

Hyecorp Property Group Pty Ltd






Acid Sulfate Soil Management Plan

37 Archer Street, Chatswood NSW

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1. Introduction

Background

EI Australia (EI) was engaged by Hyecorp Property Group Pty Ltd ('the client'), to prepare an acid sulfate soil management plan for 37 Archer Street, Chatswood in New South Wales (henceforth referred to as 'the site').

The site is located approximately eight kilometres north west of the Sydney central business district, within the local government area (LGA) of Willoughby City Council. (**Figure 1, Appendix A**). It is further identified as Strata Plan 38065, comprising an area of 2,201m² (**Figure 2, Appendix A**). At the time of drafting this plan, the land being was being used for residential purposes, by way of multiple townhouses overlying a single level basement.

The site is designated for redevelopment and this plan has been prepared to assist with the management of acid sulfate soils (ASSs), should they be encountered during the proposed works. It is submitted in support of the corresponding State Significant Development (SSD) and Planning Secretary's Environmental Assessment Requirements (SEARs).

The EI report addresses Condition 13 relating to the ground and water conditions component of the SEARs requirements.

EI acknowledges that no consultation with the local council or relevant state agencies was undertaken during the preparation of this report. However, this has not affected or altered any of the conclusions presented in this report.

Proposed Development

Based on the supplied plans (**Appendix B**), site redevelopment involved the demolition of the existing structures (townhouses), followed by the construction of a twenty-eight storey, residential (apartment) building, overlying a six level basement facility.

The basement required bulk excavation to 71.4 metres Australian Height Datum (m AHD), equating to approximately nineteen metres below ground level (m BGL). Locally deeper excavations would be necessary for footings, piling, lift overrun pits, crane pads and service trenches.

Plan Objective

The objective of this plan is to describe the measures for management and monitoring of ASSs, in the event that they are encountered during the excavation and construction phases of the development.

Scope of the Management Plan

To achieve the above objective, the scope of this plan is as follows:

- Review of geological and soil landscape maps, including the relevant ASS planning and risk maps;
- Description of the potential impacts caused by the proposed excavation and construction activities;
- Description of the measures to be undertaken in an ASS area, if encountered, which when implemented will prevent or minimise the generation and release of acid leachate into the surrounding environment;
- A focussed monitoring program covering soils, as well as surface and ground waters;

- Contingency procedures to be implemented in the advent of the failure of management measures; and
- Provisions for the recording of consultation with co-ordinating authorities.

2. Desktop Review

Property Identification, Location and Physical Setting

The site identification details and associated information are presented in **Table 2-1**. The site locality and area are identified in **Figures 1 and 2, Appendix A**. Refer also to **Appendix B** for the site survey plan.

Table 2-1 Site Identification, Location and Zoning

Attribute	Description
Street Address	37 Archer Street, Chatswood in New South Wales
Location Description	Located approximately 750 metres east of the Chatswood metro and train station. Bound by: <ul style="list-style-type: none"> • North: Residential property, followed by Albert Avenue; • East: Bertram Street, followed by residential properties; • South: Residential property, followed by Johnson Street; • West: Archer Street, followed by residential properties.
Geographical Coordinates	North-eastern corner of site (datum GDA2020-MGA56): Easting: 332164.334 Northing: 6258737.578 (Source: http://maps.six.nsw.gov.au)
Area	2,201m ²
Cadastral Identification	Strata Plan 38065
State Survey Marks	Three survey marks are in close proximity to the site (as per http://maps.six.nsw.gov.au): <ul style="list-style-type: none"> ▪ SS86258 on Bertram Street (75 m south east corner); ▪ SS53950D on Bertram Street (72m south east corner); ▪ SS86317 on Johnson Street (120m south east).
LGA	Willoughby City Council
Parish	Willoughby
County	Cumberland
Zoning	MU1: Mixed Use (<i>Willoughby Local Environmental Plan 2012</i>)
Site Description	The site was being used for residential purposes, being comprised of multiple townhouses, overlying a single level basement.

Regional Setting

Regional topography, geology and soil landscape information is presented in **Table 2-3**. Refer also to **Appendix B** for the site survey plan.

Table 2-2 Regional Setting Information

Attribute	Description
Topography	Site elevations range from 90 metres Australian Height Datum (m AHD) at the northern boundary, to 92m AHD towards the southern boundary.
Drainage	Likely to be consistent with the general slope of the site (i.e. towards the north). Runoff will be collected by pit and pipe services, discharging into the municipal stormwater system.

Geology	Information on regional sub-surface conditions, referenced from the Department of Mineral Resources <i>Sydney 1:100,000 Geological Series Sheet 9130</i> (DMR 1983) indicates the site overlies Wianamatta Group Ashfield Shale (<i>Rwa</i>), which consists of black to dark-grey shale and laminate.
Soil Landscape	According to the <i>Soil Landscapes of the Sydney 1:100 000 Sheet</i> (Chapman and Murphy, 1983), the site overlies a Glenorie (<i>gn</i>) erosional landscape. This landscape is characterised by undulating to rolling low hills on Wianamatta Group shales (local relief 50-80m, slopes 5-20%, with narrow ridges, hillcrests and valleys, shallow to moderately deep (<1m) red and brown podzolic soils).
Nearest Surface Water Features	Scott Creek, located approximately 840m north east of the site. Lane Cove River, located approximately 2600m west of the site.
Groundwater Flow Direction	Inferred to be towards the north (based on the local topography)

Definition of Acid Sulfate Soils

Acid sulfate soils are naturally occurring sediments containing iron sulphides, usually deposited in estuarine environments. As ASS comprises natural geological materials, their occurrence is not related to site boundaries or anthropogenic contamination; rather, they extend across regions suitable for their deposition.

