[NT]	[NT]	12/01/2022	12/01/2022
Arsenic-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022 ICP-MS	<0.1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Chromium-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Copper-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Lead-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Nickel-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Zinc-Dissolved	µg/L	1	Metals-022 ICP-MS	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021 CV-AAS	<0.05	[NT]	[NT]	[NT]	[NT]	95	102

QUALITY CONTROL: Miscellaneous Inorganics						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			10/01/2022	[NT]	[NT]	[NT]	[NT]	10/01/2022	[NT]
Date analysed	-			10/01/2022	[NT]	[NT]	[NT]	[NT]	10/01/2022	[NT]
pH	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	99	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	[NT]	[NT]	[NT]	[NT]	101	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
25 Research Drive Croydon South VIC 3136
ph 03 9763 2500 fax 03 9763 2633
melbourne@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	JK Environments
Attention	Todd Hore

Sample Login Details

Your reference	E34336PH
Envirolab Reference	29438
Date Sample Received	10/01/2022
Date Instructions Received	10/01/2022
Date Results Expected to be Reported	12/01/2022

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	1 Water
Turnaround Time Requested	48hr
Temperature on Receipt (°C)	23.2
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Pamela Adams	Chris De Luca
Phone: 03 9763 2500	**Phone: 03 9763 2500**
Fax: 03 9763 2633	**Fax: 03 9763 2633**
Email: padams@envirolab.com.au	**Email: cdeluca@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645 - 002
25 Research Drive Croydon South VIC 3136
ph 03 9763 2500 fax 03 9763 2633
melbourne@envirolab.com.au
www.envirolab.com.au

Sample ID	VOCs in water	vTRH(C6-C10)/BTEXN in Water	TRH Water(C10-C40) NEPM	PAHs in Water - Low Level	HM in water - dissolved	pH	Electrical Conductivity
WDUP2	✓	✓	✓	✓	✓	✓	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

SAMPLE AND CHAIN OF CUSTODY FORM

TO:		FROM:
ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	JKE Job Number: E34336PH Date Results Required: 48hr Page: 1 of 1	JKEnvironments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: Todd Hore thore@jkenvironments.com.au

Location: Double Bay

Sampler: NM

Sample Preserved in Esky on Ice

Tests Required

Date Sampled	Lab Ref:	Sample Number	Sample Containers	PID	Sample Description	Combo 2	Combo 3L	VOCs	pH / EC	8 Metals	PAHs	TRH/BTEX	BTEX	Hardness
5/01/2022	1	MW1	2x G1, 4x V, H, PVC		Water		X	X	X					
5/01/2022	2	MW2	2x G1, 4x V, H, PVC		Water		X	X	X					
5/01/2022	3	MW4	2x G1, 4x V, H, PVC		Water		X	X	X					
5/01/2022	4	WDUP1	2x G1, 4x V, H, PVC		Duplicate		X	X	X					
5/01/2022	—	WDUP2	2x G1, 4x V, H, PVC		Duplicate		X	X	X					
5/01/2022	5	TS	V										X	
5/01/2022	6	TB	V										X	

Please Send to Melbourne for analysis

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 28631
Date Received: 6/1/22
Time Received: 1330
Received By: TR
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

ENVIROLAB
Envirolab Services
25 Research Drive
Croydon South VIC 3136
Ph: (03) 9763 2500
Job No: 29438
Date Received: 10/1/22
Time Received: 2:20
Received By: GS
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None
23.2

Remarks (comments/detection limits required):
Please forward WDUP2 to Melbourne for analysis PQLs to ANZECC (2000) Detection Limits Please. All

Sample Containers:
G1 - 500mL Amber Glass Bottle G2 - 1L Amber Glass Bottle
V - BTEX Vial H - HNO3 Wash PVC
PVC - HDPE Plastic Bottles

Relinquished By:	Date: 6/1/21	Time: 9am	Received By: ELS Syd TRoberts	Date: 6/1/22 1330

Relinquished by: V.VEGA
7/1/21

IP 13°c

Appendix F: Report Explanatory Notes

QA/QC Definitions

The QA/QC terms used in this report are defined below. The definitions are in accordance with US EPA publication SW-846, entitled *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (1994)[12] methods and those described in *Environmental Sampling and Analysis, A Practical Guide,* (1991)[13]. The NEPM (2013) is consistent with these documents.