When ASSs are exposed to air (e.g. due to bulk excavation or dewatering), oxygen reacts with the iron sulphides, producing sulphuric acid (and iron oxides). The acid can be produced in large quantities and drain into waterways causing severe short and long term socio-economic and environmental impacts, including damage to manmade structures and natural ecosystems.

ASS can be classified as either:

- Actual acid sulphate soil (AASS), within which are materials that have already reacted with oxygen to produce acid; or
- Potential acid sulfate soil (PASS), within which are materials that contain iron sulphides, but have not been exposed to oxygen (e.g. soils below the water table) and therefore have not produced sulphuric acid (though they have the capacity to do so).

Aquatic organisms are extremely sensitive to acid drainage. The impacts from ASS leachates include:

- Dissolved metals (aluminium in particular) can be toxic to aquatic life forms;
- Dissolved sulfate salts can increase the salinity of freshwater; and
- Acidic sediment may “fix” phosphates and other nutrients, preventing their uptake by plants.

Acid Sulfate Soil Planning and Risk Maps

With reference to the *Willoughby Local Environmental Plan 2012 - Acid Sulfate Soil Map*, the subject land lies within a *Class 5* area.

According to the *Prospect / Parramatta River Acid Sulfate Soil Risk Map* (1:25 000 scale; Murphy, 1997), the subject land lies within an area having *No Known Occurrence*.

Based on the map information, as well as the site's relative elevation ($\geq 90\text{m AHD}$), the potential for ASSs to be present on-site was very low.

3. Acid Sulfate Soil Management

Initial Considerations

It is understood that the proposed site redevelopment involves demolition of all existing structures, followed by the construction of a twenty-eight storey, residential (apartment) building, overlying a six level basement facility. The building and basement will cover the majority of the site area.

The basement requires bulk excavation to 71.4m AHD, equating to approximately 19m BGL, although locally deeper excavations may be necessary for footings, piling, lift overrun pits, crane pads and service trenches.

In total, the works are expected to disturb up to 40,850m³ of sand- and clay- dominated soils and bedrock, or 65,360 tonnes, assuming a bulk density of 1.6 tonnes per cubic meter of material.

Given the type of development that is proposed, the following activities are considered to pose potential risk in relation to the generation of acidic leachate:

- Basement excavation;
- Disturbance or exposure of soils during bulk (trench / pit) excavation;
- Piling works; and
- Groundwater dewatering.

At the time of drafting this plan, no ASS assessment had been completed for the site. Assessment is essential **prior to** the commencement of excavation works, in order to establish which soils, if any, shall require corresponding management. Soils thus confirmed as being acid sulfate containing will be segregated during the bulk (basement) excavation phase, to minimise related environmental impacts.

Notes:

The quantity of ASS actually requiring treatment will be subject to the findings from the assessment phase. Ideally, assessment for ASS is to be undertaken post building demolition and land clearance, but before bulk (basement) excavation.

During excavation, best practices must be employed in managing any off-site water and soil quality impacts. No water containing any suspended matter is to leave the site in a manner which could significantly pollute Scott Creek and/or the Lane Cove River.

Any soils to be imported onto the site for the purpose of back-filling or landscaping will require some form of validation, to confirm their suitability for the proposed land use.

Assessment

Assessment for the presence of ASS on-site shall be performed by a qualified (certified) environmental scientist, in accordance with a specific sampling, analytical and quality plan (SAQP). It will comprise the following tasks (all performed prior to any soil disturbance taking place):

- A walkover inspection, designed to observe site landscape characteristics and check for indicators of actual or potential ASS conditions.
- Examination of the sub-surface, by way of soil layer profiling and collection of samples, by mechanical auger drilling. The bores shall be drilled to a maximum depth of 20m BGL, unless auger refusal (bedrock) prevents.

In accordance with the ASSMAC (1998) *Acid Sulfate Soil Manual* (Section 2, ASSs Assessment Guidelines) and Tables 6.1 and 6.2 of Sullivan *et al.* (2018a) *National Acid Sulfate Soils Guidance: National Acid Sulfate Soils Sampling and Identification Methods*

Manual, a minimum of four (4) sampling points is required for the assessment of an area of 2151m². Each is to be advanced to at least a depth of 1m greater than the depth of proposed disturbance, that being approximately 19m BGL in this case.

Soil samples should be collected at 0.5m increments and/or at recognised soil horizon changes during advancement. All examined soils are to be assessed in-field for indicators of ASS, including:

- Dark blue / grey (sometimes black) clays and sands (indicator of PASS);
 - Mottled or blotched yellow colouring (indicator of AASS);
 - Marine shells and grit (indicator of PASS and natural buffering capacity); and
 - A 'rotten egg' hydrogen sulphide (H₂S) odour (indicator of PASS).
- Laboratory analysis of selected (discrete / uncomposited) samples for relevant ASS parameters, using NATA-registered methods. In accordance with the ASSMAC (1998) *Acid Sulfate Soil Manual* (Section 2, *ASSs Assessment Guidelines*) and Tables 6.1 and 6.2 of Sullivan *et al.* (2018a) *National Acid Sulfate Soils Guidance: National Acid Sulfate Soils Sampling and Identification Methods Manual*, the analytical program should include:
 - Field pH_F (with values of <4 being an indicator of AASS);
 - Peroxide-oxidation pH_{FOX} (with values of <3 being an indicator of PASS);
 - Suspension peroxide oxidation combined acidity and sulfate (SPOCAS); and/or
 - Chromium suite (determining chromium reducible sulphur (S_{Cr}), which closely correlates with the inorganic sulfur content).
 - Data interpretation and reporting, updating the ASS management plan as required.