A. Practical Quantitation Limit (PQL), Limit of Reporting (LOR) & Estimated Quantitation Limit (EQL)

These terms all refer to the concentration above which results can be expressed with a minimum 95% confidence level. The laboratory reporting limits are generally set at ten times the standard deviation for the Method Detection Limit for each specific analyte. For the purposes of this report the LOR, PQL, and EQL are considered to be equivalent.

When assessing laboratory data it should be borne in mind that values at or near the PQL have two important limitations: *"The uncertainty of the measurement value can approach, and even equal, the reported value. Secondly, confirmation of the analytes reported is virtually impossible unless identification uses highly selective methods. These issues diminish when reliably measurable amounts of analytes are present. Accordingly, legal and regulatory actions should be limited to data at or above the reliable detection limit*" (Keith, 1991).

B. Precision

The degree to which data generated from repeated measurements differ from one another due to random errors. Precision is measured using the standard deviation or Relative Percent Difference (RPD).

C. Accuracy

Accuracy is a measure of the agreement between an experimental result and the true value of the parameter being measured (i.e. the proximity of an averaged result to the true value, where all random errors have been statistically removed). The assessment of accuracy for an analysis can be achieved through the analysis of known reference materials or assessed by the analysis of surrogates, field blanks, trip spikes and matrix spikes. Accuracy is typically reported as percent recovery.

D. Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is primarily dependent upon the design and implementation of the sampling program. Representativeness of the data is partially ensured by the avoidance of contamination, adherence to sample handing and analysis protocols and use of proper chain-of-custody and documentation procedures.

E. Completeness

Completeness is a measure of the number of valid measurements in a data set compared to the total number of measurements made and overall performance against DQIs. The following information is assessed for completeness:

- Chain-of-custody forms;
- Sample receipt form;
- All sample results reported;
- All blank data reported;

[12] US EPA, (1994). *SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* (US EPA SW-846)

[13] Keith., H, (1991). *Environmental Sampling and Analysis, A Practical Guide*

- All laboratory duplicate and RPDs calculated;
- All surrogate spike data reported;
- All matrix spike and lab control spike (LCS) data reported and RPDs calculated;
- Spike recovery acceptable limits reported; and
- NATA stamp on reports.

F. Comparability

Comparability is the evaluation of the similarity of conditions (e.g. sample depth, sample homogeneity) under which separate sets of data are produced. Data comparability checks include a bias assessment that may arise from the following sources:

- Collection and analysis of samples by different personnel; Use of different techniques;
- Collection and analysis by the same personnel using the same methods but at different times; and
- Spatial and temporal changes (due to environmental dynamics).

G. Blanks

The purpose of laboratory and field blanks is to check for artefacts and interferences that may arise during sampling, transport and analysis.

H. Matrix Spikes

Samples are spiked with laboratory grade standards to detect interactive effects between the sample matrix and the analytes being measured. Matrix Spikes are reported as a percent recovery and are prepared for 1 in every 20 samples. Sample batches that contain less than 20 samples may be reported with a Matrix Spike from another batch. The percent recovery is calculated using the formula below. Acceptable recovery limits are 70% to 130%.

$$\frac{\text{(Spike Sample Result – Sample Result) x 100}}{\text{Concentration of Spike Added}}$$

I. Surrogate Spikes

Samples are spiked with a known concentration of compounds that are chemically related to the analyte being investigated but unlikely to be detected in the environment. The purpose of the Surrogate Spikes is to check the accuracy of the analytical technique. Surrogate Spikes are reported as percent recovery.