For this site, the natural (alluvial) soils will most likely contain acid sulfates. For those soils confirmed as being acid sulphate containing, liming rates shall be determined for subsequent treatment purposes.

Action Criteria

The analytical results will be interpreted with respect to the criteria presented in:

- Table 4.4 *Action criteria based on ASS soil analysis for three broad texture categories*, from Section 2 *ASSs Assessment Guidelines* of the ASSMAC (1998) *Acid Sulfate Soil Manual*; and
- Table 1.1 *Action criteria based on the texture and volume of material disturbed*, from Section 1.4 *Action Criteria Triggering the Need for an ASS Management Plan* of Sullivan *et al.* (2018) *National Acid Sulfate Soils Guidance - National Acid Sulfate Soils Identification and Laboratory Methods Manual*.

For this site, the criteria applicable to the disturbance of more than 1000 tonnes of medium textured materials (i.e. sandy loams to light clays; 5-40% clay content) are to be adopted. These are:

Field pH (pH _F):	4
Peroxide Oxidation pH (pH _{FOX}):	3
Sulfur Trail (S _{Cr}):	0.03% w/w as sulfur
Acid Trail (TPA / TSA / Net Acidity):	18 moles H ⁺ / tonne

All identified ASS must be managed in accordance with the measures described in the following sections of this plan. It is anticipated ASS will either be neutralised on-site, then disposed at a waste facility, or disposed directly at a landfill facility licensed to accept untreated ASS, with their placement below the water table. No ASS, treated or otherwise, is to be used for structural or general filling above the groundwater table.

Management Options

EI understands that the site is located within an area identified as having a very low potential for the presence of acid sulfate soils (ASS). However, as outlined below, management options commonly adopted for ASS comprise:

- Avoidance, or minimisation of ASS disturbance;
- Soil neutralisation (typically with lime);
- Strategic reburial under water; and/or
- Off-site ASS treatment and disposal.

The following issues will need to be considered during construction in an ASS environment:

- Exposure and oxidation of excavated (stockpiled) material and generation of acid leachate;
- Release of acidic surface and groundwater(s) during the excavation; and
- Ongoing oxidation of excess ASS generated by excavations and consequential generation of acidic groundwater.

The extent of any associated adverse impacts will depend on the following factors:

- Volume of excavated soil identified as being ASS;
- Physical characteristics of the ASS, such as grain size and natural buffering capacity;
- Time that ASS are exposed to air; and
- Rate of oxidation and transport of the oxidation products.

Effective control of the potential impacts from ASS will rely on adequate identification and management, including a monitoring program. An effective monitoring program, combined with planned maintenance and appropriate contingencies, will ensure there is no incremental contribution of acid leachates during excavation and construction.

All potential acid-generating soil must be managed in accordance with the measures described in the following sections of this plan. It is anticipated that acidity will either be neutralised on-site, then disposed at a waste facility, or disposed directly at a landfill facility licensed to accept untreated ASS, with their placement below the water table. No acidic soil, treated or otherwise, is to be used for structural or general filling above the groundwater table.

Disposal of Potential Acid Sulfate Soils Below the Water Table

In accordance with the EPA (2014) *Waste Classification Guidelines - Part 4: Acid Sulfate Soils*, PASS may be disposed in water below the permanent water table (without lime treatment), provided:

- Disposal occurs before they have had a chance to oxidise (i.e. within twenty four hours of excavation);
- The soils meet the definition of *virgin excavated natural material* (VENM) under the *Protection of the Environment Operations Act 1997*, even though they contain sulfidic ores or soils; and
- The designated landfill facility must be licensed by the Environment Protection Authority of New South Wales (EPA) to dispose potential ASS below the water table.

Potential ASS must be disposed within eight hours of their receipt at the landfill and kept wet at all times until their burial at least two metres below the lowest historical level of the water table at the disposal facility.

It is understood that PASS from this site will either be disposed below the water table at a lawfully receiving landfill facility, or treated on-site, classified according to the EPA (2014) *Waste*

Classification Guidelines and then disposed at a landfill facility able to receive treated ASS material.

Process for Excavation of PASS

Excavation shall proceed in stages, as follows:

- The site surface shall be stripped and prepared. All existing fill materials requiring excavation shall be excavated and stockpiled separately (covered) whilst waste classification proceeds.
- Care must be taken to ensure that no surface fill is mixed with PASS below. The sides of the excavation shall also be stripped a further 200 mm laterally to ensure potential fill soils do not fall into the pit and cross contaminate PASS materials below.
- Once fill material is removed, the surface shall be inspected by a qualified environmental consultant and a representative of the receiving landfill facility, prior to excavation of PASS.
- When surface clearance is granted, PASS materials shall be excavated to the required depth and loaded directly onto waiting trucks. Each truckload shall be inspected and verification testing for pH_f shall be carried out to confirm soil pH does not fall below 5.5 prior to leaving the site.
- Verification testing is required to demonstrate that materials with existing acidity are not being reburied. Should pH_f fall below pH 5.5, the materials from that truck are to remain on-site and lime neutralisation techniques are to be implemented.

Transportation

Transport of PASS material to the receiving landfill facility shall take place immediately after excavation, testing and truck loading. If this is not possible, PASS soils shall be stockpiled and immediately covered. Stockpiled PASS materials must leave the site within 12 hours of excavation otherwise lime neutralisation techniques shall proceed

Documentation

Documentation must be provided to the occupier of the landfill facility for each truckload of PASS received, indicating that the soil excavation, transport and handling have been in accordance with the recognised guidelines, thus preventing the generation of acid.

The occupier of the disposal site must also test the pH_f of each load of soil received immediately prior to its placement under water using the test method(s) in ASSMAC (1998) (Methods 21A and/or 21AF). These details, together with the pH of the soil recorded at the time of its extraction, must be retained by the occupier of the landfill site.

Soil that has dried out, undergone any oxidation, or which has a pH_f of less than 5.5 must be treated by neutralisation and disposed of at a landfill that can lawfully accept it.

The pH of the water at the landfill into which the PASS is placed must not be less than 5.5 at any time. Landfill licence conditions require the occupiers of potential ASS disposal sites to regularly monitor the pH of ground and surface waters at their premises.

Disposal of Potential Acid Sulfate Soils Above the Water Table

This methodology shall be adopted when ASS, or indeed any acidic soil, cannot be disposed in water below a permanent water table (i.e. the conditions prescribed in Section 3.3 **cannot** be met).

- Excavated acidic soil shall be stockpiled separately within designated areas, and treated (limed) immediately. For treatment of large volumes of material by mechanical application of neutralisation materials, treatment should be carried out on a treatment pad, with adequate sediment erosion control measures in place.
- The treatment pad should consist of a minimum 300 mm thickness of compacted crushed limestone, or other appropriate neutralisation material. The level of compaction used should

produce an appropriately low permeability base to prevent infiltration of leachate. The treatment pad should be bunded with a minimum 150 mm high perimeter of compacted, crushed limestone to contain potential leachate runoff within the treatment pad area and prevent surface water runoff from entering the treatment pad area. Lime shall be spread evenly upon the excavated materials, and thoroughly mixed.

- Following treatment, soils should be chemically assessed and waste classified for off-site disposal in accordance with the EPA (2014) *Waste Classification Guidelines*.

In addition, the following strategies shall be implemented, as required, to manage risk:

- Installation of leachate collection and treatment systems (essential around the treatment pad area, at least); and
- Construction of supplementary erosion and sediment control structures.

If lime treatment on freshly excavated acidic soil, or PASS, cannot be performed immediately, plastic sheeting shall be placed over the stockpile to reduce oxidation, and the following shall be adopted:

- For every day a stockpile remains on-site, representative samples will be monitored for pH_f ; where pH_f falls below 5.5, lime will be applied for neutralisation purposes; and
- On-site neutralisation of acidic soils ($pH_f < 5.5$) will be carried out using powdered, agricultural lime.

Determination of Lime Requirement

The quantity of lime required to neutralise the theoretical maximum amount of acid that could be generated from complete oxidation of the ASS will be established at the conclusion of the assessment phase

Method of Neutralisation

In order to facilitate mixing, the soils should be thinly spread ($< 0.5m$) over the treatment pad. Lime should be added by hand and/or excavator bucket, followed by mixing using light-weight rotators and/or shovels.

Field pH testing on representative samples should be performed to ensure that sufficient neutralisation has occurred (i.e. pH_f is > 5.5), prior to waste classification and disposal.

Management of *In Situ* Acidic Soils

Potential acid-generating soil which becomes exposed (oxidised) on an excavation surface may produce acidic leachate. For every day that such an excavated surface is in an exposed state, pH_f shall be monitored by testing of representative samples. Where soil pH_f levels falls below 5.5, lime will be applied to the corresponding horizon(s), to 100-200mm depth. Plastic sheeting can be placed over the corresponding surface (where possible) to reduce the oxidation rate.

Groundwater Management and Disposal

Groundwater Management

The removal (pumping) of any groundwater from an excavation area may cause alterations to the existing water table. Extracted groundwater should be pumped to a holding vessel for assessment of pH during the dewatering process. Extracted water should be treated with hydrated lime to display a pH level of pH 6-8, prior to off-site disposal. Powdered agricultural lime should be added to the water by hand and/or excavator bucket and mixed. Field pH testing on representative samples should be performed to ensure that sufficient neutralisation has occurred, prior to disposal.

In addition, an appropriately designed truck wash area will be required to capture liquids and solids generated, prior to vehicles exiting the site. Treatment and neutralisation of solids and liquids shall be in accordance with the methodology described above.

Groundwater Disposal

It is anticipated that extracted groundwater from the dewatering process will be disposed to the municipal stormwater system. Any permits / licences from Council and Water NSW shall be obtained prior to discharging to the municipal stormwater system.

Water for disposal will be tested routinely (weekly intervals) for the duration of dewatering activities, to ensure that no change to the quality of water entering the stormwater system. Should it be found that groundwater quality is not suitable for disposal to the stormwater system, groundwater treatment or a Sydney Water permit to dispose to sewer shall be required prior to disposal.

Water quality monitoring prior to disposal shall include the following:

- Daily monitoring of field parameters (pH, electrical conductivity, dissolved oxygen, temperature and turbidity) in the treated discharge water using data logging equipment;
- Weekly sampling and laboratory analysis of treated groundwater water for a range of relevant analytical parameters (i.e. to be specified in a site-specific dewatering management plan). Laboratory results should be compared to the trigger values applicable to the 95% level of species protection provided in the ANZG (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Weekly sampling shall be performed by a suitably qualified environmental consultant and submitted to a NATA-accredited laboratory for analysis of the above parameters.

Risk Management

This management plan has been based on the assumption that acid-generating soil may be encountered during the proposed development (most likely from >2m BGL onwards). During the proposed excavations, it is recommended that site inspections be conducted by a qualified environmental scientist, in order to supervise the works and check that the assumptions made in the report are consistent with field evidence. The qualified environmental consultant/engineer should ensure:

- Soils indicative of ASS materials are adequately managed; and
- Testing of excavated and exposed soils are performed, to establish and/or confirm lime requirements.