J. Duplicates

Laboratory duplicates measure precision, expressed as Relative Percent Difference. Duplicates are prepared from a single field sample and analysed as two separate extraction procedures in the laboratory. The RPD is calculated using the formula where D1 is the sample concentration and D2 is the duplicate sample concentration:

$$\frac{(D1 - D2) \times 100}{\{(D1 + D2)/2\}}$$

Appendix G: Data (QA/QC) Evaluation

Data (QA/QC) Evaluation

A. INTRODUCTION

This Data (QA/QC) Evaluation forms part of the validation process for the DQOs documented in Section 5.1 of this report. Checks were made to assess the data in terms of precision, accuracy, representativeness, comparability and completeness. These 'PARCC' parameters are referred to collectively as DQIs and are defined in the Report Explanatory Notes attached in the report appendices.

1. Field and Laboratory Considerations

The quality of the analytical data produced for this project has been considered in relation to the following:

- Sample collection, storage, transport and analysis;
- Laboratory PQLs;
- Field QA/QC results; and
- Laboratory QA/QC results.

2. Field QA/QC Samples and Analysis

A summary of the field QA/QC samples collected and analysed for this investigation is provided in the following table:

Sample Type	Sample Identification	Frequency (of Sample Type)	Analysis Performed
Intra-laboratory duplicate (groundwater)	WDUP1 (primary sample MW2)	Approximately 33% of primary samples	Heavy metals, TRH/BTEX, PAHs and VOCs
Inter-laboratory duplicate (groundwater)	WDUP2 (primary sample MW4)	Approximately 33% of primary samples	As above
Trip spike (groundwater)	TS (5/1/22)	One per day of groundwater sampling	BTEX
Trip blank (groundwater)	TB (5/1/22)	One per day of groundwater sampling to demonstrate adequacy of storage and transport methods	BTEX

The results for the field QA/QC samples are detailed in the laboratory summary tables (Table G4) attached to the investigation report and are discussed in the subsequent sections of this Data (QA/QC) Evaluation report.

3. Data Assessment Criteria

JKE adopted the following criteria for assessing the field and laboratory QA/QC analytical results:

Field Duplicates

Acceptable targets for precision of field duplicates in this report will be 30% or less, consistent with NEPM (2013). RPD failures will be considered qualitatively on a case-by-case basis taking into account factors such as the concentrations used to calculate the RPD (i.e. RPD exceedance where concentrations are close to the PQL are typically not as significant as those where concentrations are reported at least five or 10 times the PQL), sample type, collection methods and the specific analyte where the RPD exceedance was reported.

Field/Trip Blanks

Acceptable targets for the field blank sample in this report will be less than the PQL for organic analytes.

Trip Spikes

Acceptable targets for trip spike samples in this report will be 70% to 130%.

Laboratory QA/QC

The suitability of the laboratory data is assessed against the laboratory QA/QC criteria which is outlined in the laboratory reports. These criteria were developed and implemented in accordance with the laboratory's NATA accreditation and align with the acceptable limits for QA/QC samples as outlined in NEPM (2013) and other relevant guidelines.

A summary of the acceptable limits adopted by the primary laboratory (Envirolab) is provided below:

RPDs

- Results that are <5 times the PQL, any RPD is acceptable; and
- Results >5 times the PQL, RPDs between 0-50% are acceptable.

Laboratory Control Samples (LCS) and Matrix Spikes

- 70-130% recovery acceptable for metals and inorganics;
- 60-140% recovery acceptable for organics; and
- 10-140% recovery acceptable for VOCs.

Surrogate Spikes

- 60-140% recovery acceptable for general organics; and
- 10-140% recovery acceptable for VOCs.

Method Blanks

- All results less than PQL.

B. DATA EVALUATION

1. Sample Collection, Storage, Transport and Analysis

Samples were collected by trained field staff in accordance. Field sampling procedures were designed to be consistent with relevant guidelines, including NEPM (2013) and other guidelines made under the CLM Act 1997.

Appropriate sample preservation, handling and storage procedures were adopted. Laboratory analysis was undertaken within specified holding times in accordance with Schedule B(3) of NEPM (2013) and the laboratory NATA accredited methodologies.