All contractors must employ best practices in managing any off-site water and soil quality impacts during site redevelopment. All waste materials must be chemically assessed and waste classified under the EPA (2014) *Waste Classification Guidelines*, prior to off-site disposal to appropriate landfill facilities.

Contingency Planning

A contingency plan is detailed in **Table 3-1**. The plan provides a list of potential events that may arise during bulk excavation and the actions to be undertaken if unexpected conditions occur. Refer also to **Appendix C** for the *Unexpected Find Protocol*.

Table 3-1 Contingency Plan

Unexpected Condition	Action
PASS identified at unexpected depths and location	Stop excavations. Have material assess by an environmental consultant. Follow management procedures adopted in the ASS management plan.
Neutralisation of acidic soil was not effective	Re-assess liming rates and add additional lime to material. Re-test material to check neutralisation.
Neutralisation of acidic soil indicates that too much lime has been added and soils are alkaline	Remediate soils before use. Remediation comprises mixing additional acidic soil / PASS with the treated material (i.e. use excess lime in treated soil). Re-test material to check neutralisation.
Bunded treatment area is damaged	Repair bund as soon as practicable. Clean-up any soil that escaped the treatment area and place back into the treatment area. Check surrounding area for impact from acidic leachate, and undertake remedial action as required.
Groundwater level falls below the top of an area containing acidic soil	Stop dewatering. Review exposure by checking the acidic conditions in the affected (interface) area. Determine potential causes by reviewing construction practises, weather conditions and baseline groundwater monitoring data. Perform additional groundwater monitoring as necessary. Review and confirm mitigation measures to be implemented, including: <ul style="list-style-type: none"> ▪ Maintain soil moisture levels through targeted groundwater recharge; ▪ Adjusting the construction activities or schedule; and ▪ Treatment of additional acidic soil in treatment area. The pH of water should be monitored.
Extended rainfall generating excessive water to be analysed, treated (if required), and disposed of prior to installation activities recommencing	The control procedures detailed in the plan will accommodate this contingency. The timeframe needed to recover the excessive water may extend the period during which the trench or excavation is open increasing the potential for acid generation and therefore requiring management.
Extended delays due to equipment failure, leaving trenches or excavations and excavated material open to oxidation	Addition of lime sufficient to neutralise the total potential acidity of the excavated waste. A safety factor of 1.5 is included in the calculation of lime required which should ensure sufficient neutralising capacity should the excavation be open for greater than the planned period. The oxidation of the walls and base of the excavation should also be considered in regards to engineering design.
Spillage of acidic soil	Spillage of acidic soil should be collected and transferred to the treatment area soon as practicable, to ensure that surface soil or groundwater is not adversely impacted.

4. Consultation and Records

Overall, as outlined in this report, the risk of acid sulfate soils (ASS) is considered low and acceptable, and is not expected to impact the proposed development.

During ASS assessment and management, regard must be given to the needs of the following organisations:

- EPA, concerning their requirements with respect to the various contamination control issues associated with the project and the details required in the ASS management plan;
- WaterNSW, for dewatering conditions and permit; and
- Willoughby City Council, for compliance with consent conditions relating to the development application.

A file will be established to store all hard copy records associated with ASS management for the project. All analysis and monitoring information will be stored electronically to permit ease of access and data interpretation.

5. Statement of Limitations

This plan has been prepared for the exclusive use of Hyecorp Property Group Pty Ltd, whom are the only intended beneficiaries of EI's work. The scope of the plan was limited to that agreed with the clients.

No other party should rely on this document without the prior written consent of EI, and EI undertakes no duty, or accepts any responsibility or liability, to any third party who purports to rely upon this document without EI's approval.

EI has used a degree of care and skill ordinarily exercised in similar investigations by reputable members of the environmental industry in Australia as at the date of this document. No other warranty, expressed or implied, is made or intended. Each section of this report must be read in conjunction with the whole of this report, including its appendices.

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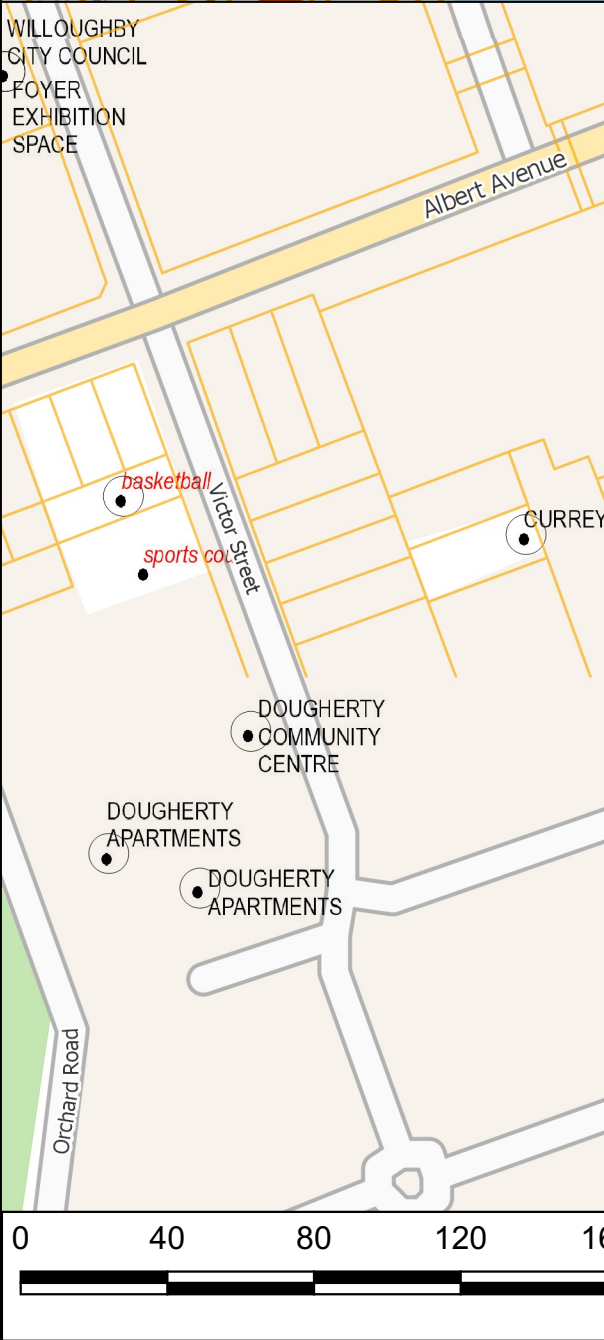
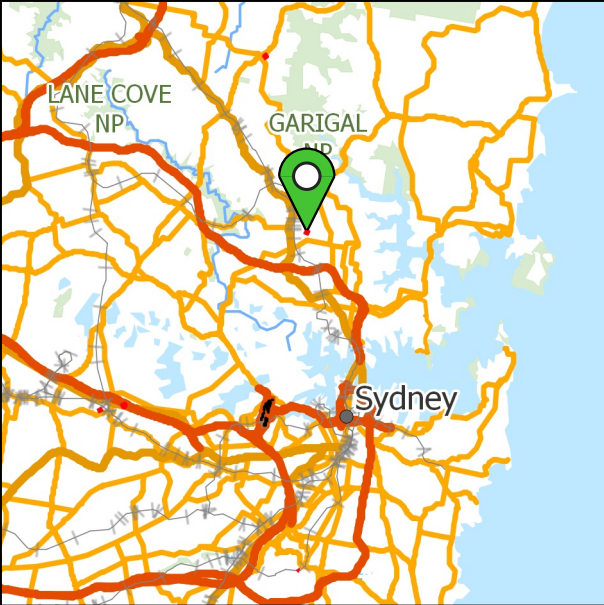
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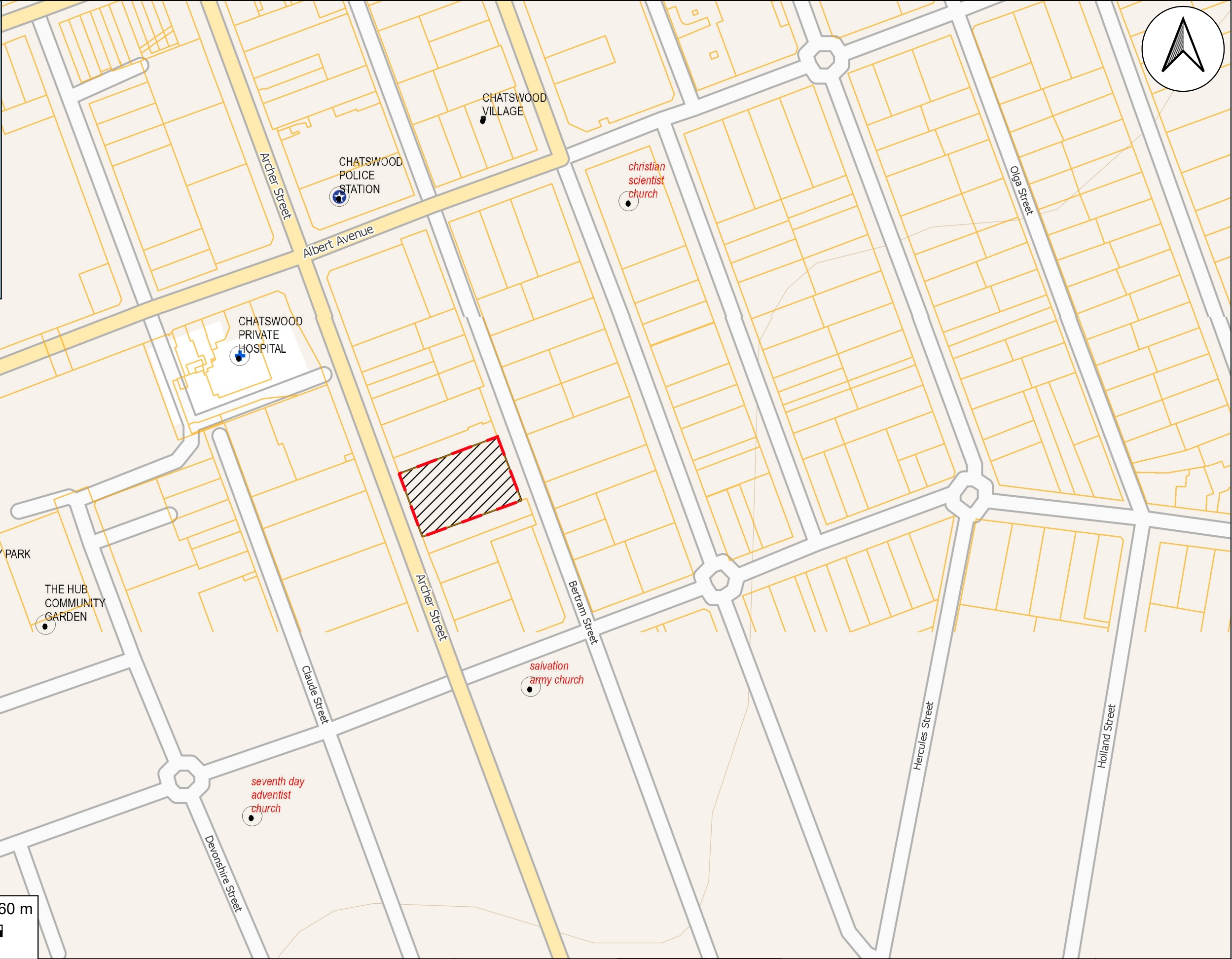
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Appendix A – Figures