JKE note that the temperature on receipt of soil samples was reported to be up to 13°C. JKE understand that the temperature is measured at the laboratory using an infrared temperature probe by scanning the outside of the sample container (i.e. one sample jar/container at the time of registering the samples). This procedure is not considered to be robust as there is a potential for the outside of the jar to warm to ambient temperature, or at least to increase from that of the internal contents, relatively quickly. On this basis, JKE are of the opinion that the temperatures reported on the Sample Receipts are unlikely to be reliable or representative of the overall batch. This is further supported by the trip spike recovery results (discussed further below) which reported adequate recovery in the range of 109% to 116%.

Review of the project data also indicated that:

- COC documentation was adequately maintained;
- Sample receipt advice documentation was provided for all sample batches;
- All analytical results were reported; and
- Consistent units were used to report the analysis results.

2. Laboratory PQLs

Appropriate PQLs were adopted for the analysis and all PQLs were below the SAC, with the exception of the anthracene and vinyl chloride PQLs for groundwater analysis which were 10 times greater than the ecological SAC and approximately three times greater than the recreational SAC, respectively. In light of the PAH and VOC concentrations reported for groundwater, JKE are of the opinion that this is not significant, and it does not affect the quality of the dataset as a whole or the outcome of the investigation.

3. Field QA/QC Sample Results

Field Duplicates

The results indicated that field precision was acceptable. RPD non-conformances were reported for several heavy metals in WDUP2/MW4. Values outside the acceptable limits have been attributed to very low concentrations of the analytes in the samples (typically less than five times the PQL). Where applicable, the higher duplicate value has been adopted as a conservative measure (see attached report tables). As, generally, both the primary and duplicate sample results were less than the SAC, the exceedances are not considered to have had an adverse impact on the data set as a whole.

Field/Trip Blanks

During the investigation, one groundwater trip blank was placed in the esky during sampling and transported back to the laboratory. The results were all less than the PQLs, therefore cross contamination between samples that may have significance for data validity did not occur.

Trip Spikes

The results ranged from 109% to 116% and indicated that field preservation methods were appropriate.

4. Laboratory QA/QC

The analytical methods implemented by the laboratory were performed in accordance with their NATA accreditation and were consistent with Schedule B(3) of NEPM (2013). The frequency of data reported for the laboratory QA/QC (i.e. duplicates, spikes, blanks, LCS) was considered to be acceptable for the purpose of this investigation. JKE note that due to the limited number of samples submitted for analysis, duplicates and matrix spikes were not reported for some analytes. This is not considered to have an impact on the data quality for this investigation.

C. DATA QUALITY SUMMARY

JKE is of the opinion that the data are adequately precise, accurate, representative, comparable and complete to serve as a basis for interpretation to achieve the investigation objectives.

Non-conformances were reported for some field QA/QC samples. These non-conformances were considered to be sporadic and minor, and were not considered to be indicative of systematic sampling or analytical errors. On this basis, these non-conformances are not considered to materially impact the report findings.

There was only one groundwater monitoring event undertaken for the investigation. On this basis there is some uncertainty around the representativeness of the groundwater data, particularly during different climatic conditions and after wet/dry periods. However, given the low contaminant concentrations reported, and in consideration of other lines of evidence gathered during the PSI and DSI (e.g. no odours or sheen in groundwater), this is not considered to alter the conclusions of the investigation.

Appendix H: Field Work Documents

JKEnvironments

Client:	Brooklyn Lane Investment Pty Ltd	Job No.:	E34336PH
Project:	Proposed Redevelopment	Well No.:	MW1
Location:	2a Cooper St, DOUBLE BAY, NSW	Depth (m):	1.0m

WELL FINISH

	Gatic Cover		Standpipe	X	Other (describe)

WELL PURGE DETAILS:

Method:	Peri-Pump	SWL – Before:	0.8m
Date:	5/1/22	Time – Before:	12:02
Undertaken By:	NM	Total Vol Removed:	5.5L
Pump Program No:	—	PID (ppm):	0

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
7	0.9	1		22.2	4.0	3641	6.89	35.8
16	0.9	2		22.3	4.9	670	6.82	32.2
20	0.9	2.5		22.3	5.1	668	6.82	31.1
			Begin Sampling					

Comments: Odours (YES / (NO)) NAPL/PSH (YES / (NO)), Sheen (YES / (NO)), Steady State Achieved (YES / (NO))
mod- Heavy silt load, poor recharge (due to depth?)