LEGEND. Note: All locations are approximate

 Site Boundary



 Suite 6.01, 55 Miller Street, PYRMONT 2009 Ph (02) 9516 0722 Fax (02) 9518 5088	Drawn:	T.Y.	HPG General Pty Ltd Preliminary Site Investigation 37 Archer Street, Chatswood NSW Site Locality Plan	Figure: 1
	Approved:			Project: E26577.E01
	Date:	26/11/2024		



<div>LEGEND. Note: all locations are approximate</div> <div><div></div>Site Boundary</div>	<div><div><div></div></div><div>eiaustralia</div><div>Practical Solutions for Built Environments</div><div>Suite 6.01, 55 Miller Street, PYRMONT 2009 Ph (02) 9516 0722 Fax (02) 9518 5088</div></div>	Drawn:	T.Y.	<div><div>HPG General Pty Ltd</div><div>Preliminary Site Investigation</div><div>37 Archer Street, Chatswood NSW</div><div>Site Layout Plan</div></div>	Figure:
		Approved:			2
		Date:	26/11/2024		Project: E26577.E01

Appendix B – Site Survey and Proposed Development Plans

40 ARCHER STREET
9 STOREY
APARTMENTS

47-49 ARCHER STREET
2 STOREY
TOWN HOUSES

45 ARCHER STREET
2 STOREY
TOWNHOUSES

31 - 35 ARCHER STREET
14 STOREY APARTMENT BUILDING
UNDER ASSESSMENT

22-28 BERTRAM STREET
2 STOREY
TOWNHOUSES

GENERAL NOTES







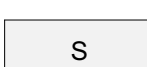


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LEGEND

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	RETAIL PARKING
	FOOD AND BEVERAGE PARKING
	RESIDENTIAL PARKING
	RESIDENTIAL VISITOR PARKING
	SHARED ZONE
	STORAGE CAGES
	ACCESSIBLE CARSPACE
	BOLLARD
R - LF	RESIDENTIAL LIFT
C - LF	COMMERCIAL LIFT

BASEMENT 06
28 CAR PARKING SPACES

REVISION ID	AMENDMENT	DATE
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ARCHITECT

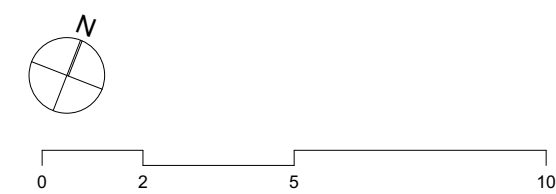
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ABN 81 612 046 643
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CLIENT

HYECORP

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CHATSWOOD NSW 2067



SITE ADDRESS
37 ARCHER STREET
CHATSWOOD NSW 2067

JOB NO		
2332		
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SSDA
DRAWING TITLE
BASEMENT 06 PLAN

SHEET NO.	REVISION
SSDA 101	A

40 ARCHER STREET
9 STOREY
APARTMENTS

47-49 ARCHER STREET
2 STOREY
TOWN HOUSES












45 ARCHER STREET
2 STOREY
TOWNHOUSES

31 - 35 ARCHER STREET
14 STOREY APARTMENT BUILDING
UNDER ASSESSMENT

22-28 BERTRAM STREET
2 STOREY
TOWNHOUSES

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	COMMERCIAL PARKING
	RETAIL PARKING
	FOOD AND BEVERAGE PARKING
	RESIDENTIAL PARKING
	RESIDENTIAL VISITOR PARKING
	SHARED ZONE
	STORAGE CAGES
	ACCESSIBLE CARSPACE
	BOLLARD
	RESIDENTIAL LIFT
	COMMERCIAL LIFT

BASEMENT 03
25 CAR PARKING SPACES
BASEMENT 04
25 CAR PARKING SPACES
BASEMENT 05
25 CAR PARKING SPACES

TOTAL
75 CAR SPACES

REVISION ID	AMENDMENT	DATE
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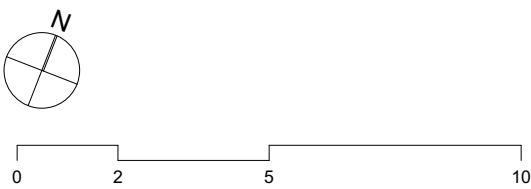
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SITE ADDRESS
37 ARCHER STREET
CHATSWOOD NSW 2067

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DATE CREATED	SCALE	
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SSDA
DRAWING TITLE
TYPICAL BASEMENT 03-05 PLAN