Sampling Containers Used: 2x glass amber, 4x BTEX vials, x HNO3 plastic, x H2SO4 plastic, x unpreserved plastic

YSI used: 5

Tested By: ~~Todd Hore~~ NM	**Remarks:**
Date Tested: 5/1/22	- Steady state conditions
Checked By: TH	- difference in the pH less than 0.2 units, difference in conductivity less than 10% 10% and SWL stable/not in drawdown
Date: 12/1/21	

JKEnvironments

Client:	Brooklyn Lane Investment Pty Ltd	**Job No.:**	E34336PH
Project:	Proposed Redevelopment	**Well No.:**	MW2
Location:	2a Cooper St, DOUBLE BAY, NSW	**Depth (m):**	0.62

WELL FINISH

	Gatic Cover		**Standpipe**	X	**Other (describe)** open / Plumb Rose

WELL PURGE DETAILS:

Method:	Peri-pump	**SWL – Before:**	0.26m
Date:	5/1/22	**Time – Before:**	10:00am
Undertaken By:	NM	**Total Vol Removed:**	7.5L
Pump Program No:	—	**PID (ppm):**	0

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
5	0.26	1		21.7	3.2	484.2	6.99	211.3
10	0.26	1.5		21.6	1.0	662.1	6.63	145.4
15	0.26	2		21.6	0.8	633.0	6.54	131.7
20	0.26	2.5		21.6	0.7	622	6.52	124.2
25	0.26	3		21.6	0.61	628	6.90	56.4
27	0.26	3.5		21.6	0.8	627	6.89	56.0
30	0.26	4		21.6	0.9	629	6.89	55.8
32	0.26	4.5		21.6	0.7	628	6.91	55.7
			Begin Sampling					

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

~~Heavy~~ Med Silt load, erratic recharge

Sampling Containers Used: 2 x glass amber, 4 x BTEX vials, | x HNO3 plastic, x H2SO4 plastic, | x unpreserved plastic

YSI used: 5

WDUP 1

Tested By: ~~Todd Hore~~ NM	**Remarks:**
Date Tested: 5/1/22	- Steady state conditions
Checked By: TH	- difference in the pH less than 0.2 units, difference in conductivity less than 10% 10% and SWL stable/not in drawdown
Date: 12/1/21	

JKEnvironments

Client:	Brooklyn Lane Investment Pty Ltd	Job No.:	E34336PH
Project:	Proposed Redevelopment	Well No.:	MW4
Location:	2a Cooper St, DOUBLE BAY, NSW	Depth (m):	0.42

WELL FINISH

	Gatic Cover		Standpipe	✓	Other (describe) Plumb/Brass

WELL PURGE DETAILS:

Method:	Peri-pump	SWL – Before:	0
Date:	5/1/22	Time – Before:	11:07 am
Undertaken By:	NM	Total Vol Removed:	11 L
Pump Program No:	—	PID (ppm):	0

PURGING / SAMPLING MEASUREMENTS

Time (min)	SWL (m)	Vol (L)	Notes	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
4	0	1		20.9	7.9	313.0	7.21	51.6
8	0	2		20.4	0.6	706	6.74	51.4
11	0	4		20.4	0.8	705	6.66	51.4
14	0	6		20.4	0.5	705	6.65	~~48~~.9
17	0	8		20.3	0.5	705	6.63	47.2
			Begin Sampling					

Comments: Odours (YES / (NO)), NAPL/PSH (YES / (NO)), Sheen (YES / (NO)), Steady State Achieved ((YES) / NO)

Excellent recharge, ~~med~~ low silt load

Sampling Containers Used: 2 x glass amber, 4 x BTEX vials, | x HNO3 plastic, x H2SO4 plastic, | x unpreserved plastic

YSI used: ✗ WQM2

Tested By: ~~Todd Hore~~ NM	**Remarks:**
Date Tested: 5/1/22	- Steady state conditions
Checked By: TH	- difference in the pH less than 0.2 units, difference in conductivity less than 10% 10% and SWL stable/not in drawdown
Date: 12/1/21	

JKEnvironments

WATER QUALITY METER CALIBRATION FORM

Client:	Brooklyn Lane Investment Pty Ltd		
Project:	Proposed Redevelopment		
Location:	2a Cooper St, DOUBLE BAY, NSW		
Job Number:	E34336PH		
DISSOLVED OXYGEN			
Make: YSI	Model: Professional Plus		
Date of calibration: 5/1/22	Name of Calibrator: NM		
Span value: 70% to 130%			
Measured value: 100%			
Measured reading Acceptable (Yes/No):			
pH			
Make: YSI	Model: Professional Plus		
Date of calibration: 5/1/22	Name of Calibrator: NM		
Buffer 1: Theoretical pH = 7.01± 0.01	Expiry date: 8/22	Lot No: 367754	
Buffer 2: Theoretical pH = 4.01± 0.01	Expiry date: 10/22	Lot No: 371300	
Measured reading of Buffer 1: 7.02			
Measured reading of Buffer 2: 4.02			
Slope:	Measured reading Acceptable (Yes/No):		
EC			
Make: YSI	Model: Professional Plus		
Date: 5/1/22	Name of Calibrator: NM	Temperature: 23.7 °C	
Calibration solution: Conductivity Standard	Expiry date: 11/22	Lot No: 373623	
Theoretical conductivity at temperature (see solution container): 1359 µS/cm			
Measured conductivity: 1347 µS/cm	Measured reading Acceptable (Yes/No):		
REDOX			
Make: YSI	Model: Professional Plus		
Date of calibration: 5/1/22	Name of Calibrator: NM		
Calibration solution: ORP Test Solution	Expiry date: 04/26	Lot No: 6347	
Theoretical redox value: 240mV			
Measured redox reading: 245.5 mV	Measured reading Acceptable (Yes/No):		

JKEnvironments

PID FIELD CALIBRATION FORM

Client:	Brooklyn Lane Investment Pty Ltd
Project:	Proposed Redevelopment
Location:	2a Cooper St, DOUBLE BAY, NSW
Job Number:	E34336PH

PID

Make:	Model:	Unit: ①	Date of last factory calibration:
Date of calibration: 4/1/22		Name of Calibrator: NM	
Calibration gas: Iso-butylene		Calibration Gas Concentration: 100.0 ppm	
Measured reading: 100.1 ppm		Error in measured reading: ± ppm	
Measured reading Acceptable (Yes/No): Yes			

PID

Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration: 100.0 ppm	
Measured reading: ppm		Error in measured reading: ± ppm	
Measured reading Acceptable (Yes/No):			

PID

Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration: 100.0 ppm	
Measured reading: ppm		Error in measured reading: ± ppm	
Measured reading Acceptable (Yes/No):			

PID

Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration: 100.0 ppm	
Measured reading: ppm		Error in measured reading: ± ppm	
Measured reading Acceptable (Yes/No):			

PID

Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:		Name of Calibrator:	
Calibration gas: Iso-butylene		Calibration Gas Concentration: 100.0 ppm	
Measured reading: ppm		Error in measured reading: ± ppm	
Measured reading Acceptable (Yes/No):			

Appendix I: Guidelines and Reference Documents

Acid Sulfate Soils Management Advisory Committee (ASSMAC), (1998). Acid Sulfate Soils Manual

Australian and New Zealand Environment Conservation Council (ANZECC), (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality

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Department of Land and Water Conservation, (1997). 1:25,000 Acid Sulfate Soil Risk Map Series

Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land (1998)

National Health and Medical Research Council (NHMRC), (2021). National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011

NSW Department of Environment and Conservation, (2007). Guidelines for the Assessment and Management of Groundwater Contamination

NSW EPA, (1995). Contaminated Sites Sampling Design Guidelines

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Olszowy, H., Torr, P., and Imray, P., (1995). Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission

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