SHEET NO.	REVISION.
SSDA 102	A

36 ARCHER STREET
9-STOREY
APARTMENTS

45 ARCHER STREET
2 STOREY
TOWNHOUSES

31 - 35 ARCHER STREET
14 STOREY APARTMENT BUILDING
UNDER ASSESSMENT

22-28 BERTRAM STREET
2 STOREY
TOWNHOUSES

BASEMENT 02
26 CAR PARKING SPACES

SHEET NO.	REVISION
SSDA 103	A

SHEET NO.	REVISION
SSDA 103	A

36 ARCHER STREET
9-STOREY
APARTMENTS

45 ARCHER STREET
2 STOREY
TOWNHOUSES

31 - 35 ARCHER STREET
14 STOREY APARTMENT BUILDING
UNDER ASSESSMENT

22-28 BERTRAM STREET
2 STOREY
TOWNHOUSES

SHEET NO.	REVISION.
SSDA 104	A



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- RETAIL PARKING
- FOOD AND BEVERAGE PARKING
- RESIDENTIAL PARKING
- RESIDENTIAL VISITOR PARKING
- SHARED ZONE
- S STORAGE CAGES
- ACCESSIBLE CARSPACE
- B BOLLARD
- R - LF RESIDENTIAL LIFT
- C - LF COMMERCIAL LIFT

REVISION ID	AMENDMENT	DATE
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CHATSWOOD NSW 2067

0 2 5 10

SITE ADDRESS
37 ARCHER STREET
CHATSWOOD NSW 2067

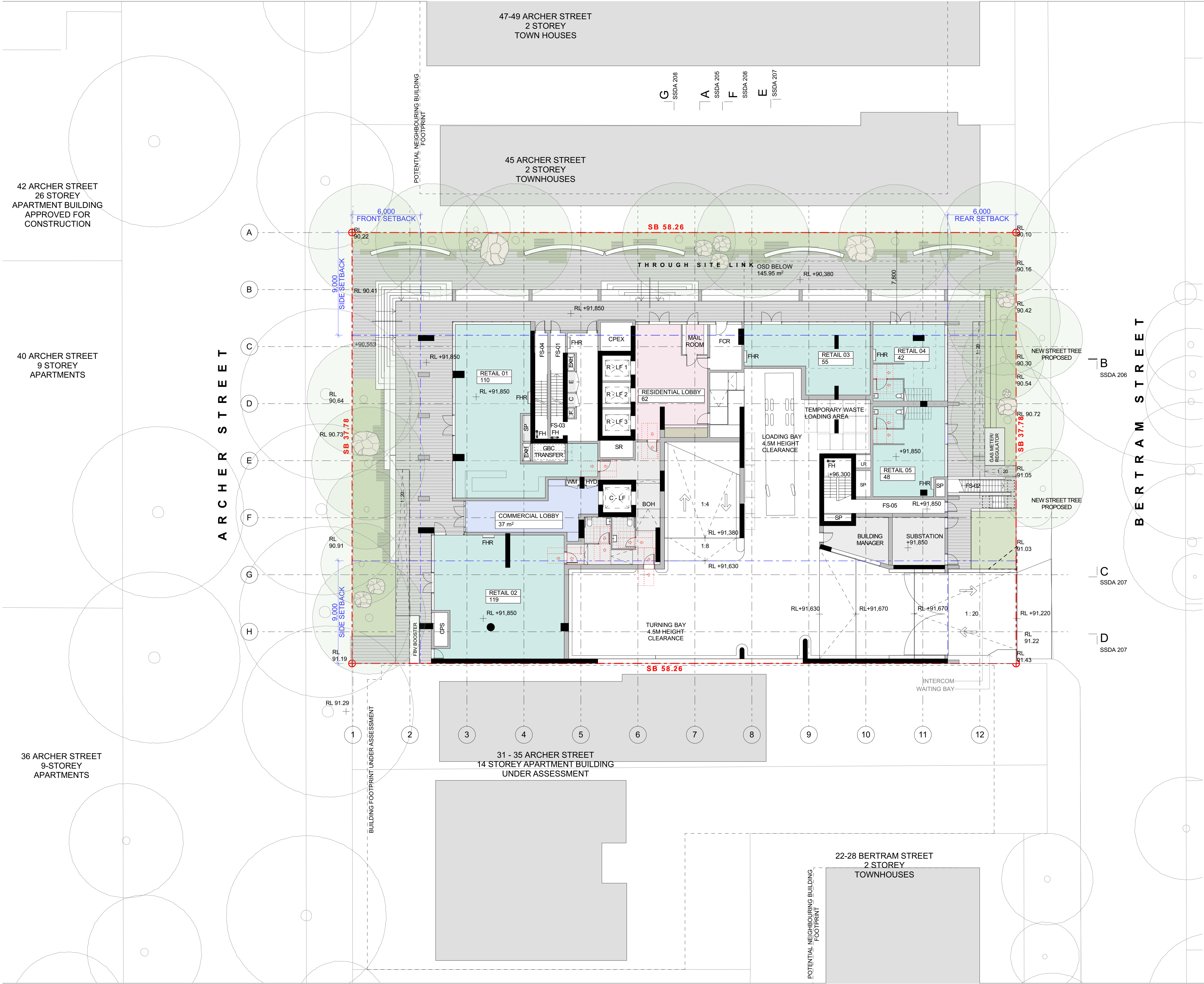
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PROJECT STATUS
SSDA

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BASEMENT 01 MEZZANINE PLAN

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LEGEND

- 1 BED APARTMENT
- 2 BED APARTMENT
- 3 BED APARTMENT
- 4 BED APARTMENT
- COMMERCIAL
- RETAIL
- RESIDENTIAL LOBBY

REVISION ID	AMENDMENT	DATE
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0 2 5 10

SITE ADDRESS

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PROJECT STATUS

SSDA

DRAWING TITLE

GROUND FLOOR PLAN

SHEET NO.	REVISION
SSDA 106	A

Appendix C – Unexpected Find Protocol

UNEXPECTED FINDS PROTOCOL

